A

NOTICE OF PREPARATION

OF A SUBSEQUENT ENVIRONMENTAL IMPACT REPORT AND SPECIFIC PLAN FOR THE TIOGA INN PROJECT

LEAD AGENCY: Mono County Community Development Department
ADDRESS: Post Office Box 347 ♦ Mammoth Lakes, California 93546
COUNTY CONTACT: Gerry LeFrancois 760.924.1810

NOP ISSUED: **17 OCTOBER 2016**
NOP COMMENTS DUE BY: **25 NOVEMBER 2016**
SCOPING MEETING: 27 OCTOBER 2016 ♦ 4:30-6:30 pm ♦ Lee Vining Community Center

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A. PURPOSE OF NOTICE

As Lead Agency, the Mono County Community Development Department ("the County") is planning to prepare a Subsequent Environmental Impact Report (SEIR) and Specific Plan for the Tioga Inn development. CEQA §15162 requires preparation of a Subsequent Environmental Impact Report (SEIR) when warranted by changed project circumstances, the availability of new information, potential for new environmental effects, and potential for new mitigation measures and/or project alternatives to reduce significant effects.

Mono County has prepared this Notice of Preparation (NOP) to invite your comments on the scope and content of environmental information in the forthcoming SEIR.

→ In particular, the County is requesting your input regarding:

- **Permits and Approvals:** Applicable permits and approvals that may be required from your agency and environmental review requirements associated with those approvals (please see NOP §H);
- **Significant Issues & Thresholds of Significance:** Potentially significant effects to be examined and Significance Thresholds that should be used;
- **Alternatives & Cumulative Projects:** Alternatives to the proposed project that merit evaluation in the forthcoming SEIR (please see discussion in NOP §I);
- **Related Projects:** Related projects or actions that should be considered in assessing cumulative effects;
- **Reference Materials:** Reference materials to review in setting forth baseline conditions, evaluating impacts, and mitigations.

B. PUBLIC ACCESS & PARTICIPATION

To optimize public access, the County will post project documents on the County website for review and downloading. SEIR copies will be provided at Lee Vining Public Library and county offices in Mammoth Lakes and Bridgeport. Hard-bound copies can also be obtained for a nominal charge to cover reproduction costs. Agency and public comments and questions are welcomed throughout the review process.

C. OCTOBER 27 SCOPING MEETING

A scoping meeting will be held on 27 October 2016 from 4:30- 6:30 pm at the Lee Vining Community Center located at 296 Mattly Avenue in the community of Lee Vining. Following a brief presentation about the project and CEQA process, participants will be invited to comment on the proposed scope and focus of the forthcoming SEIR.

D. PROJECT INFORMATION

The applicants, Dennis and Jane Domaille, are proposing to construct the Tioga Inn and associated project features on the site of the existing Tioga Gas Mart and Whoa Nellie Deli, located at 22 Vista Point Drive in the unincorporated community of Lee Vining.

The project area encompasses 4 parcels totaling 67.8 acres of land within an overall ownership area of roughly 74 acres (including an outparcel with an existing road that connects Parcel 1 to the existing workforce housing on Parcel 4). State Route 120 (SR 120) provides access to the project site and also provides the only eastern access into Yosemite National Park. Located about one-half mile south of the main US 395 corridor through Lee Vining, the property is surrounded on the north, east and west by land owned by the Los Angeles Department of Water and Power (LADWP); adjoining acreage to the west is owned by Southern California Edison (SCE). The LADWP and SCE parcels are largely undeveloped but include a smattering of industrial uses, roads and utility improvements.

The project encompasses multiple elements, many of which were analyzed in the 1993 environmental and planning documents. The original concept was to provide a full range of services and facilities for tourists (to Yosemite National Park, the Mono National Scenic Recreation Area, and the eastern Sierra Nevada generally), as well as meeting facilities, jobs and employee housing opportunities for area residents.

The current proposal embodies goals and concepts developed in 1993, with added refinements. Thus, the current proposal proposes up to 80 new workforce housing units, adds 100 seats to the full-service restaurant, adds a third story to the hotel to reduce its footprint while retaining the full 120 guest rooms, and adds a third gas pump island and overhead canopy. The proposal includes substantial additional parking to accommodate onsite guests (deli, hotel, restaurant and events) as well as a park-and-ride facility for Lee Vining residents and bus parking for Yosemite transit vehicles. The existing onsite septic system would be replaced by an onsite wastewater treatment plant to treat wastes before discharge to a designated leach field.

E. PROJECT LOCATION

The project is located at 22 Vista Point Road, close to the intersection of SR 120 and US395, and about one-half mile south of Lee Vining. The property is the location of the well-known Mobile Mart and Whoa Nellie Deli, established by Dennis and Jane Domaille in 1996. The proposed project retains all existing structures and services on the site, with the addition of the new elements described herein. Exhibit 1 depicts the regional and local project vicinity, and Exhibit 2 shows the proposed layout of uses in the project site.

F. NOP RESPONSE PROCEDURE

Please include the name and telephone number of a contact person so that we can follow up if questions arise, and send your NOP by e-mail, fax or mail to:

Mono County c/o Gerry LeFrancois
Bauer Planning & Environmental Svcs., Inc.
P.O. Box 347 ♦ Mammoth Lakes, California 93546
Tel: 760.924.1810 ♦ Fax: 760.924.1801
e-Mail: glefrancois@mono.ca.gov

Due to time limits mandated by state law, **your response to this NOP must be sent at the earliest possible date and no later than 25 NOVEMBER 2016.** The schedule calls for the draft SEIR to be distributed for public review during late summer or autumn of 2017. If you have any questions, please feel free to contact Mr. LeFrancois 9760.924.1810), or the county's CEQA consultant (Sandra Bauer, Bauer Planning & Environmental Services, Inc., 714.397.3301).

G. NOP CONTENTS

This NOP contains ten sections addressing the proposed project and forthcoming SEIR. Table 1 below outlines the NOP contents and sections.

Table 1
NOTICE OF PREPARATION CONTENTS

A.	NOP Purpose	F.	NOP Response Procedure
B.	Public Access	G.	NOP Contents
C.	Scoping Meeting	H.	Responsible Agencies & Approvals
D.	Project Information	I.	Project Alternatives
E.	Project Location	J.	Environmental Effects

H. DISCRETIONARY ACTIONS, RESPONSIBLE AGENCIES

LEAD AGENCY: Mono County is the designated Lead Agency for the project. In order to implement the project, the County will be required to certify that the Final Subsequent EIR has been prepared in compliance with CEQA, approve the Mitigation Program, adopt findings, approve the Specific Plan, and verify that water supplies are adequate to serve the project.

RESPONSIBLE AGENCIES: In addition to the Lead Agency project approvals described above, the SEIR may be used by other public agencies that will consider separate permits and approvals required before the project can be implemented. Table 2 provides a preliminary outline of discretionary approvals and actions associated with the proposed Tioga Inn project.

Table 2
LEAD, RESPONSIBLE & TRUSTEE AGENCIES

LEAD AGENCY: MONO COUNTY
- Certification of the Subsequent EIR
- Adoption of the Mitigation Program
- Review by Mono Co. Health Dept. of report addressing water availability for the project
- Adoption of the Specific Plan
- Approval of Wastewater Treatment Plant ?

RESPONSIBLE AGENCIES:

Lahontan Regional Water Quality Control Board
- Approval of NPDES General Storm Water Permit
- Review of Stormwater Pollution Prevention Plan
- Approval of a Waste Discharge Permit

Great Basin Air Pollution Control District
- New Secondary Source Permit

TRUSTEE AGENCY: CA Dept. of Fish & Wildlife (CDFW)
- SEIR review & comment on botanical and wildlife trust resources in the project area

DISCRETIONARY ACTIONS: A key step in the initial review is to delineate between actions that were approved in 1993 and remain unchanged, and newly proposed actions that are now subject to discretionary approval. Table 3 is a preliminary outline of the approved and proposed project elements. Only the newly proposed actions (shown in the right-most column) are subject to discretionary action as part of the current project proposal.

Table 3. EXISTING, APPROVED & PROPOSED LAND USES AND ACREAGES

PARCEL	ACREAGE APPROVED IN 1993	PROPOSED ACREAGE	EXISTING LAND USES	LAND USES APPROVED IN 1993	LAND USES NOW PROPOSED	NEW DISCRETIONARY ACTIONS
1	30.3	26.5	▪ Open Space Monument Signs (2)	▪ 120-room 2-story hotel with coffee shop, banquet room & gift shop; ▪ Parking spaces for onsite parking needs.	▪ 120-rm 3-story hotel with 200-seat restaurant, fitness center, laundry, car rental, banquet room, gift shop, electric car-charging; ▪ Added Parking spaces ▪ Wastewater treatment plant	▪ Hotel footprint reduced by 23,189 sf with change to 3-stories; ▪ Added Parking for **new** uses.
2	36.0	32.1	▪ Overflow parking ▪ Historical Marker ▪ 4-unit workforce housing ▪ Electric supply shed ▪ Water Supply Well ▪ SCE powerlines ▪ Buried Utility Xing septic tank/leach field	▪ Full-service 100-seat restaurant ▪ Restaurant parking spaces ▪ Overflow/oversize vehicle parking ▪ Maintenance Bldg ▪ 30,000-gallon Propane Tank	▪ Full-service 200-seat restaurant ▪ Restaurant parking ▪ Overflow/oversized vehicle parking ▪ 80-unit work-force housing ▪ Sewage leach field	▪ 80-bedroom workforce housing structure and access road; ▪ Restaurant increased to 200 seats from 100
3	2.4	2.4	▪ 2 Gas Pump Islands/canopies ▪ Tioga Gas Mart ▪ Whoa Nellie Deli	Reconfiguration of the 2 gas pump islands for added parking	▪ 3 Gas pump islands with overhead canopies & lighting	▪ I new gas pump island with canopy & lighting
4	5.0	6.8	▪ 10 Workforce Housing Units ▪ 1 Water Tank ▪ 1 Cell Tower	New water storage tank and location to replace existing tank.	▪ Construction of a 2nd water storage tank on site approved in 1993 (instead of replacing existing tank)	▪ 1 new back-up water tank
SR 120 Ease-ment	TBD	TBD	* 2-lane access from SR-120 (1 lane each direction, turn lanes) * Park & Ride Area		▪ 2-lane access to Mobile Mart off of SR-120, with turn lanes.	▪ No changes proposed
TOTAL PROPOSED ACRES 67.83 (reduced from 73.7 acres in 1993)						

I. ALTERNATIVES & CUMULATIVE EFFECTS

The purpose of alternatives is to identify feasible ways to avoid or reduce significant impacts identified in the environmental review, while meeting basic project objectives. The range of alternatives will therefore depend on findings in the SEIR, but at a minimum the SEIR will consider the mandatory 'No Project' alternative. Cumulative effects are defined as impacts that are created as a result of the project evaluated in the EIR together with other projects causing related impacts; the cumulative assessment relies heavily on the identification of other closely related past, present, and reasonably foreseeable probable future projects.

➔ You are invited to comment on the range of alternatives, and on the list of projects to be analyzed in the cumulative analysis.

J. ENVIRONMENTAL EFFECTS

The SEIR will be comprehensive in scope, addressing the full range of potential environmental issues. The document will focus on key issues that are expected to include:

- ❑ **Water Supply:** The SEIR will provide an updated review of project water use requirements, water supply and water availability in the project area. The review will include results of a well stress test to determine whether increased well production would have potential to impact area well facilities;

- ❑ **Waste Treatment and Water Quality:** The SEIR will assess the proposed new wastewater treatment plant and adequacy of the existing waste disposal leach field to accommodation additional loading. The SEIR will also consider water quality associated with the siting of a second well site relative to the proposed leach field. Compliance with applicable requirements and standards set by the Lahontan Regional Water Quality Control Board (LRWQCB) and the Mono County Environmental Health Dept. will be addressed;

- ❑ **Biological Resources:** An updated assessment of wildlife, vegetation and habitats will supplement information in the 1993 EIR. The SEIR will assess biological resource impacts based on current listings and regulations, and will analyze impacts to the Casa Diablo deer herd including updated review of the availability of bitterbrush-dominated stands of Great Basin Mixed Scrub and Jeffrey Pine Forest;

- ❑ **Traffic**: The SEIR will provide an updated review of ingress and egress requirements, parking and traffic demands associated with special events, overflow parking requirements, Caltrans' concerns regarding use of the SR-120 right-of-way, and Encroachment Permit requirements. Multi-modal issues will be considered, including internal and external bicycle and pedestrian trails and facilities as well as linkage to regional trail systems serving Lee Vining and Yosemite;

- ❑ **Aesthetics**: The SEIR will incorporate updated visual and schematic assessments to reflect the proposed project modifications. Schematic renderings will be taken from the locations used in the 1993 EIR to facilitate comparison of aesthetic impacts associated with the 1993 and current project plans;

- ❑ **Air Quality & Greenhouse Gases (GHG):** The assessment of construction and mobile source emissions will be updated, with a new assessment of GHG emissions, including impacts from the newly proposed 80-unit workforce housing structure. The assessment will also consider compliance of proposed hotel fireplaces with applicable air quality standards including PM10;

- ❑ **Cultural Resources**: Impacts on cultural resources will be assessed for the revised project, along with a mandatory consultation with Native American tribes;

- ❑ **Public Safety**: Project impacts on public safety will be reassessed in light of proposed new access lanes and parking for onsite uses as well as proposed park and ride facilities and parking for Yosemite buses;

- ❑ **Solid Waste**: The Subsequent EIR will assess solid waste generation for the revised plan, as well as the adequacy of solid waste disposal facilities to accommodate the added demands;

- ❑ **Fire Safety:** Consultation with Cal Fire will be updated to evaluate adequacy of emergency access features and compliance with current fire safety regulations;

- ❑ **Cumulative Effects, Alternatives, Mitigation Measures:** The cumulative impact assessment will be updated along with the analysis of alternatives and mitigation measures that could avoid or reduce potentially significant environmental impacts;

- ❑ **Specific Plan:** The Specific Plan will be updated in tandem with the SEIR. Both documents will draw substantially upon information provided in the 1993 document, but with revisions to reflect changes in the project proposal and current state and county guidelines for Specific Plan and CEQA content and format.

  ➔ The County seeks your comments on the proposed scope and focus of analysis, as well as applicable thresholds of significance and key issues of particular concern. Please include this information as part of your response to the NOP and/or your comments at the scoping meeting.

B

Mono County
Community Development Department

Planning Division

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Mammoth Lakes, CA 93546
(760) 924-1800, fax 924-1801
commdev@mono.ca.gov

P.O. Box 8
Bridgeport, CA 93517
(760) 932-5420, fax 932-5431
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NOTICE OF DECISION
DIRECTOR REVIEW 12-007/Tioga Inn Kitchen Expansion

APPLICANT: Dennis Domaille, Tioga Gas Mart

SUBJECT PROPERTY: APN 021-080-014, 22 Vista Point Drive, Lee Vining, CA

PROPOSAL FOR: A 316 square feet kitchen expansion at the Tioga Gas Mart. The property is part of the Tioga Inn Specific Plan.

Pursuant to the Tioga Inn Specific Plan and Mono County General Plan Section 31.010, and based upon the following findings, you are hereby notified that Director Review 12-007 has been:

________ Granted as requested.
___XX___ Granted subject to the attached Conditions of Approval.
________ Denied.

BACKGROUND

Director Review permit 12-007 would permit the expansion of the kitchen by 316 square feet. The Specific Plan allows for a hotel, full service restaurant, a residential area, and a convenience store and gas station. The Tioga Inn Specific Plan was approved in 1993 and amended in 1995 and 1997. The 1997 Specific Plan amendment permitted a 1,500 square foot apartment on the convenience store and gas station parcel, approved a master sign program, a lighting plan, permitted a public restroom/shower/laundry facility on the Hotel parcel, and clarified that any future restaurant is to be constructed on the flat area of restaurant parcel.

The existing convenience store and gas station has had various remodels. These additions include a pizza oven in 1997, the addition of restrooms (one of which is available during non-business hours), storage areas and laundry facilities in 1998 and a kitchen expansion in 2000.

The Specific Plan convenience store and gas station land use designation allows for:

- A retail store and fuel purchase facility not exceeding 4,800 square feet of gross floor area, and an apartment not to exceed 1,500 square feet, for a total building footprint of 6,300 square feet,
- A maximum of two fuel islands with four multi-grade dispensing stations per island for a total of eight pumping stations,
- Picnic area sited in conjunction with the scenic turn-out,
- Public restrooms,
- Parking areas, including spaces for recreational vehicles, vehicles towing trailers, and tour busses,
- Appurtenant service (not including vehicle service or repair) and delivery bays, storage areas, publicly accessible air supply, vehicle water supply, enclosed trash receptacle area,
- Underground fuel tanks, and
- Other uses that are similar in nature, typically associated with the primary land use, and equal to or less in intensity – subject to individual review and approval by the Planning Director.

The proposed project is to expand the current kitchen area by 316 square feet. Attachment 1 shows the current floor plan of the convenience store and the proposed 316 square feet of new kitchen area.

DIRECTOR REVIEW FINDINGS

Under Tioga Inn Specific Plan, and Mono County General Plan, Chapter and Section 31.030, the Community Development Department Director may issue a Director Review permit after making all of the following findings. The Director has made the following findings concerning DR12-007:

1. *All applicable provisions of the Mono County General Plan and Tioga Inn Specific Plan are complied with, and the site of the proposed use is adequate in size and shape to accommodate the use and to accommodate all yards, walls and fences, parking, loading, landscaping and other required features because:*

    The subject property is approximately 2.35 acres in size, adequate to accommodate the 316 square feet of kitchen expansion. The property's Specific Plan land use designation allows for: "Other uses that are similar in nature, typically associated with the primary land use, and equal to or less in intensity – subject to individual review and approval by the Planning Director."

    The proposed 316 square feet kitchen expansion will provide additional services on the convenience store / gas station parcel. Due to the lack of a hotel or full service restaurant on the property, this limited kitchen expansion is permitted by the Planning Director, subject to this Directors Review, as permitted in the Specific Plan. No other commercial or retail space expansion will be permitted on the convenience store gas station parcel without a revision to the Tioga Inn Specific Plan.

    The proposed addition meets the Specific Plan height limit of 20', is located with the building envelope established in the Specific Plan (Figure 7), and meets the minimum parking requirements of 10 standard vehicle spaces, two bus or recreational vehicle spaces, and two spaces for vehicles towing trailers.

2. *The site for the proposed use relates to streets and highways adequate in width and type to carry the quantity and kind of traffic generated by the proposed use, because:*

The proposed project is located on Vista Point Drive with access to State Route 120 (Tioga Pass). The proposed kitchen addition will not create impacts to surrounding streets or to Highway 120. The project has existing encroachment permits with Caltrans District 9.

3. *The proposed use will not be detrimental to the public welfare or injurious to property or improvements in the area in which the property is located, because:*

The Specific Plan allows for a hotel, full service restaurant, a residential area, and a convenience store and gas station. The only two uses on the project site at this time are the convenience store / gas station and the residential units. The hotel and full service restaurant have never been constructed. The proposed 316 square foot kitchen expansion will provide additional services on the convenience store / gas station parcel. Due to the lack of a full service restaurant on the project site, this limited expansion will not be detrimental to the public welfare, and/or injurious to property or improvements in the project area.

4. *The proposed use is consistent with the map and text of the Mono County General Plan and Tioga Inn Specific Plan, because:*

The Tioga Inn Specific Plan designates this parcel as Convenience Store / Gas Station which provides for a retail store and fuel purchase facility, an apartment, two fuel islands with four multi-grade dispensing stations per island for a total of eight pumping stations, a picnic area sited in conjunction with the scenic turn-out, public restrooms, and parking areas, including spaces for recreational vehicles, vehicles towing trailers, and tour busses.

Mono County Land Use Element, Chapter 36 Specific Plans:
General Plan Section 36.60 Specific Plan Amendment states that amendments to a specific plan can be handled through the Director Review process if no change in density results and no change in conditions are necessary. See Attachment 1 Ground Floor Plan that shows existing uses and the proposed kitchen expansion. With DR 2012-007, the expansion of 316 square feet to the kitchen does not change the density of the project or change conditions.

This Specific Plan was adopted in 1993 and as of this date, only the Residential and Convenience Store/Gas Station uses have been developed. In consideration of this and the fact that the Hotel and other Restaurant uses are undeveloped, the increase in footprint of the Convenience Store/Gas Station from 6,300 permitted square feet to 6,835 square feet (includes the 316 sf kitchen expansion) is considered minor and allowed within the specific plan area.

5. *Improvements as indicated on the development plan are consistent with all adopted standards and policies as set forth in the Land Development Regulations, this General Plan and the Tioga Inn Specific Plan, because:*

The project is consistent with the Mono Basin Area Plan because it conforms to the policies encouraging infill development within or adjacent Lee Vining.

Mono County Land Use Element, Mono Basin Area Plan:
Objective A: Direct future development to occur in and adjacent to Lee Vining.
Objective D, Policy 3: Focus commercial development within or adjacent to Lee Vining.

The project is consistent with the Tioga Inn Specific Plan because the project is consistent with the Convenience Store / Gas Station parcel and the permitted uses allowed on this parcel. See finding 4. above.

6. *The project is exempt from CEQA, because:*

a) It qualifies for a Class 1 Categorical Exemption. Class 1 exemptions would allow for: (e) additions to existing structures provided that the addition will not result in an increase of more than 50 percent of the floor area of the structures before the addition, or 2,500 square feet whichever is less.

b) In addition, an Environmental Impact Report was certified as a part of the Tioga Inn Specific Plan approval in 1993.

CONDITIONS OF APPROVAL

DR12-007/Domaille is issued with the following conditions:

1. Project shall comply with the requirements of the Building Division and Environmental Health.

2. All exterior lighting shall be shielded and directed downward to complying with Chapter 23, Dark Sky Regulations and the Tioga Inn Specific Plan.

3. The roof and exterior construction shall match the existing building store and roof colors as shown in Attachment 2

4. No other commercial or retail space expansion will be permitted on the convenience store gas station parcel without a revision to the Tioga Inn Specific Plan.

5. Termination. A Director Review shall terminate and all rights granted therein shall lapse, and the property affected thereby shall be subject to all the provisions and regulations applicable to the land use designation in which such property is classified at the time of such abandonment, when any of the following occur:
   A. There is a failure to commence the exercise of such rights, as determined by the Director, within one (1) year from the date of approval thereof. Exercise of rights shall mean substantial construction or physical alteration of property in reliance with the terms of the Director Review.

   B. There is discontinuance for a continuous period of one (1) year, as determined by the Director, of the exercise of the rights granted.

   C. No extension is granted as provided in Section 31.080.

6. Extension. If there is a failure to exercise the rights of the Director Review within one (1) year of the date of approval, the applicant may apply for an extension for an additional one (1) year. Any request for extension shall be filed at least sixty (60) days prior to the date of expiration and shall be accompanied by the appropriate fee. Upon receipt of the request for extension, the Planning Division shall review the application to determine the extent of review necessary. Conditions of approval for the Director Review may be modified or expanded, including revision of the proposal, if deemed necessary. The Planning Division may also deny the request for extension. Exception to this provision is permitted for those Director Reviews approved concurrently with a tentative parcel or tract map; in those cases the approval period(s) shall be the same as for the tentative map.

7. Revocation. The Planning Commission may revoke the rights granted by a Director Review and the property affected thereby shall be subject to all of the provisions and regulations of the Land Use Designations and Land Development Regulations applicable as of the effective date of revocation. Such

revocation shall include the failure to comply with any condition contained in the Director Review or the violation by the owner or tenant of any provision pertaining to the premises for which such Director Review was granted. Before revocation of any permit, the Commission shall hold a hearing thereon after giving written notice thereof to the permittee at least ten (10) days in advance of such hearing. The decision of the Commission may be appealed to the Board of Supervisors in accordance with Chapter 47, Appeals, and shall be accompanied by an appropriate filing fee.

This Director Review Permit shall become effective ten (10) days following the issuance of the Director's decision. This decision may be appealed within ten (10) days by filing a written notice of appeal with the Secretary of the Planning Commission. If an appeal is filed, the permit will not be issued until the appeal is considered and a decision is rendered by the Planning Commission.

PREPARED BY: Gerry Le Francois, Principal Planner

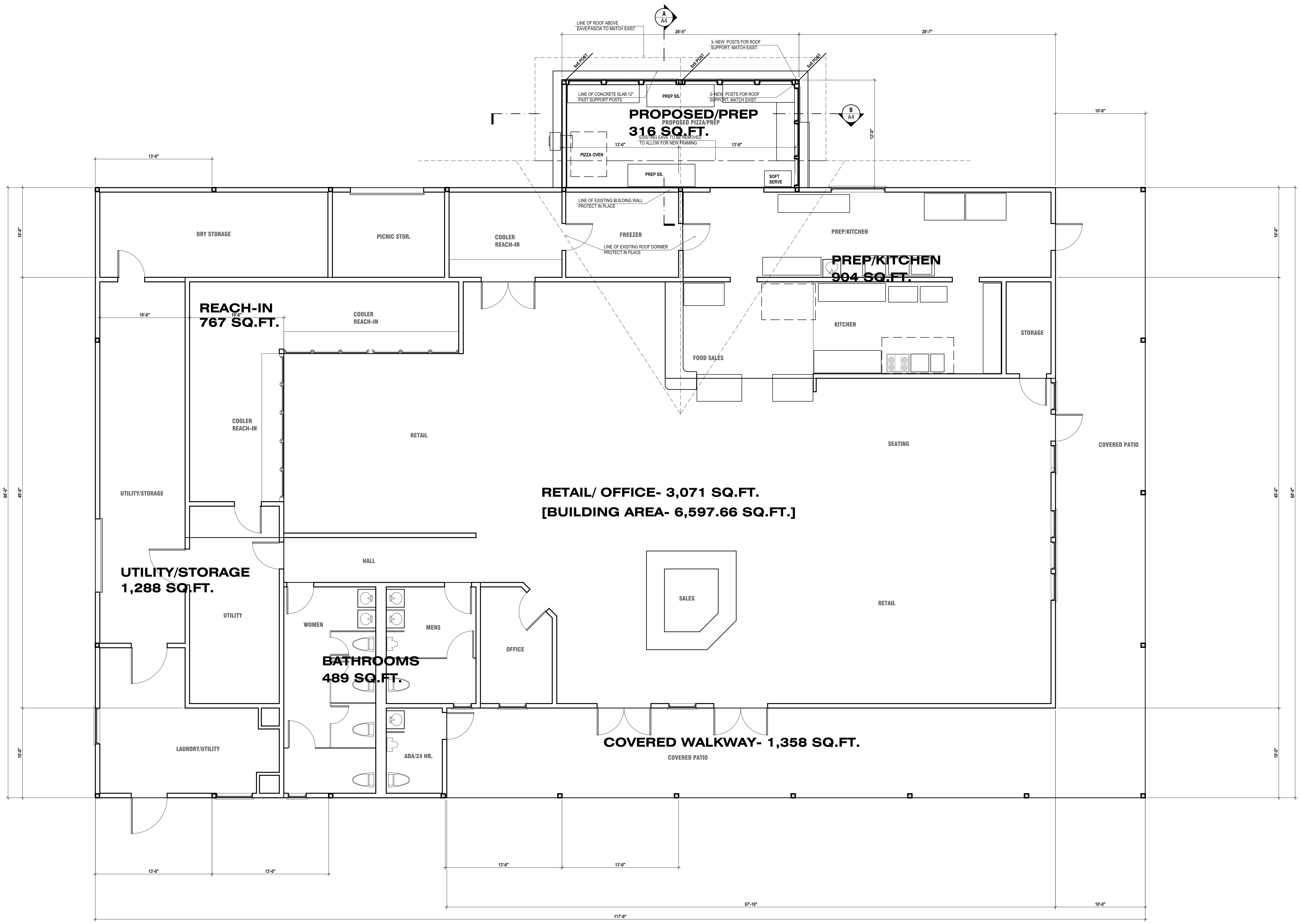
DATE OF DECISION: July 2, 2012

SIGNED: ______________________

Scott Burns, Community Development Director

Attachments:

1. Ground Floor Plan – shows existing and proposed square footages
2. Building Elevation and Model Images



GROUND FLOOR PLAN

SCALE 3/16"=1'-0"

AREA CALCULATIONS

EXISTING RETAIL/OFFICE/DINING	=	1,139 SQ.FT.
EXISTING KITCHEN/PREP	=	904 SQ.FT.
EXISTING UTILITY/ DRY STORAGE	=	1,288 SQ.FT.
EXISTING REFERIG./ FREEZER	=	767 SQ.FT.
EXISTING BATHROOMS	=	489 SQ.FT.
EXISTING BUILDING ENCLOSED AREA	=	6,519 SQ.FT.
EXIST. COVERED WALKWAY	=	1,358 SQ.FT.
PROPOSED FOOD PREP/PIZZA	=	316 SQ.FT.
TOTAL BUILDING ENCLOSED AREA	=	6,835 SQ.FT.

DESIGN DIMENSION ASSOCIATES
P.O. BOX 7193
MAMMOTH LAKES, CA. 93546
TEL/FAX (760) 934-4348

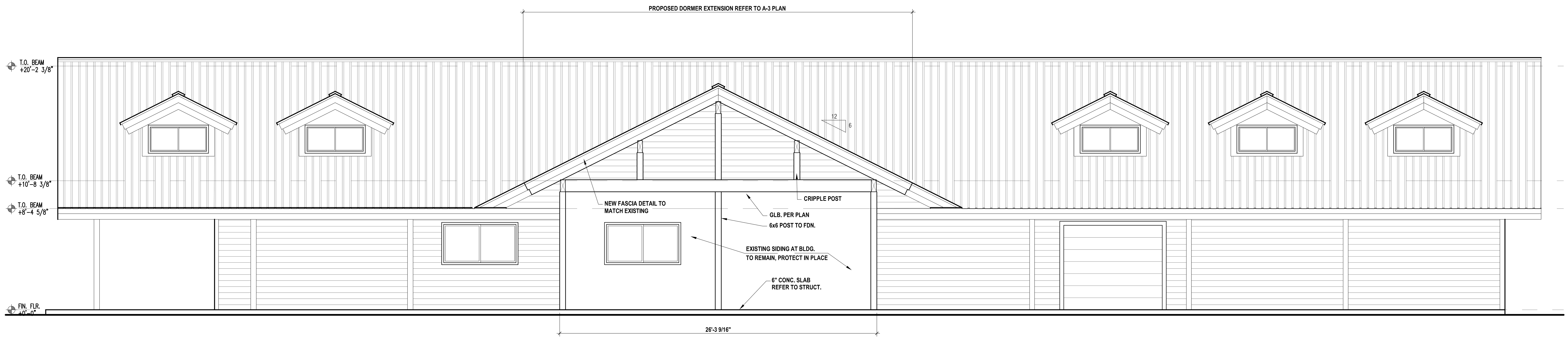
PROPOSED GROUND FLOOR PLAN

TIOGA GAS MART

FOR: JANE &DENNIS DOMAILLE
MAMMOTH LAKES, CA.
P.O. BOX 7272
760.934.4440

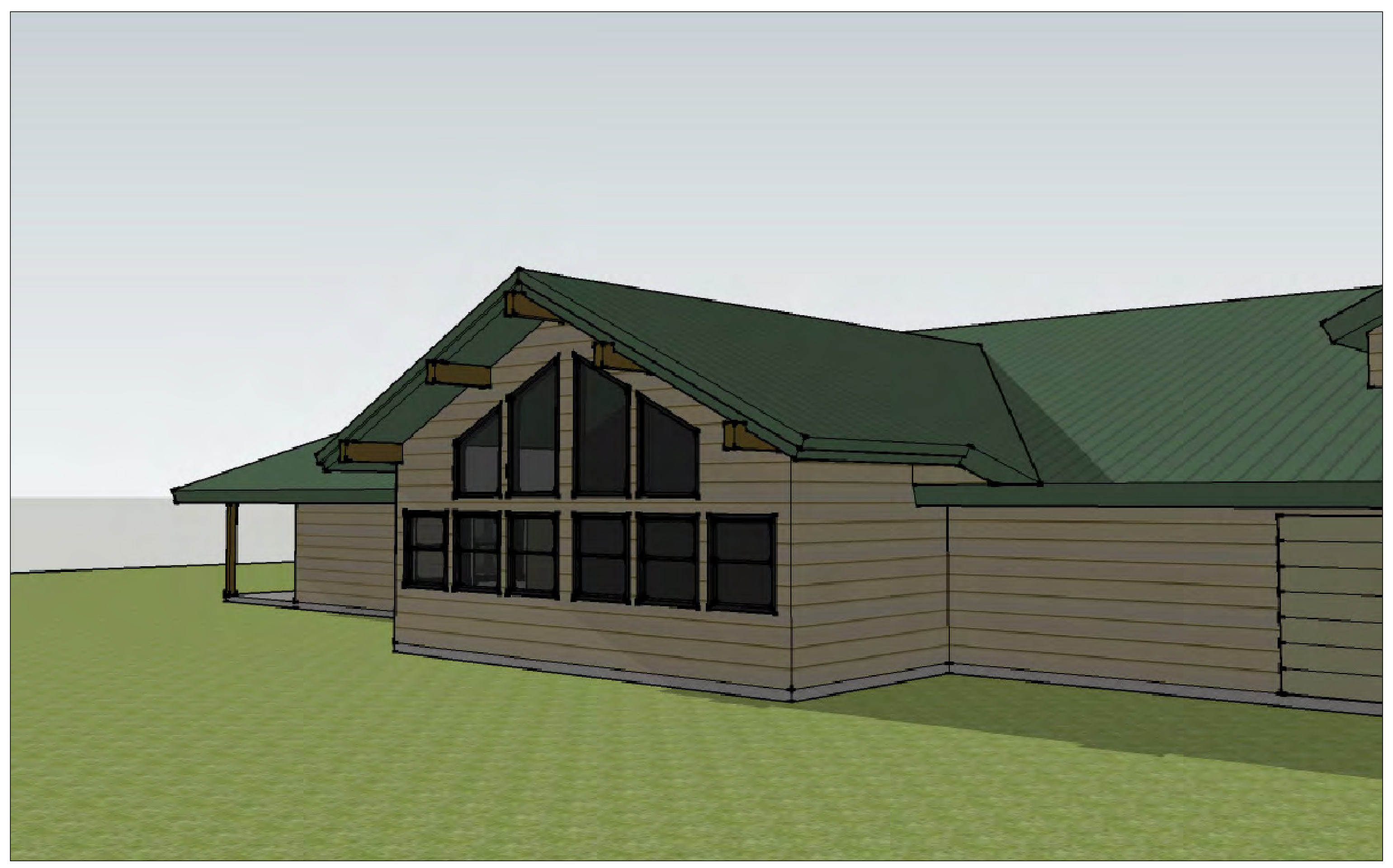
REVISIONS

MAY 2012
SCALE:
DRAWN: JP/ CWT.
SHEET A 3



WEST ELEVATION

SCALE: 1/4"=1'-0"

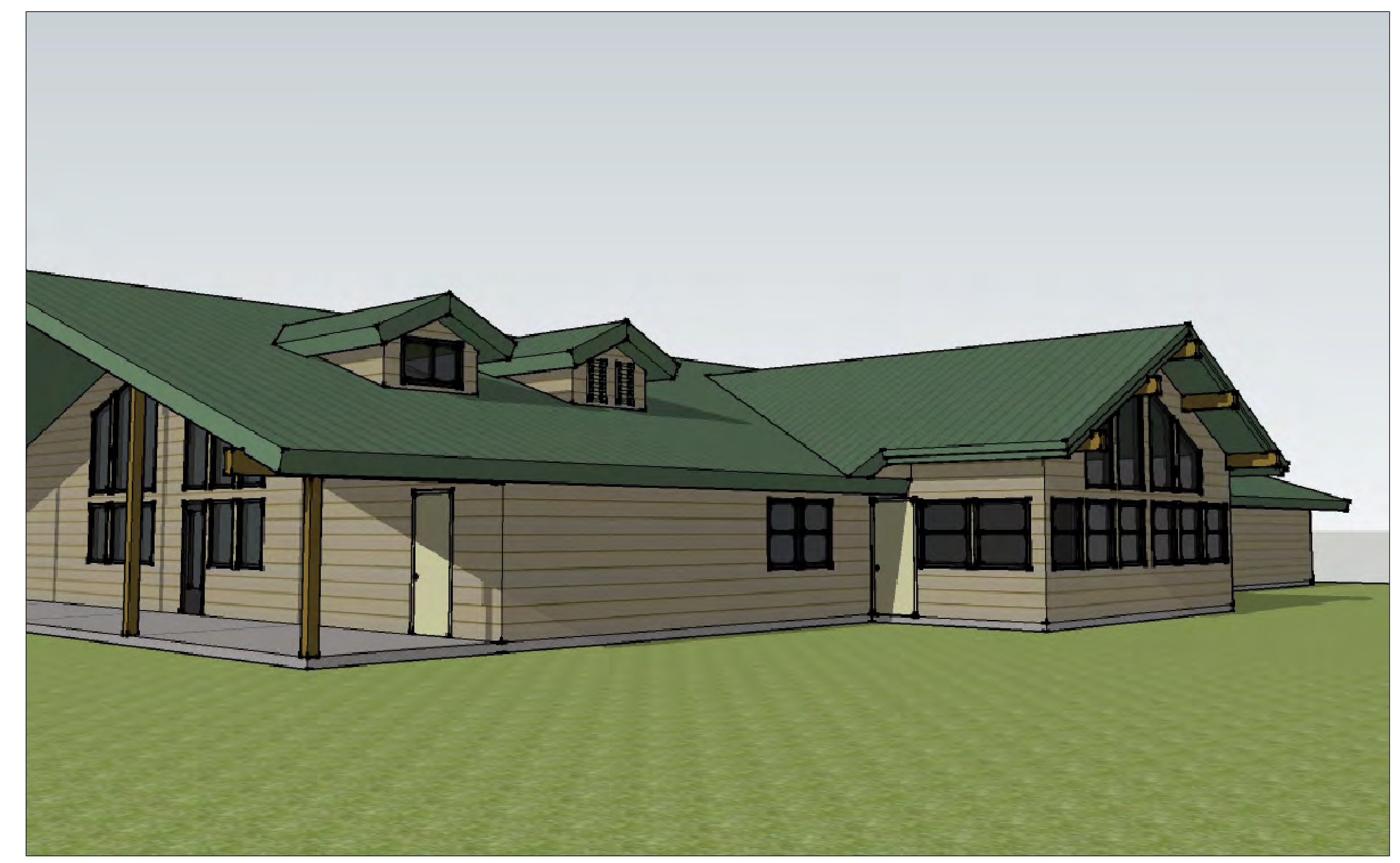


SW VIEW OF MODEL

SCALE : N.T.S.

Roofing:
All roofing areas shall be covered with Standing seam pattern, Western metals Manufacturing, color and pattern to match existing roofing. Provide smooth metal at all Valleys or crickets to allow snow shed, allow for appropriate counter flashing. Provide Bituthene Ice and Watershield Underlayment at all roof valleys, overhangs and at walls. Roofing shall be flashed at walls, pitch changes,etc. Contractor to install per MFR. specifications. Drip edge, G.I. flashing, gutters, caps etc. Any parts in common with roofing material shall be painted to match roof color. Fire rating: Class A - UL580 - Class 90 & Class 60.

Horizontal Siding:
Exterior siding shall be 6" HARDY-BACKER SHIP-LAP style. Install o/ Tyvek housewrap paper o/ plywood shear wall with 2-8d nails @ 48" o.c. or per board per bearing. Use 3-10d nails @ board ends and splices. Verify Paint & sealer w/ designer. Paint color per Owner to be Solid Body exterior quality. Field Color - by owner.



NW VIEW OF MODEL

SCALE : N.T.S.

SOUTH ELEVATION

SCALE: 1/4"=1'-0"

DESIGN
DIMENSION
ASSOCIATES
P.O. BOX 7193
MAMMOTH LAKES, CA. 93546
TEL/FAX (760) 934-4348

BUILDING ELEVATIONS AND MODEL IMAGES

TIOGA GAS MART

FOR: JANE &DENNIS DOMAILLE
P.O. BOX 7272
MAMMOTH LAKES, CA.
760.934.4440

REVISIONS

MAY 2012
SCALE:
DRAWN: JP/ CWT.

SHEET
A 5

C

PRELIMINARY GEOLOGIC INVESTIGATION

83±-ACRE PARCEL, TENTATIVE PARCEL MAP NO. 34

LEE VINING AREA, MONO COUNTY, CALIFORNIA

FOR

MR. DENNIS DOMAILLE

P. O. BOX 2727

MAMMOTH LAKES, CALIFORNIA 93546

APRIL 4, 1991 W. O. 431-A-RC

GeoSoils, Inc.

GeoSoils, Inc.

Geotechnical Engineering • Engineering Geology

24890 Jefferson Avenue • P.O. Box 490 • Murrieta, California 92362 • (714) 677-9651 • FAX (714) 677-9301

April 4, 1991
W.O. 431-A-RC

Mr. Dennis Domaille
P.O. Box 2727
Mammoth Lakes, California 93546

Subject: Preliminary Geologic Investigation, 83±-Acre Parcel, Tentative Parcel Map No. 34, Lee Vining Area, Mono County, California

Gentlemen:

In accordance with your request and authorization, this report presents the results of our preliminary geologic investigation on the subject property. The primary purpose of this study was to evaluate the presence of previously-mapped faults within the Alquist-Priolo special studies zone. The secondary purpose of this study was to evaluate the onsite geologic conditions and their effects on the proposed site development from a geologic viewpoint. At the time of our study, the actual location of the proposed improvements was not known.

EXECUTIVE SUMMARY

As indicated above, the purpose of this study was to satisfy the provisions of the Alquist-Priolo special studies zone act, as well as provide a geologic evaluation of the site. Based on our study, the proposed improvements are suitable for their intended use, from a geologic viewpoint.

Active faulting was not encountered during our study. In addition, the site and the region as a whole is subject to strong seismic shaking, as well as the effects of volcanic processes. Mitigation of these conditions should include adherence to the latest edition of the Uniform Building Code.

In summary, adverse geologic features that would preclude the feasibility of development as proposed were not encountered. The recommendations presented in this report should be incorporated into the planning, design, earthwork, and construction considerations for the project.

SCOPE OF SERVICES

The scope of our services has included the following:

1. Review of readily available geologic data for the area (Appendix), including stereoscopic aerial photographs, and photolineament analysis and faulting evaluation.

2. Geologic and geomorphic site reconnaissance.

3. Subsurface exploration consisting of the excavation by backhoe of two overlapping fault locating and lineament evaluation trenches.

4. Geologic analysis of the data collected.

5. Preparation of this report.

SITE DESCRIPTION

The site is a roughly rectangular-shaped parcel consisting of approximately 83 acres in the Lee Vining area of Mono County, California (see the Site Location Map, Figure 1). The site is bounded to the north, east, west, and south by essentially natural and undeveloped property. The subject property is transected by U.S. Highway 395 diagonally along the eastern to northern property margins, and also diagonally by State Highway 120 along the western and northern property margins. Cuts and fills associated with those roadways also exist onsite. Continental telephone lines and Southern California Edison Company power lines also transect the eastern and northern property margins. An Alquist-Priolo special studies zone exists on the approximately western third of the property.

The majority of the site, with the exception of some dirt access roads and those areas mentioned above, is in an essentially natural condition. The site is characterized by a northeasterly descending flank and ridge of a hillside that has been locally terraced and incised with drainages. Slopes within this hillside area range from nearly flat to locally as steep as 1:1 (horizontal to vertical). The property flattens in a northerly direction near the north-central portion of the site to an overall gradient of about 13:1 (horizontal to vertical) and to nearly flat in the north-easterly margin of the site. Overall relief across the site ranges from a high of about 6978 feet MSL to a low of about 6699 feet MSL. Vegetation is sparse to moderate, and consists of native brush with very few trees.

PROPOSED DEVELOPMENT

As indicated previously, at the time of our investigation, the proposed locations and types of structures were not known. Subsequently, we were provided with plans that indicate that currently a 120-unit hotel and restaurant is proposed near the northwesterly to central area of the property, southeasterly of State Highway 120. Associated appurtenant structures including a pool and spa, as well as associated interior roadways and parking, are also proposed. In addition, a single-family residence is also proposed in the future in the southwesterly portion of the property.

FIELD STUDIES

Field studies conducted during our geologic evaluation of the property consisted of the following:

1. Geologic and geomorphic reconnaissance and mapping.
2. Excavation of two overlapping exploratory backhoe trenches to evaluate the near-surface soil and geologic conditions with respect to faulting. The trenches totaled about 1,500 feet and were about 10 to 15 feet deep.

The trenches were logged by a geologist from Sierra Geotechnical Services, Inc., and briefly viewed by the undersigned. The locations of the trenches are presented on Plate 1. Logs of the trenches are presented on Plates 2 through 6.

GEOLOGICAL SUMMARY

Regional Geologic Setting

The subject property is located at the transition of two prominent natural geomorphic provinces in California known as the "Sierra Nevada" and "Basin and Range." These provinces have long and active geologic histories. The Basin and Range province is generally characterized by narrow, fault-bounded, northerly-trending mountain ranges separated by irregular-shaped, alluvium-covered valleys. The Sierra Nevada is generally a north-northwesterly trending, singular, asymmetric, tilted fault-block of great magnitude, which has broken free on the east along the Sierra Nevada frontal fault system. Some geologists consider the Sierra Nevada the highest and grandest of the Basin and Ranges mountains.

In general, the bedrock of the majority of the mountains in the site vicinity consists of Triassic to Cretaceous-age plutons (bodies of crystalline igneous rocks) and overlying roof pendants (a remnant of sedimentary or metamorphic rock that is intruded by the plutonic rock) of Paleozoic to Triassic-age. Relatively thin sedimentary and volcanic deposits of Tertiary and Quaternary age discontinuously overly and/or intrude the bedrock, respectively, probably along fractures that are a result of faulting along the Sierra Nevada frontal fault system and a magma chamber at depth. These tectonic and volcanic processes remain active through the present. For convenience, a geologic time scale is provided as Table I (after Norris & Webb 1990, USGS 1979, and CDMG 1977) below.

TABLE I
GEOLOGIC TIME SCALE

EON	ERA	PERIOD	EPOCH	YEARS (MILLIONS) AGO AT OPENING OF	
			Recent (Historic Record - 200 years)		
	CENOZOIC	Quaternary	Holocene	0.011	
			Pleistocene	1.8	
		Tertiary	Pliocene	5	
			Miocene	23.5	
			Oligocene	39	
			Eocene	53.5	
			Paleocene	65	
PHANEROZOIC	MEZOZOIC	Cretaceous		144	
		Jurassic		208	
		Triassic		245	
	PALEOZOIC	Permian		286	
		Carboniferous Systems		320	
				360	
		Devonian		408	
		Silurian		438	
		Ordovician		505	
		Cambrian		570	PRE-CAMBRIAN ↑
		Ediacarian		700	
PROTEROZOIC				2,500	
ARCHEAN				3,800	PRE-CAMBRIAN
ORIGIN OF EARTH				4,600	↓

During Quaternary time, glaciation has resulted in wide, U-shaped valleys, and upon glacial retreat, lateral and terminal moraine deposits, which have sometimes served as alpine lake confinements. Glacial deposits and fluvial deposits derived from glacial meltwaters have filled portions of the valleys and descend and coalesce from the mountainous areas. Geomorphic processes, together with Quaternary volcanism and faulting, have generated the present-day landforms.

A regional geologic map is provided as Figure 2. The regional geologic map indicates that the site is underlain by Quaternary till of the Tahoe Glaciation, and Quaternary alluvium. Faults within the till have been mapped on the property (Kistler, 1966; CDMG, 1985.) The absolute age of the Tahoe till has been reported as potentially as young as 9,800 years old to as old as 65,000 years old, with most studies indicating the older age as most probable.

Lineament Analysis

In order to identify possible unmapped faults and to evaluate topographic expressions of published fault traces, a lineament analysis was performed. Stereoscopic aerial photographs at a scale of approximately 1:24,000 and 1:2,400 were utilized in the lineament analysis.

Lineaments were classified as strong, moderate or weak. A strong lineament is a well-defined feature that can be continuously traced from several hundred feet to a few thousand feet. A moderate lineament is less well defined, somewhat discontinuous, and can be traced for only a few hundred feet. A weak lineament is discontinuous, poorly defined, and can be traced for a few hundred feet or less.

A weakly- to moderately-developed lineament transected the site in a northwesterly direction paralleling the faults previously mapped onsite (see Plate 1). The lineament was field checked during our reconnaissance mapping to evaluate possible origin. This lineament, as well as previously mapped onsite faults, was intercepted by our trenches.

SITE GEOLOGIC UNITS

The geologic units observed on the subject property consisted of manmade fill, colluvium (topsoil), fluvial-glacial deposits, and alluvium. Mappable units are shown on Plate 1 and are described as follows:

Fill (not mapped)

Manmade fill was observed during our field study on the subject property associated with the previously-mentioned highways, as well as the dirt roads that transect the site. These fill materials are considered potentially compressible in their existing state and unsuitable for the support of additional fill loadings or settlement-sensitive structures. In the absence of documentation of the methods of compaction, they will require complete removal and recompaction, if settlement-sensitive improvements are planned in those areas. These materials will typically have engineering properties similar to the parental units from which they are derived.

Colluvium (not mapped)

Quaternary colluvium (topsoil) was observed on the site in both trenches. It is generally 1 to 2 feet thick; however, locally it ranges up to 10 feet thick, and should underlie other portions of the site. The observed colluvial soils are weathered fluvial-glacial deposits. The colluvium logged in our trenches was light to medium to dark grayish brown, fine- to medium-grained, to fine- to coarse-grained sands, with minor amounts of silt and very fine-grained sand, and locally abundant pebbles and cobbles. Evidence of a calcic or argillic horizon was not observed. The materials were damp to moist and loose and contained abundant rootlets. Because of their potential compressibility, the colluvial soils are unsuitable for support of structures and/or settlement-sensitive improvements, and will require removal and recompaction. These soils typically have a low to medium expansion potential. Based on the lack of a calcic or argillic horizon, this unit is judged to be a minimum of Holocene to recent in age.

Fluvial-Glacial Deposits (Map Symbol - Qfg)

Quaternary fluvial-glacial deposits were encountered in our trenches and underlie the majority of the site. These materials are deposits derived from glaciation and glacial meltwaters and were generally various shades of gray, brown, and rust brown and were dry to wet. Lithologies generally ranged from fine-grained sands, and fine- to coarse-grained sands to sandy to gravelly conglomerate, with some silty sands and silts. In areas, the upper 1 to 2 feet of the fluvial-glacial deposits were loose and porous and may be locally-derived colluvium. The fluvial-glacial deposits at depths lower than about 3 to 4 feet were medium dense. Owing to their potential compressibility, the near-surface fluvial-glacial materials are unsuitable for support of structures and/or settlement-sensitive improvements. Removal and recompaction of the near-surface fluvial-glacial deposits will be necessary. These soils typically have a low to medium expansion potential. Since this unit is likely a result of a significant climate change, and since the last major climate change occurred during the Pleistocene to Holocene transition, this unit is judged to have a minimum relative age range of Pre-Holocene to Holocene, or about 15,000 to, perhaps, as young as 7,000 years old. This unit may be older than pre-Holocene; however, for conservatism the previously mentioned range is deemed appropriate.

Alluvium (Map Symbol - Qal)

Although not encountered during our field investigation, Quaternary alluvial deposits were observed along the extreme easterly margin of the property. These sediments likely consist of the products of weathering and erosion of parental rocks from the site vicinity as well as locally derived and undifferentiated effusive volcanic and lacustrine deposits. These materials were not evaluated, as the currently proposed development is not planned in this area. Based on the available data, as well as geomorphic and stratigraphic relationships, this unit is judged to be of Pleistocene to Recent in age, with the younger deposits occurring near the surface. Offsite, deposition is still occurring within this unit (i.e., Mono Lake).

GEOLOGIC STRUCTURE

The fluvial-glacial deposits on the site are generally medium to thickly bedded and are generally flat lying, and exhibit cross-bedding, channeling, and lenticular bedding typical of such materials. However, cross-bedded lenses dipped as steeply as 21 degrees. Although not encountered, the alluvial deposits are anticipated to be essentially flat-lying, and are not expected to be exposed during site development. Faulting and vulcanism are discussed later in this report.

FAULTING AND REGIONAL SEISMICITY

The site is situated in an area of active as well as potentially active faults. Major fault zones that could have a significant affect on the site should they experience activity would include the following:

Fault Zone	Distance From Site (miles)
Mono Valley	0.3
Parker Lake	5
Hartley Springs	6
Un-named Faults in Long Valley	17
Owens Valley	35
West Walker	44

The relationship of the site location to the major mapped faults is indicated on Figure 3. Other significant faults have been mapped in the region. The nearest known active fault is the Mono Valley fault, which may be considered part of the Sierra Nevada frontal fault system. The pattern of faulting within this area is wide and complex, with numerous north to northwesterly branching and subsidiary faults, and is believed to have developed largely through extensional deformation and associated normal faulting. The Sierra Nevada Frontal fault zone is believed to have been formed in this manner. Volcanic processes and, to a lesser degree, tectonic processes are believed responsible for the east-west trending faults, as well as some of the minor north-northwesterly trending faults. This is discussed further later in this report.

The "design fault" for the project site is the Mono Valley fault, which is thought to be related to the Basin and Range fault system. Accordingly, this fault has the potential for a maximum credible earthquake of 8.0 M and a maximum probable earthquake of 6.5 M. Peak horizontal ground accelerations from a maximum credible event could exceed 1.0 g, and a maximum probable event may reach 0.75 g.

The repeatable high acceleration (RHA), which is taken to be approximately 65 percent of the peak acceleration for sites less than 20+ miles from the epicenter (Ploessel & Slosson, 1974), is also used for design criteria. The estimated horizontal design criteria for repeatable acceleration, therefore, may be about 0.49 g. A relatively newly-recognized phenomenon, observed during the 1989 Loma Prieta earthquake, is "earthquake focussing," and may also influence ground motion. However, as discussed below, a subsurface fault has been mapped at the site. Buried topography as a result of this fault may also occur at depth, below the site. Accordingly, we recommend that the full range of values for acceleration, 0.49 g, 0.75 g, and 1.0 g, should be considered for seismic design. The site period should be on the order of 0.35 seconds, and the duration of strong shaking may range from about 18 to 34 seconds. Recurrence intervals for large earthquakes in the Basin and Range province is anticipated to be on the order of 100,000 years (verbal communication, Shlemon, 1990).

As indicated previously, an area of the westerly portion of the site lies within an Alquist-Priolo special studies zone. The state has mapped a fault in this area (see Figure 1). In addition, Kistler (1966) has also mapped a fault on the property (see Figure 2). These faults were parallel to the photolineament noted during our aerial-photograph review. The previously-mapped faults and photolineament were intercepted by our fault-finding trenches. Evidence for Holocene faulting (i.e., the geomorphic alignment of topographic saddles along the postulated fault traces; complete stratigraphic continuity [no truncation or offset] of bedding; or stepped regional geomorphology) was not observed. Accordingly, the present-day landform configuration on the property is most likely a result of geomorphic processes. Based on our study, we judge that the previously mapped faults and photolineament are not related to Holocene faulting.

Numerous earthquakes have occurred in California. Many of these are historical, but lack adequate records. Documentation is available, however, for various earthquakes that have occurred in California since 1912 with magnitudes greater than 6.0 on the Richter Scale.

Ground accelerations at the site are similar to the eastern Sierra Nevada region as a whole. As indicated previously, a maximum probable earthquake of 6.5 M. on the Mono Valley fault may generate repeatable horizontal ground acceleration on the order of 0.49 g. Table II summarizes the results of statistical analysis of earthquake data with respect to a 50-year life span.

TABLE II
(after Housner, 1970)

Acceleration of Gravity	Probability of One Occurrence Per 100 Years
0.05	95%
0.10	88%
0.15	64%
0.20	40%
0.25	22%
0.35	4%

During a 50-year span, a structure on the site may possibly be subjected to an earthquake of Richter magnitude of 6.5. Horizontal acceleration induced by an earthquake may affect earth structures and/or embankments.

Ground lurching or shallow ground rupture due to shaking could occur within the site, as well as most of the Mono Basin and Mono Lake area, from an earthquake either originating on the Mono Valley fault or on other nearby faults. Such lurching could possibly cause cracking of paved areas and limited damage to structures.

Earthquake-induced slope stability problems may also occur within the site. These instability problems (e.g., landslides) would most likely occur where unsupported bedding planes exist or where the earth materials are highly weathered. This is discussed further below. Experience has shown that wood-frame structures designed in accordance with the most recent edition of the Uniform Building Code tend to best resist earthquake effects.

MASS WASTING

Mass wasting refers to the various processes by which earth materials are moved downslope in response to the force of gravity. Examples of these processes include slope creep, and surficial failures. Creep is the lowest form of mass wasting, and generally involves the outer 5 to 10 feet of the slope surface. During heavy precipitation, creep-affected materials may become saturated, resulting in a more rapid form of downslope movement (i.e., landslides and/or surficial failures).

Indications of deep-seated landsliding, significant slope creep or surficial failures on the site were not observed during our review of stereoscopic photographs of the area (USDA, 1977, Triad Engineering, 1984b) or during our site reconnaissance. The potential for seismically induced landsliding is considered low. The potential for earth flows on the site is moderate, particularly in the areas of colluvium-filled swales. Possible mitigation measures are discussed later in this report.

GROUND WATER

Ground water was not observed during our investigation. In addition, seeps, springs, or other indications of a high regional ground water level were not noted on the subject property during the time of our field investigation. It is our understanding that a well drilled since our field investigation began encountered the regional water level at an elevation of about 6360 feet MSL, below the elevation of Mono Lake (about 6380 feet MSL). However, seepage may occur locally (due to heavy precipitation or irrigation) in areas where fill soils overlie relatively impermeable sediments or soils. Such soils or sediments may be encountered in the materials that exist onsite.

LIQUEFACTION POTENTIAL

Liquefaction is a phenomenon in which cyclic stresses produced by earthquake-induced ground-motion create excess pore pressures in cohesionless (sandy) soils. These soils may thereby acquire a high degree of mobility that can lead to lateral movement and sliding, consolidation and settlement of loose sediments, sand boils, and other damaging deformations. This phenomenon occurs only below the water table; however, after liquefaction has developed, it can propagate upward into overlying, non-saturated soil as excess pore water escapes.

Liquefaction potential is related to numerous factors and the following conditions must exist for liquefaction to occur: 1) sediments must be relatively young in age and not have developed large amount of cementation; 2) sediments must consist mainly of fine-grained cohesionless sands; 3) the sediments must have low relative density; 4) free ground water must be present in the sediments; and 5) the site must experience seismic events of a magnitude large enough to induce straining of soil particles. At the subject site, discontinuous zones with four of these conditions exist: 1) the sediments consist of uncemented relatively young, sediments; 2) they have relatively low to moderate density; 3) they are sandy; and 4) it is anticipated that significant seismic events will occur that are capable of shaking the site.

One of the primary factors controlling the potential for liquefaction is the depth to ground water. Liquefaction susceptibility generally decreases with depth of the ground water table for two reasons: 1) the deeper the water table, the greater is the normal effective stress acting on saturated sediments at any given depth, and liquefaction susceptibility decreases with increased normal effective stress; 2) age, cementation, and relative density of sediments generally increase with depth. Thus, as the depth to the water table increases and as the saturated sediments become older, more cemented, have higher relative density, and confining normal stresses increase, the less likely they are to liquefy during an earthquake. Typically, liquefaction has a relatively low potential where ground water is greater than 30 feet deep and virtually unknown below 50 feet. Due to the depth of the regional ground water table, liquefaction potential should be considered low to nil in the site area, under the present conditions.

Should the water table rise to within 30 to 50 feet from the surface or should a perched water condition develop as a result of permeable materials overlying impermeable materials, liquefaction may occur. Due to the overall relative permeability and nature of the discontinuous bedding within the onsite sediments and soils, this is considered unlikely.

VOLCANIC DEVELOPMENTAL CONSIDERATIONS

As discussed, the site is also located in an area of active vulcanism. The last known eruption within this region occurred at Mono Lake around 1890. Volcanic areas that have erupted within the last 2000 years and that could have a significant affect on the site, should they experience renewed activity, include the following:

Volcanic Source	Distance from Site (miles)
Mono Lake area	4.4 to 5.6
Long Valley/Mammoth Lakes area	14.5 to 22.7

The relationship of the site location to these recently active volcanic areas, as well as other Quaternary volcanic sites, is also shown on the Regional Fault Map, Figure 3.

Based on the available data, an eruptive episode in the Mono Basin-Long Valley area may occur as follows:

Stage 1 - Earthquakes along the Sierra Nevada fault system that open fissures or lessen the horizontal confining pressure along faults reaching the magma chamber at depth.

Stage 2 - Viscous siliceous magma rises towards the surface along these weakened fractures; at the same time ground water may leak downward.

Stage 3 - When contact is made, a steam explosion displaces pre-existing volcanic and lacustrine (lake) sediments forming a crater.

Stage 4 - If magma continues to rise, eruptions continue, changing in character from phreatic (steam) to phreatomagmatic and eventually magmatic with the formation of a dome.

The time lag from precursory earthquakes to eruption would likely be on the order of 6 months to as much as 10 years (Kilbourne, R. T., et al, 1980). The type of eruptions and their effects include ash falls, pyroclastic flows, pyroclastic surges, lava domes and flows, floods and mud flows, and volcanic gasses. These are briefly summarized below:

Ash falls - Volcanic ash and larger fragments are ejected upward above a volcanic vent by gaseous explosive eruptions. Large hot rock fragments can extend as much as 6 miles or so from the source vent. The effects of ash are greatest where it is thickest near the volcanic source, and decrease with distance.

Pyroclastic Flows - Pyroclastic flows are relatively high density masses of hot, dry rock fragments mixed with hot gasses; the flows move like fluids, along the ground surface to great distances at a high speed, outward from the vent.

Pyroclastic Surges - Pyroclastic surges are relatively low-density, cloud-like mixtures of rock particles and gasses that move at high speed outward from volcanic vents.

Lava Domes and Flows - Lava domes are flows resulting from the relatively quiet eruption of molten rock that piles up over a volcanic vent, or flows away as a molten stream, typically along topographic lows, to as much as 30 miles from the source.

Floods and Mudflows - Eruptions at vents in areas covered with snow may cause hot mudflows as hot rock debris mixes with snowmelt, or floods that may become mudflow as they incorporate rock debris.

Volcanic Gasses - Volcanic gasses are emitted without rock material from small vents called fumaroles, and they also generally accompany molten or solid rock fragments expelled during eruptions. Volcanic gasses are controlled by wind direction and generally consist of steam, accompanied by carbon dioxide and compounds of sulfur and ammonia.

Due to the sites topographic setting and location with respect to the known recently-active volcanic areas, as well as those volcanic areas of Quaternary-age, the site is subject to the effects of eruption of pyroclastic flows and clouds of hot ash and pyroclastic surges, and to a lesser extent lava flows and domes, and to an even lesser extent mud flows and floods (Miller, C. D. and others, 1980). Mitigation of these hazards is generally impractical; and thus, if such an event were to occur, evacuation of personnel in accordance with state and local guidelines should be performed. Structures, however, would likely be damaged. This should be considered during project planning and design. It is our opinion, however, that the most likely volcanic hazard to potentially impact the site would be ash falls, due to the site's elevation and distance to known volcanic sources. Accordingly, the potential for ash falls at the site should not be any greater than nearby and already-developed properties.

SUBSIDENCE

Our review of readily available data did not indicate that the site specific area is currently subsiding as a result of down-faulting along bordering fault zones, ground water withdrawal, or hydrocompaction. The site, however, lies in a region that has a potential for collapse and subsidence (i.e., Long Valley-Mono Craters) where volcanic sources exist. However the scope of this potential for affecting the subject site is beyond the scope of this current study.

In general, areal subsidence generally occurs at the transition condition between materials of substantially different engineering properties as a result of geologic processes. Thus, the only potential for this condition exists between the fluvial-glacial deposits and alluvium. Based on the available data, bedrock underlies the fluvial-glacial deposits and alluvium at depth; therefore, this potential is generally considered low, but increases to moderate along the extreme easterly margin of the site near Highway 395. Our review of available stereoscopic aerial photographs (USDA, 1977, Triad Engineering, 1984b) showed no features generally associated with areal subsidence (e.g.,radially-directed drainages flowing into a depression(s), linearity of depressions associated with mountain fronts, or ground fissures).

Ground fissures are generally associated with excessive ground water withdrawal and associated subsidence, or regional neotectonics -- that is, tectonic movement along faults active in Miocene, Pliocene, Pleistocene, and Holocene time. Our study indicates that excessive ground water withdrawal at the site is not occurring at this time, and active faults do not transect the property; however, older buried inactive faults may exist at depth. Portions of Lee Vining are believed to have similar geologic conditions as those onsite. Accordingly, the potential for areal subsidence or ground fissures should not be any greater at the site than for nearby and already-developed properties.

Two other geologic constraints are also pertinent to site development, and these are (1) adverse geologic structures, and (2) seismically induced landsliding. Owing to the relatively granular nature of the onsite materials anticipated to be encountered during grading and the lack of adverse geologic structures (based on the available data), the potential for seismically-induced landsliding or adverse geologic structures is low, but may not be entirely precluded. This should be further evaluated during grading, if significant cuts are proposed.

CONCLUSIONS AND RECOMMENDATIONS

Based on our review of available data, field exploration, and our geologic analyses, it is our opinion that the project site is suited for the proposed use from a geologic viewpoint. The primary geologic developmental considerations affecting the site are the effects of seismic shaking and volcanic processes. This should be considered during project planning and design. The recommendations presented in this report should be incorporated into the planning, design, earthwork, and construction phases.

General

1. The recommendations presented below should be reviewed and revised, if necessary, by the project engineering geologist when an approved grading or site plan becomes available.

2. Geotechnical engineering and compaction testing services should be provided during grading to aid the contractor in removing unsuitable soils and in his effort to compact the fill. Geologic inspections should be performed during and cut slope excavation to further evaluate the presence of adverse geologic structures, if significant cuts are proposed. Based on the exposed conditions, supplemental recommendations for mitigation may be warranted.

3. Grading should conform to chapter 70 of the latest edition of the Uniform Building Code, as well as local ordinances.

4. Shallow ground water was not encountered during this study. Ground water, however, may vary with the seasons or other factors and may be encountered locally. Subdrain systems are recommended for all proposed canyon fill areas on a preliminary basis.

5. If settlement-sensitive improvements are proposed within the zone of influence of our exploratory trenches, or if the exploratory trenches exist uphill within a zone of influence that may impact proposed structures, mitigative measures, such as removal and recompaction, debris/impact walls, etc, should be provided by the soils engineer or design civil engineer, if warranted.

Debris Flow Mitigation

In consideration of the potential for prolonged rainfall, possible brush fires and vegetation denudation, we recommend that the project's civil engineer consider using debris/desilting/retention basins and/or rip-rap or other mitigative devices in those areas where canyon or significant hillside gully areas intersect the proposed development. If structures are not proposed in those areas, then this would not be warranted from a geologic perspective; however, this should be considered for personnel safety by the design civil engineer.

Fault Setback Zones

Structural setbacks are not warranted for the site based on the available data. Undetected, potentially active faults may exist within the property outside of the area investigated. However, based on the available data, these would not meet the "sufficiently active" or "well defined" criteria of the Alquist-Priolo special studies zone act. As potentially active faults may exist or new faults possibly occur in unpredictable locations, it is impractical to zone entire mountain front areas for setbacks, based on the physical nature of soil and sedimentary materials and the above criteria. Although unlikely, it should be noted, however, that due to the project area's location in a zone of known active faulting, it is possible that removals and/or grading may expose fault traces that may warrant further study and/or structural setbacks. This should be considered during the planning and construction stages of the project.

INVESTIGATION LIMITATIONS

The materials encountered on the project site are believed representative of the total area; however, soils materials may vary in characteristics between test excavations.

Inasmuch as our investigation is based upon our review of available data, the site materials observed, and geologic analyses, the conclusions and recommendations are professional opinions. It is possible that variations in the subsurface conditions could exist beyond the points explored in this investigation. Also changes in ground water conditions could occur at some time in the near future due to variations in temperature, regional precipitation, and other factors.

These opinions have been derived in accordance with current standards of practice, and no warranty is expressed or implied. This report is subject to review by the controlling authorities.

We sincerely appreciate this opportunity to be of service. If you have any questions pertaining to this report, please contact us at (714) 677-9651.

Respectfully submitted,

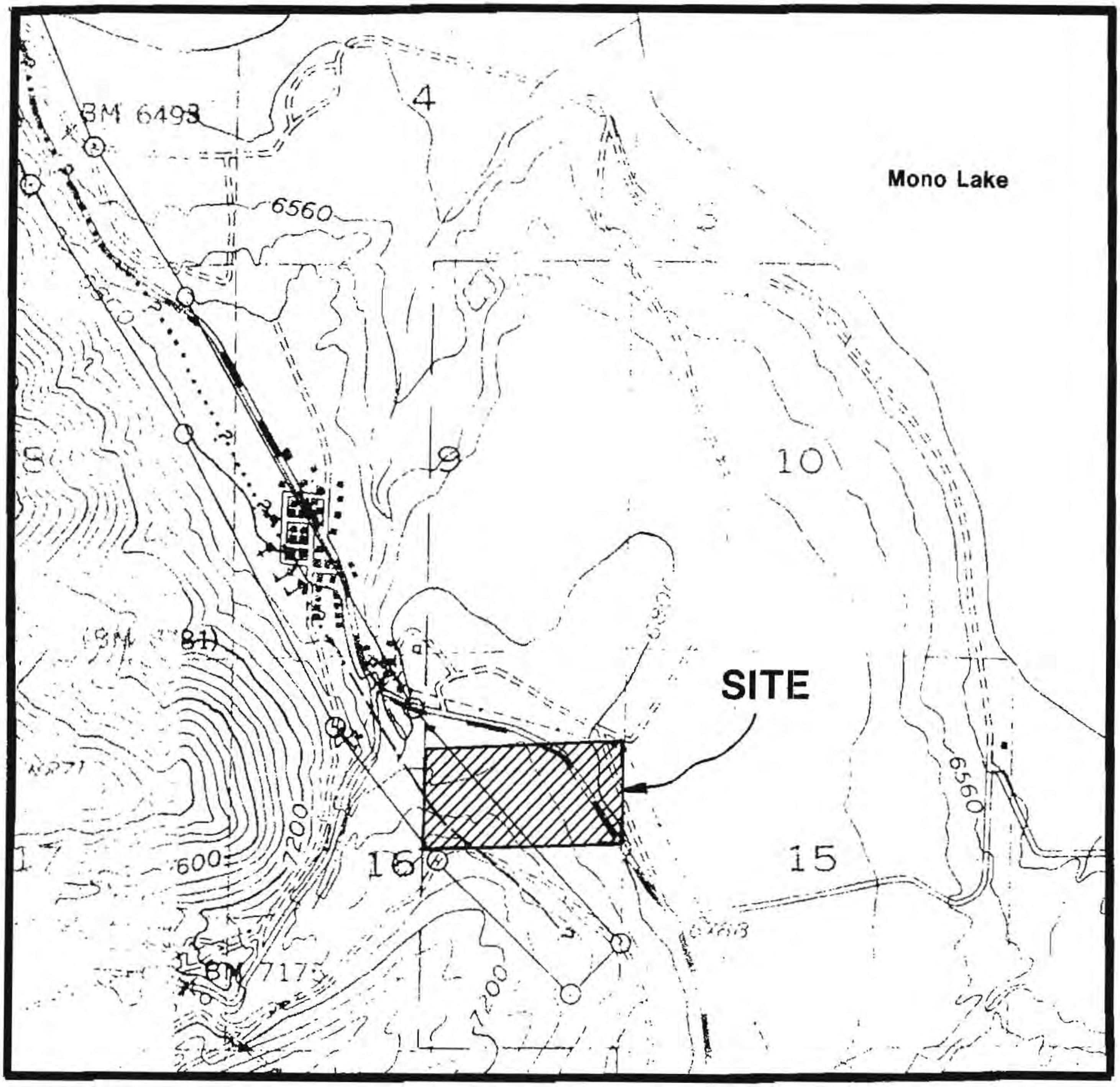
GeoSoils, Inc.

John P. Franklin
Engineering Geologist, CEG 1340

REGISTERED GEOLOGIST
JOHN P. FRANKLIN
No. 1340
Certified
Engineering
Geologist
State of California

Enclosures: Figure 1 - Site Location Map
Figure 2 - Regional Geologic Map
Figure 3 - Regional Fault Map
Appendix - References
Plate 1 - Geologic Map
Plates 2 to 6 - Trench Logs

Distribution: (2) Addressee
(5) Sierra Geotechnical Services, Inc.
Attention: Mr. Tom Platz



BASE MAP: CDMG, State of California Special Studies Zone, 7 1/2 Minute, NE 1/4 Mono Craters Quadrangle and NW 1/4 Mono Craters Quadrangle, California 1985

N

0 2000 4000

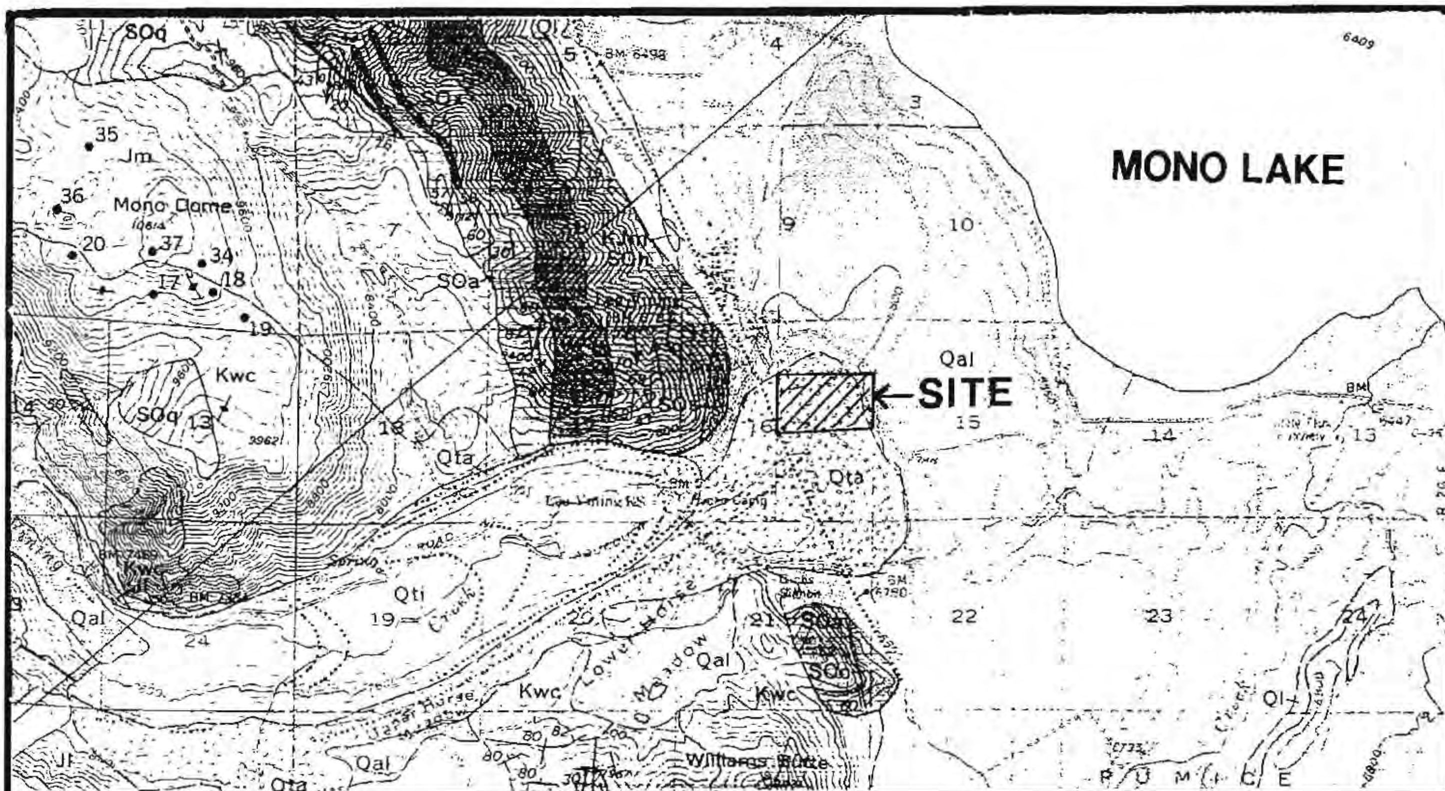
Scale Feet

GSI Inc.

W.O. 431-A-RC

SITE LOCATION MAP

Figure 1



LEGEND

Qal Quaternary alluvium and pumice

Ql Quaternary lake beds

Qti Quaternary till of the Tioga Glaciation (dotted lines show moraine crest)

Qta Quaternary till of the Tahoe Glaciations (dotted lines show moraine crests)

Kwc Cretaceous Wheeler Crest quartz monzonite

KJm Jurassic/Cretaceous Quartz monzonite of Mono Lake

Jm Jurrassic granodiorite of Mono Dome

Jl Jurassic quartz monzonite of Lee Vining Canyon (pattern indicates autolith zones)

METAMORPHOSED SEDIMENTARY ROCKS OF THE LOG CABIN MINE ROOF PENDANT

SOq Silurian/Ordovician biotite-bearing quartzite

SOa/SOx Silurian/Ordovician older sedimentary rocks (SOa, andalusite hornfels, quartzofeldspathic hornfels with thin carbonaceous marbles; SOx, crossbedded calcareous quartzite)

SOc Silurian/Ordovician marble, calc-silicate hornfels and quartzite

SOh Silurian/Ordovician quartzofeldspathic hornfels

SOs Silurian/Ordovician marble and calc-silicate hornfels

GEOLOGIC SYMBOLS

Geologic contact dashed where approximately located; dotted where concealed

Fault, bar and ball on downthrown block; dashed where approximately located; dotted where concealed

Trend and plunge of lineation

Bedding

Rock sample locality

Vertical foliation

1 0 1

scale miles

N

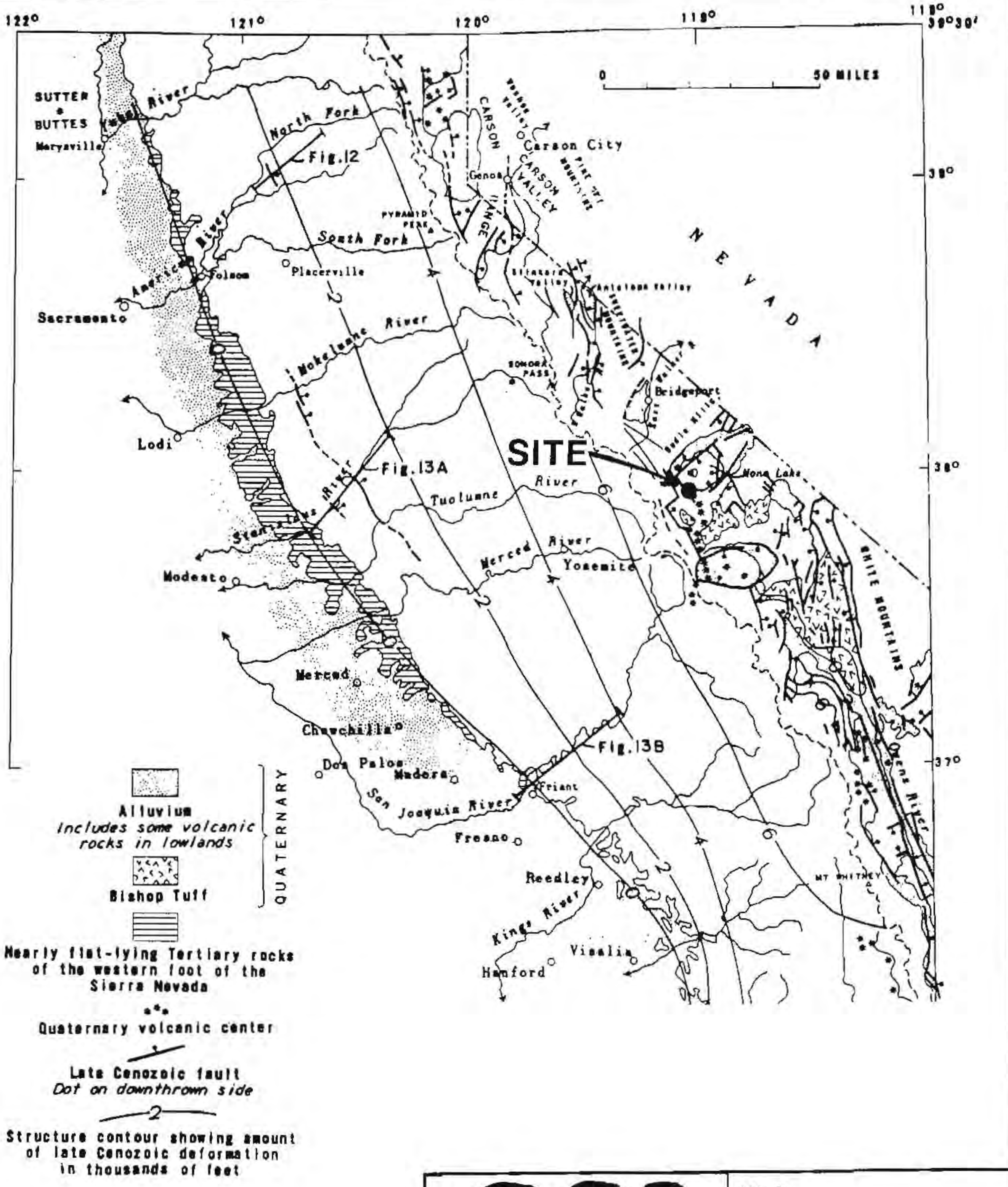
BASE MAP: Geologic Quadrangle Map, Mono Craters Quadrangle, California, 1966, by Ronald W. Kistler: USGS GQ-462

GSI Inc.

W.O. 391-A-RC

REGIONAL GEOLOGIC MAP

Figure 2



(From Bateman and Wahrhaftig, 1966)

W.O. 431-A-RC

REGIONAL FAULT MAP

Figure 3

APPENDIX

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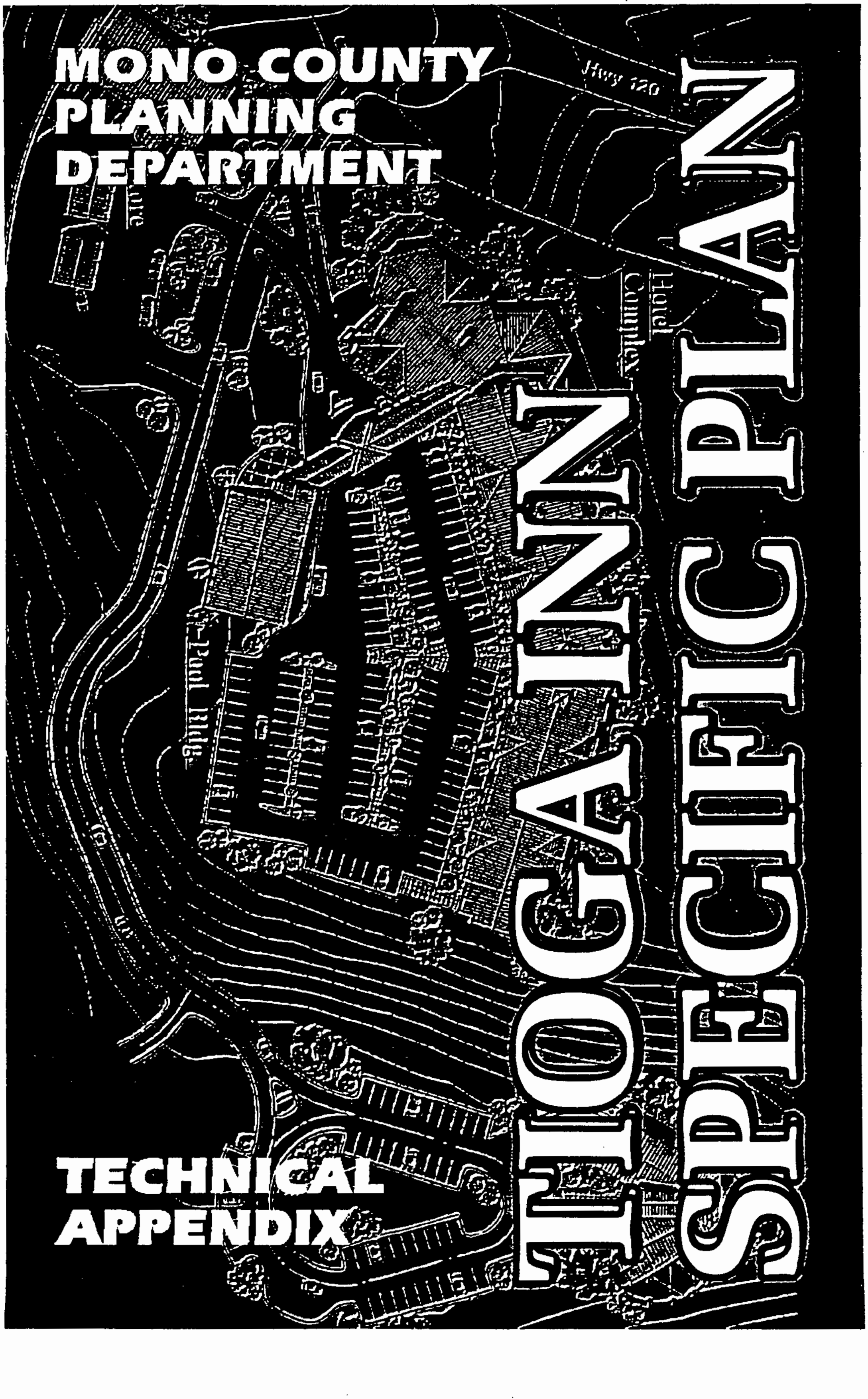
MONO COUNTY
PLANNING
DEPARTMENT
Hwy 120
Hotel Complex
TIOGA INN
SPECIFIC PLAN
TECHNICAL
APPENDIX

GEOTECHNICAL/
HYDROLOGICAL
REPORT

Report 1

KLEINFELDER

August 21, 1992
File: 30-2091-01.001

Mono County Planning Department
HCR 79 Box 221
Mammoth Lakes, CA 93546

Attention: Mr. Scott Burns

SUBJECT: **Modified Phase I Groundwater Resources Assessment and Review of a Fault Investigation Report for the Tioga Inn Specific Plan, Lee Vining, California**

Dear Mr. Burns:

This letter report presents a summary of our hydrogeologic assessment and a review of Geo Soils, Inc.'s fault investigation report for the subject Tioga Inn Specific Plan, in Lee Vining, California.

BACKGROUND

The proposed Tioga Inn project is located along Highway 395, just south of Highway 120 in Lee Vining (see Plate 1, Appendix A). At completion, the project will consist of a 120 room full service hotel, a restaurant, a gas station/mini mart, and 10 units of residential housing. There is an existing well, extending to a total depth of 580 feet, located near the east portion of the site. A short pump test conducted on the well by the drillers immediately after installation (1984) indicates it will produce approximately 150 gallons per minute (gpm). However, the well has been idle since it was constructed.

In May 1992, the Mono County Planning Department (MCPD), as part of its review of the project, requested Kleinfelder conduct an assessment of the potential impact of pumping groundwater from an existing well at the site for use in the proposed development. Specifically, they requested we focus on the preliminary groundwater characteristics of the aquifer, potential impacts from pumping, and potential impacts to water resources from project activities based on available information.

The MCPD also requested we review a preliminary geologic investigation to evaluate the potential hazard of surface fault rupture at the site, prepared by Geo Soils, Inc. of Marietta, California.

WORK PERFORMED

Review Pertinent Geologic Literature. We reviewed pertinent references on the geology attendant to the Lee Vining area and specific to the project area prior to initiating the aquifer pump test and reviewing the fault investigation report by Geo Soils, Inc. These references include professional papers and maps that address geologic and hydrogeologic conditions in the Mono Lake region. We list the references reviewed for this project at the end of the report.

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Aquifer Pump Test. Proper testing of a well typically involves conducting two aquifer tests; a continuous pumping test and a step-drawdown test. The extended aquifer pumping test provides information necessary to estimate the hydraulic conductivity and storativity. This information assists in estimating the long-term yield of the well and potential interference between the subject well and nearby wells, springs, etc. The step-drawdown test provides information on the dynamic (pumping) water levels (DWL's) at various pumping rates for developing pump design criteria.

We recommended combining the two tests into one extended step-drawdown test to obtain as much information as possible, given the time and budget constraints of this project.

On June 24 and 25, 1992, Kleinfelder and Mr. Dennis Domaille (property owner) conducted an extended step-drawdown test on the well. The test consisted of three steps, with each step having a successively higher pumping rate than the preceding step. We ran the first two steps for approximately two hours each and the third step for approximately 21.7 hours. The pumping rates employed for the steps were about 38, 91, and 132.5 gpm, respectively. We also recorded well recovery data for approximately 27.2 hours. The DWL's and recovery water levels were measured with a pressure transducer placed in a 1.25-inch inside diameter slave well installed inside the well, and recorded on a Hermit 2000R data logger manufactured by In-Situ, Inc.

GEOLOGIC SETTING

The project site is located at the base of the eastern slope of the Sierra Nevada Mountain Range at Lee Vining Creek and west of Mono Lake. This is a transition area between two major geologic provinces, the Sierra Nevada geologic province to the west, and the Basin and Range geologic province to the east. The Sierra Nevada is predominantly composed of granitic plutonic rocks of Mesozoic age. These rocks constitute the Sierra Nevada batholith, which is a nearly monolithic block tilted westward by uplift along a fault system at its eastern limit. Paleozoic to Triassic age metamorphic rocks that were intruded by the plutonic rock are common as roof pendants along the crest and eastern slope of the Sierra Nevada Mountains. Cenozoic volcanic rocks are also prominent along the central portion of the eastern Sierra Nevada. The crest of the Sierra Nevada Mountain Range is located only a few miles west of the site.

The Basin and Range geologic province consists of northwest trending fault-block mountain ranges, separated from intervening basins by high angle normal faults of great displacement. This province includes eastern Nevada, western Utah, a part of Oregon, Idaho, California, and Arizona. The mountain ranges in western Nevada are primarily made up of Mesozoic or Early Tertiary intrusive and Tertiary volcanic rocks. The intervening basins consist of deep accumulations of Early Cenozoic to Quaternary age deposits.

The Mono Basin is characterized by Quaternary age volcanic activity that has resulted in lava flow, ash and cinder deposits over much of the area. Numerous volcanic cinder cones and plugs occur within a few miles of the project site.

The mountains west of the site were subjected to repeated Pleistocene age glaciations. This glacial activity produced in glacial till and outwash deposits along the eastern Sierra. Previously higher water levels in Mono Lake resulted in alluvial deposits and wave cut terraces around Mono Lake. The project site is predominantly underlain by Tahoe age glacial till. Quaternary age alluvium underlies part of the eastern portion of the site.

FINDINGS AND DISCUSSION

Hydrogeologic Conditions

The static water level (SWL) measured approximately 339 feet below ground surface before the start of the test. Total drawdown at the end of the test (25.7 hours) was about 17.6 feet. The well recovered to about 0.3 feet of the original SWL within 13.8 hours after terminating the pumping phase of the test.

The specific capacity for the well ranged from approximately 11.1 gallons per minute per foot (gpm/ft) at 38 gpm to 7.5 gpm/ft at 132.5 gpm. Using the test data, we calculated drawdowns, specific capacities, and well efficiencies for several pumping rates. In general, the calculated well efficiencies vary between 55.8% at 125 gpm to 28.3% at 400 gpm. These low efficiencies are not unusual considering the type of perforated casing (Mill Slot) installed in the well. Appendix B contains the step-drawdown calculations for this test.

We used the recovery data to assess the hydrogeologic characteristics of the aquifer penetrated by the well. Usually, the recovery data is more reliable and accurate because there is no potential electrical interference or turbulent flow from pumping. In addition, conducting the pumping phase in steps essentially renders the drawdown data useless in terms of estimating the hydrogeologic characteristics of the well.

To calculate the average transmissivity (T) using the recovery data, we used a variation of the Jacob straight-line method (Driscoll, 1989). The T is the rate at which the aquifer can transmit water through a unit width of an aquifer under a unit hydraulic gradient. We were not able to calculate storativity because of the lack of monitoring wells for this test.

The method of using recovery data involves plotting on semilog paper the residual drawdowns versus a ratio of time since the pump test began divided by the time since pumping stopped. We began collecting recovery data within 5 seconds after turning the pump off. In this time, the well recovered approximately 8.7 feet. In addition, the pump was turned on for about 15 minutes towards the end of the recovery phase. We do not believe the rapid initial recovery or the brief pumping period adversely affects the data.

The recovery plot usually gives a relatively straight line, from which we can calculate T. The plot from this well indicates there is a recharge boundary encountered near the end of the recovery period, therefore, we calculated T values before and after the recharge boundary using the formula and assumptions as shown below:

$$T = \frac{264Q}{ds'}$$

Where: T = transmissivity (gpd/ft)
Q = pumping rate (gpm)
ds' = recovery per log cycle of time (ft)

Assumptions:

Before Boundary	After Boundary
Q = 132.5 gpm	Q = 132.5 gpm
ds' = 2.25 ft	ds' = 1.10 ft

For additional assumptions refer to Driscoll (1989).

Then, the T of the aquifer(s) before boundary is approximately 15,600 gpd/ft. The T after the boundary condition increases to about 31,800 gpd/ft. These T values are probably typical of high yielding unconfined aquifers in this area (see Appendix B for the recovery data).

We calculated the potential sustained yield of the well by taking 67% of the saturated thickness times the specific capacity. In other words, at 67% of the total potential drawdown, the well will produce 90% of its maximum yield (Driscoll, 1989). Although the subject well does not completely penetrate the unconfined aquifer, we believe this method gives a reasonable estimate of the sustained yield.

This well has 200 feet of perforations. Although the SWL is about 41 feet higher than the perforated interval, we must use that portion of the well open to the aquifer. Using this saturated thickness, we calculated the sustained yield as follows:

Sustained Yield = (saturated thickness x 0.67) x specific capacity

Where: Saturated thickness = 200 feet
Specific capacity @ 400 gpm = 3.95

Thus, the sustained yield for this well is approximately 530 gpm. We used the calculated specific capacity for a pumping rate of 400 gpm because the specific capacity will decrease as the pumping rate increases. This will give a more accurate calculated sustained yield.

Based on the calculations above, we believe the yield of this well is capable of exceeding 400 gpm. However, additional testing of this well in the form of an extended aquifer test with one or more monitoring wells, and quality analysis will be necessary before pumping at this rate. We understand the maximum production will be only about 150 gpm. The recovery data indicates that recharge into the well is quick, as is evidenced by the relatively high T for the aquifer. Actually, the aquifer probably has a much higher T than those calculated because we did not account for the inefficiency of the well. As discussed above, the well is not very efficient. Water level measurements taken from a more efficient well would likely have resulted in a much higher T value which would probably be nearer the actual T of the aquifer.

Because of the highly transmissive nature of the aquifer, and the presence of an apparent recharge boundary in the vicinity of the well, we believe there will be minimal impacts to the groundwater in terms of quantity or quality. The withdrawal of the quantity of water required for this project will likewise be minimal.

The nearest surface water source is the generally north trending Lee Vining Creek, located about 2,800 feet northwest of the site. Based on the topography in the area, the apparent groundwater flow direction is to the east-northeast. Considering this, and the depth of the aquifer below ground surface, it is highly unlikely that the well will draw water from surface water sources. Rather, surface waters percolating into the subsurface, in addition to eastward groundwater flow from the Sierra Nevada, will serve to recharge the aquifer.

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Fault Investigation Report

The following presents the results of our review of a geologic investigation report entitled "Preliminary Geologic Investigation, 83± -acre Parcel, Tentative Parcel Map No. 34, Lee Vining Area, Mono County, California." The purpose of this report was to evaluate the hazard of primary surface rupture at the subject site. We did not assess other potential geologic hazards at the site. The subject report was prepared by Geo Soils, Inc. of Marietta, California, for Mr. Dennis Domaille of Mammoth Lake, California.

The purpose of our review was to evaluate the adequacy of the subject geologic report in terms of potential hazard of surface fault rupture at the site. Our review was based on Kleinfelder's previous experience in the site area and the "Guidelines for Evaluating the Hazard of Surface Fault Rupture" presented in Appendix C of California Division of Mines and Geology (CDMG) Special Publication 42: "Fault-Rupture Hazard Zones in California," by E. W. Hart, (1990).

As discussed above, the subject site is located near the town of Lee Vining in Mono County, California. The Mono Lake fault was previously inferred by others to trend across the site. Consequently, the State of California required a geologic study of the fault under the Alquist-Priolo Special Studies Zones Act of 1972. An Alquist-Priolo Special Studies Zone was designated along the Mono Lake fault in 1985 and is shown on the NE1/4 Mono Craters, California 7.5 Minute Quadrangle Map. The Mono Lake fault was included in a regional evaluation of faults by Associate Geologist William A. Bryant with the CDMG. The results of this regional evaluation are contained in the CDMG Fault Evaluation Report FER-155, "Faults in Bridgeport Valley and Western Mono Basin, Mono County," by Bryant (1984).

<u>Discussion</u> The scope of services performed by Geo Soils included:

- Review of geologic literature and photolineament analysis of available aerial photographs;
- Site reconnaissance by a geologist;
- Subsurface exploration consisting of about 1,500 feet of trenches excavated 10 to 15 feet below existing grade;
- Geologic analysis of the data collected; and
- Preparation of the subject report.

The report contains a description of the proposed development, methods of study, regional geologic setting, and several plates. In addition, the report was signed by a registered geologist in the State of California.

The scope of services performed by Geo Soils is in general accordance with the CDMG guidelines and similar to the scope of other geologic studies for similar projects at the time the study was performed. In addition, the subsurface exploration performed for the project was relatively extensive. However, Geo Soils did not review CDMG FER-155 and other recent literature referenced in FER-155 pertaining specifically to faulting in the site area. CDMG FER-155 presents evidence of active fault displacement near the project site with locations of fault-related features shown on a regional fault map.

The Geo Soils report does not state specific conclusions concerning the location and existence (or absence) of hazardous faults on or adjacent to the site, or the relative potential for future surface displacement. The likelihood of future ground rupture may be stated in semiquantitative terms such as low, moderate, or high, or in terms of slip rates estimated for specific fault segments.

In summary, based on our knowledge of the planned development and guidelines given by the State of California, the scope of services performed by Geo Soils, Inc. for the subject geologic study was reasonably adequate to evaluate potential fault rupture at the subject site. However, a key reference (CDMG FER-155) for the Mono Lake fault was not stated in the references reviewed by Geo Soils for their study. In addition, the subject report does not state conclusions concerning the existence or absence of hazardous faults on the subject site, or the relative potential for future surface displacement.

CONCLUSIONS

We have based the following conclusions on the data collected during this investigation. <u>These conclusions are subject to the limitations stated in this report</u>, and may change if additional information becomes available. The following is a summary of our conclusions:

<u>Aquifer Test</u>:

- The results of the extended pump test indicate the well can produce a sustained yield of approximately 530 gpm. The results also indicate there is a recharge boundary encountered near the end of the test. The calculated T before and after the boundary is approximately 15,600 gpd/ft and 31,800 gpd/ft, respectively.
- Pumping groundwater at the proposed rate of no greater than 150 gpm should have minimal impact on the quantity and quality of the groundwater or on surface waters in the area.

<u>Fault Investigation Report Review:</u>

- The subject geologic study by Geo Soils, Inc. was reasonably adequate to evaluate potential fault rupture at the site. However, a key reference (CDMG FER-155) was apparently not reviewed for the study.
- The subject report does not state conclusions concerning the existence or absence of faults on the site, or relative potential for future surface displacement.

RECOMMENDATIONS

Based on our findings and conclusions above, we recommend the following:

- Request Geo Soils, Inc. review the CDMG Fault Evaluation Report FER-155; and
- Request Geo Soils, Inc. modify their report to include their review of FER-155 and state their conclusions regarding the existence or absence of faulting on the site.

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LIMITATIONS

The services provided under this contract, as described in this report, include professional opinions and judgments based on the data collected and analyzed. We performed these services according to currently accepted engineering geology practices for water resources and geotechnical engineering in Northern California. We base this report on information derived from the following:

- Data from selected available literature;
- Extended step-drawdown aquifer test;
- Copy of the Fault Investigation Report by Geo Soils, Inc.; and
- Our knowledge of and experience in the local area.

We consider the information contained in this report to be valid for a period of one year from the date of the report. This report does not provide a warranty as to variable subsurface conditions which may actually exist. Do not assume this report applies outside the specific project area. In addition, one should recognize that definition and evaluation of geologic and hydrogeologic conditions is a difficult and inexact art. Geologists and hydrogeologists must occasionally make general judgments leading to conclusions with incomplete knowledge of the geologic history, subsurface conditions, and hydraulic characteristics present. To reduce the inherent risk associated with evaluating water resources, the client should request that the geologists and hydrogeologists use more extensive studies including subsurface exploration.

If the client wishes to reduce the uncertainty beyond the level associated with this study, Kleinfelder should be notified for additional consultation.

Very truly yours,

KLEINFELDER, INC.

Michael W. Fies
Project Geologist

Ray H. Davis, P.E., C.E.G.
Principal

MWF:RHD:jhs

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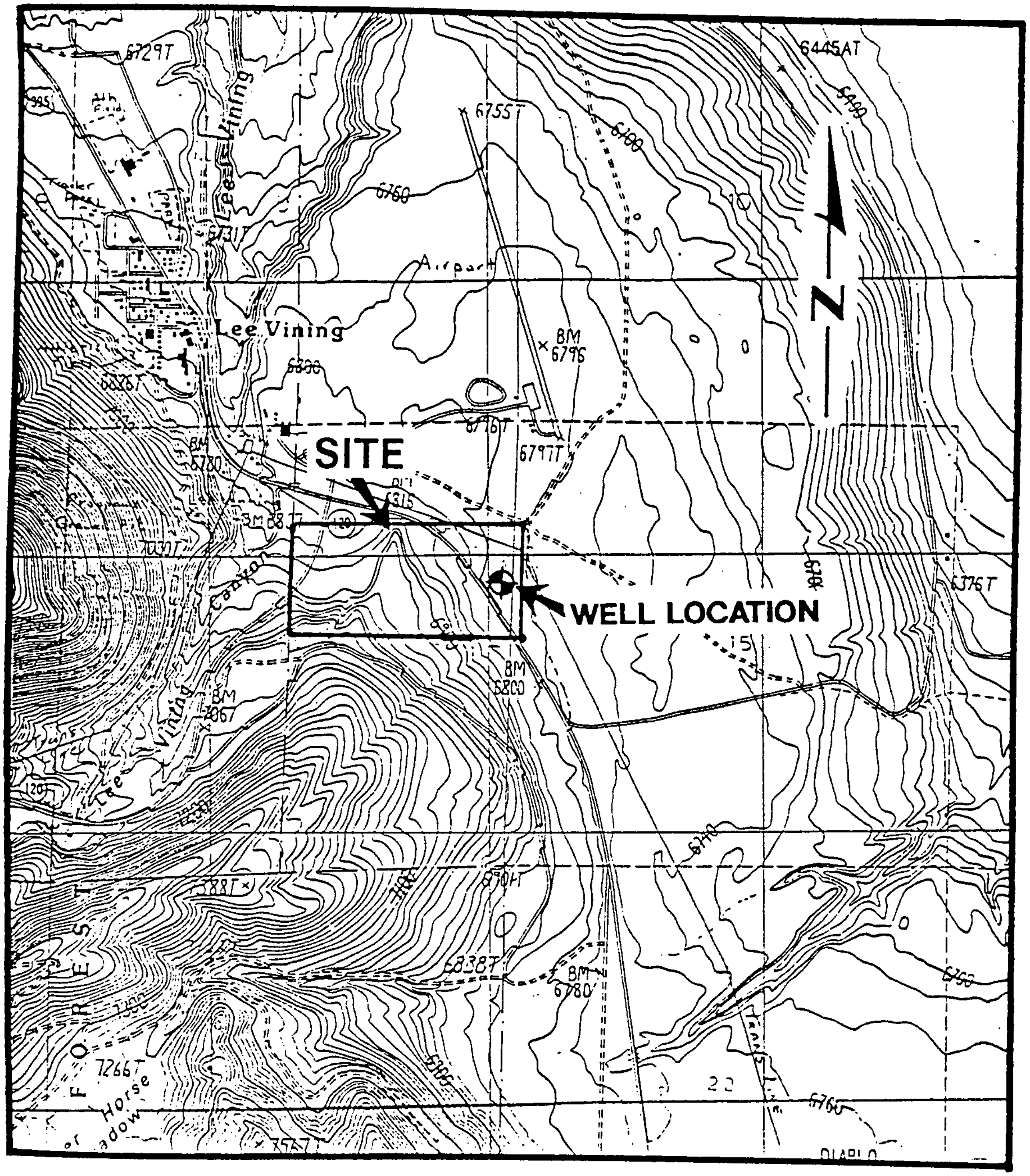
APPENDIX A



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FEET

QUADRANGLE LOCATION

BASE MAP: U.S.G.S., 1986, TOPOGRAPHIC MAP OF LEE VINING
7.5 - MINUTE QUADRANGLE, CALIFORNIA

KLEINFELDER	SITE WELL LOCATION MAP TIOGA INN	PLATE 1
PROJECT NO. 30-2091-01.001	LEE VINING CALIFORNIA	

STEP-DRAWDOWN TEST CALCULATIONS

PROJECT NO: 30-2091-01.001 DATE OF TEST: June 24-25, 1992

JOB NAME: Tioga Inn

TEST LOCATION: Approx. 200 Ft. E. of Hwy 395, 2000 ft. S. of Junction with Hwy.120

WELL NO: 1 STATIC WATER LEVEL: ± 340 TOC

CALCULATED BY: M.W. Fies ± 339 GL @ ____ HRS

EXPLANATION OF SYMBOLS

Q = well discharge (gpm)
s = total drawdown (ft)
Δs = drawdown at end of step (ft)

B = Formation loss (s/Q) (from graph)
C = Well loss (s/Q^2) (from graph)
E = Aquifer Efficiency

EQUATIONS:

Specific drawdown: s/Q (ft/gpm)
Specific capacity: Q/s (gpm/ft)
Calculated drawdown: $s_c = BQ + CQ^2$ (ft)
Aquifer Efficiency: $E = 1/[1 + (C/B)Q]$ (%)

Step	Pump Rate Q (gpm)	Step-Drawdown Δs (ft)	Total Drawdown s (ft)	Specific Drawdown s/Q (ft/gpm)	Specific Capacity Q/s (gpm/ft)
1	38	3.411	3.411	0.0898	11.14
2	91	6.697	10.108	0.1111	9.00
3	132.5	7.502	17.610	0.1329	7.52

Calculated Drawdown, Specific Capacity, Well Efficiency

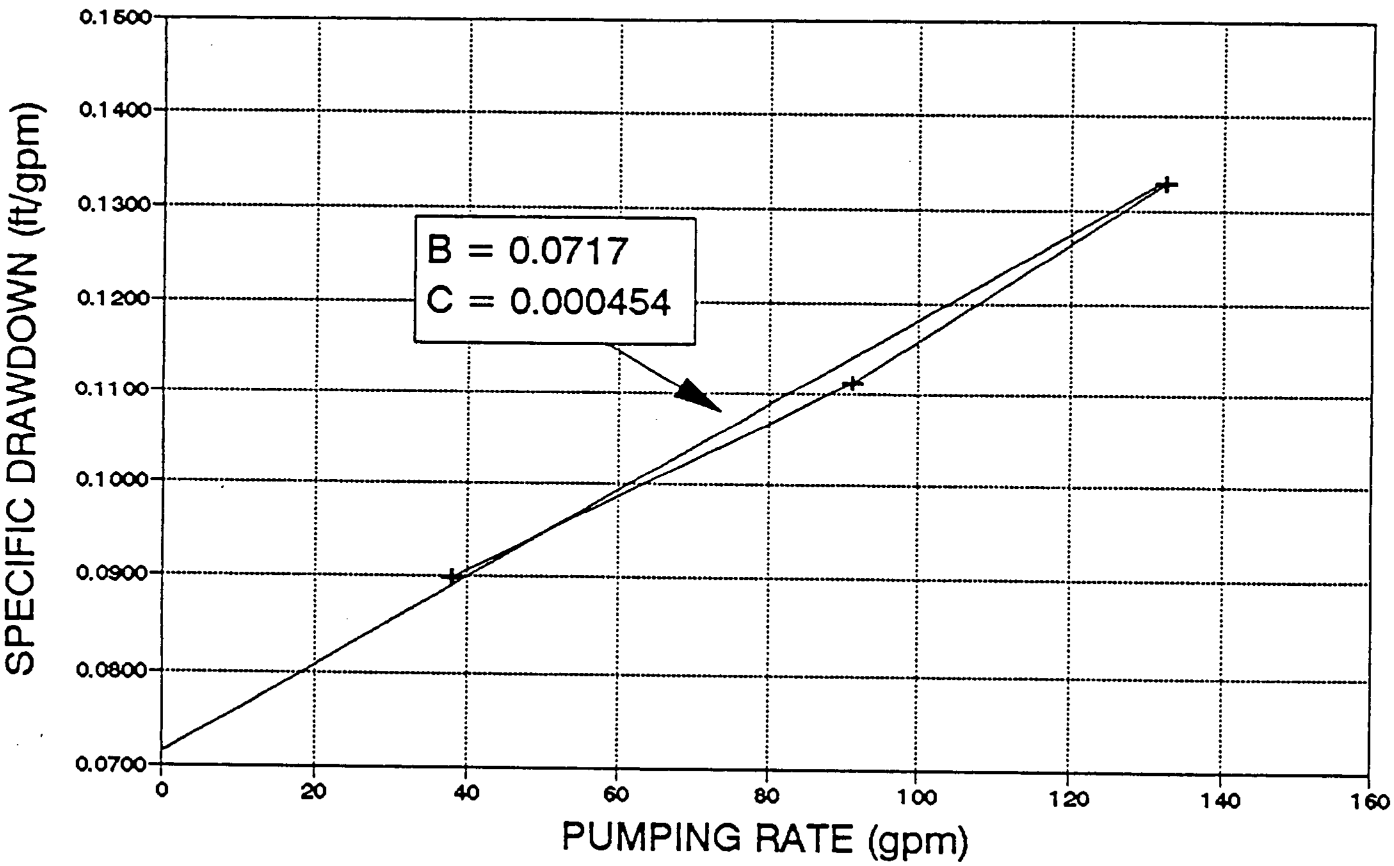
Pump Rate Q (gpm)	Formation Loss BQ (ft)	Well Loss CQ^2 (ft)	Calculated Drawdown s_c(ft)	Calculated Specific Capacity Q/s_c(gpm/ft)	Well Efficiency E (%)
125	8.96	7.09	16.05	7.79	55.8
150	10.76	10.22	20.98	7.15	51.3
200	14.34	18.16	32.50	6.15	44.1
300	21.51	40.86	62.37	4.81	34.5
400	28.68	72.64	101.32	3.95	28.3

From graph: B = 0.0717 s/Q

C = 0.000454 s/Q^2

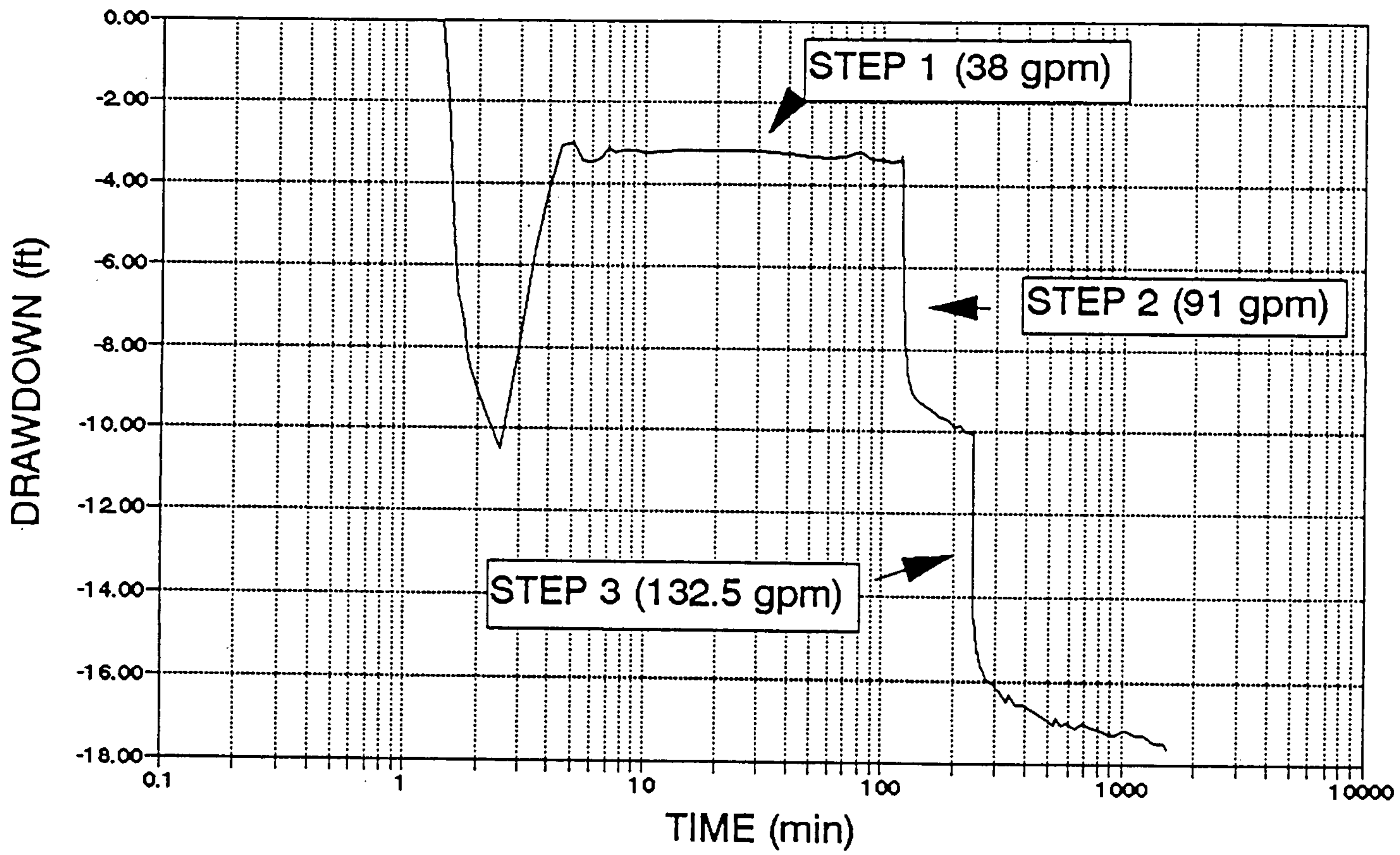
TIOGA INN WELL #1

Specific Drawdown/Discharge



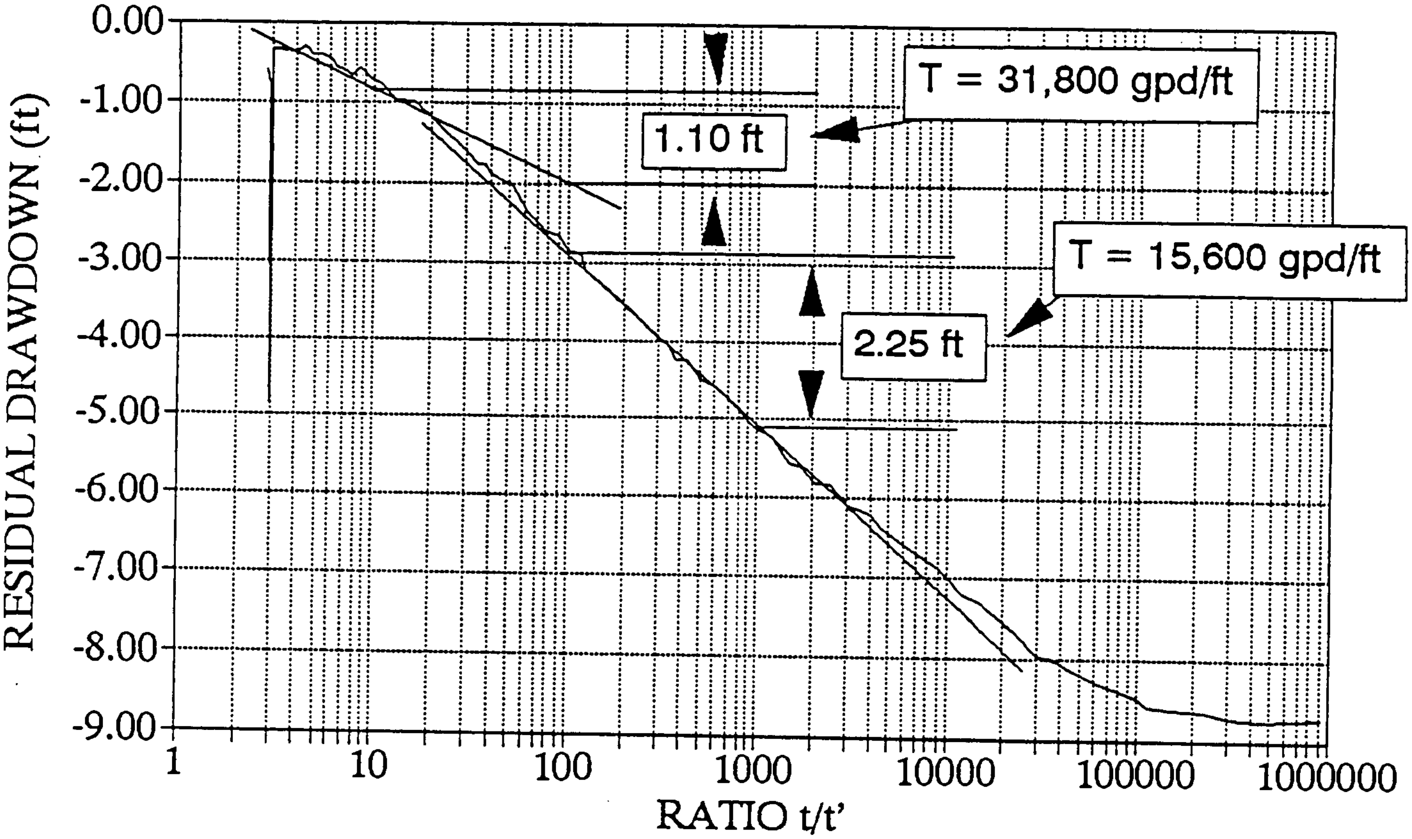
TIOGA INN WELL #1

Extended Step-Drawdown Aquifer Test



TIOGA INN Well #1

Step 4 (Recovery)



VISUAL IMPACT ANALYSIS

Report 2

DRAFT

VISUAL IMPACT ASSESSMENT

FOR

THE TIOGA INN SPECIFIC PLAN EIR

LEE VINING, CALIFORNIA

Prepared for:

MONO COUNTY

November 1992

Prepared by:

CERTIFIED/EARTH METRICS
7000 Marina Boulevard, 4th Floor
Brisbane, CA 94005
(415) 742-9900

S12046B

EXISTING SETTING

Visual Setting. Mono County offers some of the most diverse terrain features and scenic resources to be found in any area of the country. The proposed project site is situated in the Mono Basin at the intersection of U.S. Highway 395 (US 395) and State Route 120 (SR 120). The site borders the federally designated Mono Basin National Forest Scenic Area, a nationally recognized visual resource. The basin's visual resources include Mono Lake and a diverse spectrum of dramatic landforms such as tufa towers, glacial moraines, and young volcanic features. Within a 20 mile radius of the site a number of visually significant resources attract the area's many visitors, including Yosemite National Park, Inyo National Forest, June Lake, Mammoth Lakes, Topaz Lake, and Devil's Postpile National Monument.

The proposed project site lies on the outskirts of Lee Vining, a small, rustic community. Many different architectural styles can be found in Lee Vining from trailer parks to "alpine lodge" and old west styles. Lee Vining marks the southern gateway to the famous Bodie Ghost Town, an authentic old western gold mining town.

The project site consists of a gently sloping grade trending north to south with a ridgeline running through the center, forming two upper "plateaus" (see Plates A and B). The site's varied terrain is vegetated with a dense cover of sagebrush, whitethorn and other low lying shrubs, as well as a sparse covering of Jeffrey and Pinion pines. The site's barren, chaparral landscape is characteristic of the Mono Basin environment.

View Opportunities. View opportunities are those views available from the project site. The project site affords scenic vistas to Mono Lake, Paoha Island, and Mono Basin to the north (see Plate C); Williams Butte and the Ansel Adams Wilderness to the south (see Plate D); and Crater Mountain to the east. View opportunities are more dramatic from the site's upper elevations due to increased elevation of the viewer's vantage point.

View Corridors. A view corridor is a vantage point which offers aesthetically pleasing views or panoramas to a substantial number of people. The major view corridors of consideration in the impact analysis of the proposed project are the views from SR 120 looking north to Mono Lake and Mono Basin (SR 120 - Mono Basin corridor), and the views from the intersection of SR 120 and US 395 looking south up Tioga Pass (SR 395 - Tioga Pass corridor). The SR 120 - Mono Lake corridor is significant in that it marks an important first view to Mono Lake for motorists travelling down Tioga Pass. There is currently a scenic turnout with an interpretive information kiosk on SR 120 adjacent to the project site (see Plate E). The US 395 - Tioga Pass corridor is significant in that it marks the intersection of two highways which experience a high volume of vehicle traffic, and offers aesthetically pleasing views to the dramatic peaks of the eastern Sierra (see Plate F).

Other view corridors which would be potentially impacted by the proposed project are views from the community of Lee Vining, and views from across Mono Basin (Black Point, Mono County Park, lower Lee Vining Canyon). Views to the project site from these vantage points are illustrated in Plates G, H,, I and J. Due to the relative distance of the project site to any development, the project site would not be readily perceptible from this vantage point.

Scenic Highways Management. There are no official State of California designated scenic highways in the vicinity of the project site. The section of SR 120 that runs adjacent to the project site is one of several highway segments for which the State has completed Scenic Highway Reports, indicating possible future consideration for official state scenic highway designation.

In a mandate to manage the County's scenic resources, Mono County adopted a Scenic Highways Element in 1981. Mono County has designated the road segments of US 395 and SR 120 running adjacent to the project as part of the Mono County Scenic Highway system. These road segments are managed through the goals, policies and implementation measures of the Scenic Highways Element. Most of the goals, policies and implementation measures of this element have been reworked and incorporated into the Conservation/Open Space Element of the Mono County General Plan Update which is currently in draft form. The county has applied to the state for an extension to the time period required to certify the Draft General Plan. Therefore, the state has required that all projects currently under consideration be subject to the policies of the Draft General Plan Update.

The Scenic Highways Element (1981) and Draft General Plan define a "Scenic Highway" as:

> Any freeway, highway, road, street, boulevard, or other public right-of-way which traverses an area of unusual scenic quality and has been designated as a scenic Highway by the County Board of Supervisors and/or the State of California.

Similarly, these planning documents define a "Scenic Highway Corridor" as:

> The area of land generally adjacent to (within 1000 feet) and visible from the highway, which requires protective measures to insure perpetuation of its scenic qualities. Scenic Highway Routes consist of both the public right-of-way and the scenic corridor.

The following goals, objectives, policies and actions of the Conservation/Open Space Element of the Draft Mono County General Plan are particularly relevant to the proposed project (see Appendix A for a complete list of visual resource policies and the existing Scenic Highways Element):

GOAL. Protect and enhance the visual resources and landscapes of Mono County.

OBJECTIVE A. Maintain and enhance visual resources in the county.

Policy 3: Preserve the visual identity of areas outside communities.

Action 3.1, Action 3.2, Action 3.4

Policy 4: Protect significant scenic areas by maintaining land in those areas in public ownership.

Action 4.2, Action 4.3, Action 4.4, Action 4.5

OBJECTIVE B. Maintain a countywide system of state and county designated scenic highways.

OBJECTIVE C. Ensure that development is visually compatible with the surrounding community and/or natural environment.

Policy 1: Future development projects shall avoid potential significant visual impacts or mitigate impacts to a level of non-significance, unless a statement of overriding considerations is made through the EIR process.

Action 1.1

Policy 2: Future development shall be sited and designed to be in scale and compatible with the surrounding community and/or natural environment.

Action 2.1, Action 2.2, Action 2.3, Action 2.4, Action 2.5, Action 2.9, Action 3.1, Action 3.2, Action 3.3

Policy 4: Promote revegetation and reforestation programs along county roads, including designated scenic highways.

Action 4.1

Policy 5. Minimize the visual impact of signs within designated scenic highway corridors.

Action 5.1, Action 5.3

OBJECTIVE D. Heighten awareness of Mono County's unique visual environment.

Policy 1: Tourist facilities should be located to take advantage of scenic views.

Action 1.1, Action 1.2

Policy 2: Provide roadside improvements for designated county and state scenic highways.

SR 120 up Lee Vining Canyon has been designated as a National Scenic Byway. This program designates highways that traverse scenic areas in public lands. These roads highlight an area's special scenic and recreational values and further serve to increase public awareness of those lands and resources. The byways further highlight a variety of resources, management opportunities, and activities. The U.S. Forest Service is currently in the process of developing an interpretive program for the SR 120 scenic byway.

Mono Basin National Forest Scenic Area. The proposed project site is adjacent to the Mono Basin National Forest Scenic Area (scenic area). The Inyo National Forest and U.S. Department of Agriculture have developed a Comprehensive Management Plan for the scenic area which manages the area's natural resources. Although the project site is not within the scenic area's boundaries, development of the site may affect views to and from the scenic area. It would therefore be beneficial for the proposed project to conform with the scenic area's standards and management prescriptions. Areas adjacent to the project site that are within the scenic area boundary and along SR 120 and US 395 are mostly within the designated "Developed Recreation Zone." This designation is designed to "maintain existing developments and provide for new services and/or facilities in support of visitor use needs." The following standards, guidelines, and management prescriptions of the scenic area Comprehensive Management Plan are particularly relevant to the proposed project:

Scenic Area Standards and Guidelines:

- Do not allow new overhead lines outside of existing utility corridors, which are visible from sensitivity level 1 roads and trails. Sensitivity level 1 observation points include U.S. 395, and Highways 120, 167; Lundy Canyon Road; Cemetery Road (from 395 to County Park); the visitor center; and South Tufa, Panum Crater, Navy Beach, Old Marina, County Park, and Black Point visitor sites.

Management Prescriptions:

- Developed Recreation Zone - Manage vegetative setting in and adjacent to the zone to meet the Visual Quality Objectives (VQO) of retention within the foreground zone.

- Strive to meet the VQO of retention but do not exceed partial retention standards for all facilities and developments as seen from sensitivity level 1 travel routes or occupancy sites. For distances greater than 1.2 mile from the viewing location, meet retention standard.

- Plant and maintain vegetation at developed sites to provide screening and a natural appearing setting. Favor native species, but historically introduced species and cultivated equivalents of native species may be used.

- Facilities should borrow shape, color, and texture from the natural setting.

National Forest Visual Management System. The project site is adjacent to lands managed by the U.S. Forest Service. The Visual Management System (VMS) is applied to all management activities on National Forest Lands. The system establishes VQOs which are based on a combination of variety class and sensitivity level. The variety class is determined by classifying the landscape into one of three different degrees of variety: Distinctive, Common, or Minimal. The sensitivity level is determined by measuring viewers' concerns for visual quality and assigning a level of sensitivity: Level 1, highest sensitivity; Level 2, average sensitivity; and Level 3, lowest sensitivity. Based on these classifications, the land is assigned VQOs, describing the level of acceptable alteration of the natural environment. The objectives are as follows:

- Preservation. Allows only ecological changes on the land. The only management impact allowed is very low visual impact recreation facilities.

- Retention. Allows management activities which repeat form, line and color already found in the natural landscape.

- Partial Retention. Allows management activities to repeat the form, line, and color of the natural landscape; other changes can be made provided the visual impact is dominated by the natural landscape.

- Modification. Management activities may visually dominate the natural characteristics of the environment. The management activities must borrow from the natural characteristics of the environment.

- Maximum Modification. Management activities of vegetative and landform alterations may dominate the natural characteristics of the environment.

Although the project site itself would not be subject the VMS, it should be noted that Forest Service lands may be subjected to changes in classification or visual quality upon completion of the proposed project.

IMPACTS

Standard of Significance. Based on CEQA Guidelines, the adverse visual impacts of a project will only be significant if they would have a "substantial, demonstrative negative visual or aesthetic impact." This determination is based on several criteria including observer position, views, view corridors, existing and proposed screening, backdrop, the characteristics and building materials of the proposed development, and the existing visual character of the surrounding area. As the determination of significance is often a subjective judgement, heavy emphasis is placed on the goals and policies of the Mono County General Plan and the Scenic Highways Element in the interpretation of impacts. The County has further defined its standard of significance in the Conservation/Open Space Element (see Visual Resources objective C, policy 1, action 1.1):

Examples of a substantial demonstrable negative aesthetic effect include:

1) Reflective materials
2) Excessive height and/or bulk
3) Standardized designs which are utilized to promote specific commercial activities and which are not in harmony with the community atmosphere
4) Architectural designs and features which are incongruous to the community or area and/or which significantly detract from the natural attractiveness of the community or its surroundings.

Visual Character. The proposed project would transform the existing natural landscape into a multi-use development (see Plate K). In considering whether the proposed project could be considered to have a "demonstrable negative effect," the project can be evaluated by the standards of the Conservation/Open space element (objective C, policy 1, action 1.1. See "Standard of Significance" above).

REFLECTIVE MATERIALS. A complete list of proposed building materials was not provided as part of the application for the proposed project. Contact with the project applicant indicated that glare resistant glass and roofing materials would be used in project construction. Use of building materials which would cause excessive amounts of light and glare is identified as a potentially significant impact.

EXCESSIVE HEIGHT AND/OR BULK. The proposed hotel would not exceed the roof elevations of 30 feet from finished floor elevations. Preliminary hotel designs, with gabled roofs, wood beams, and stone columns would break up the northern facade of the hotel, thereby minimizing the perception of a "bulky" design. Similarly the restaurant, service station/mini-mart, and housing portions of the proposed project would not exceed 30 feet in height or be considered to have excessive bulk. No significant aesthetic impact would be expected relating to excessive height and bulk if the proposed project design were implemented.

STANDARDIZED DESIGNS. Although the hotel and restaurant portions of the proposed project call for similar basic design and building materials, it would not be considered a "standardized" design which promotes certain commercial activity. The proposed alpine style architecture would blend with the environment and be congruous with other structures in Lee Vining. As no standardized, commercialized designs are proposed, no significant aesthetic impacts would be expected.

ARCHITECTURAL DESIGNS. As stated above, the proposed architectural design and use of natural and naturally colored building materials (ie. stone walls, wood beams, green roof, etc.) would increase blending with the existing surrounding natural terrain. The proposed project design would not cause significant aesthetic impacts relating to its architectural design.

As no detailed landscape plans have been drawn for the proposed project, visual screening for the proposed project remains to be defined. Landscape vegetation and other visual buffers are of vital importance to provide an adequate transition from the manmade environment to the natural environment. Landscape designs have the potential to temper manmade features on site and minimize their visual prominence. As cited in the Conservation/Open Space Element of the Draft Mono County General Plan, buildings must blend with the natural environment. Inadequate designs would reduce natural blending and cause potentially significant visual and aesthetic impacts.

The type and design of the proposed signage at the project site have not been included as part of the project application. Signs which do not blend with the natural environment or cause excessive light and glare would not be compatible with the stated goals, policies, and actions of the Conservation/ Open Space Element, or the Mono County Sign Ordinance. Improper sign design is identified as a potentially significant impact.

The type and design of nighttime lighting on the project site has not been defined as part of the project application. lighting fixtures and configurations which project excessive light and glare to its surroundings would be inconsistent with Objective C, policy 1, Action 2.1 h of the Conservation/Open Space element which calls for lighting to be shielded and direct. This is identified as a potentially significant impact.

<u>View Opportunities</u>. The proposed project would allow privately owned land to become available for public use. Due to the richness of the view opportunities present on the project site, aesthetically pleasing views would become available to a larger number of people. Views would be particularly pleasing from the proposed restaurant due to its elevated position on the site. Enhanced public access to view opportunities can be considered a beneficial impact.

<u>View Corridors</u>. The proposed project would cause existing unobstructed view corridors to become partially obstructed. As the photo simulations in Plate H demonstrate, the foreground views of the US 395 - Tioga Pass corridor would be

disrupted from its existing natural setting. Distant views to the peaks surrounding Tioga Pass (occluded in photo by cloud cover) would not be disrupted by the proposed project. Similarly, foreground views from the SR 120 - Mono Basin corridor could potentially be partially obstructed by the proposed project. The proposed building siting would minimize obstruction of views of Mono Lake because adequate setback of the hotel portion of the project is planned. The mini-mart is also set back sufficiently to avoid obstruction of Mono Basin views from this corridor (see Plate L). With the proposed project siting and height and bulk, no significant impacts relating to obstruction of view corridors are anticipated.

Visually prominent areas of the proposed project site in relation to significant view corridors are identified in Figure 1. The proposed service station/mini-mart and western side of the hotel would be visually prominent because of their proximity to SR 120. The proposed restaurant and parking area would also be visually prominent because of their elevated position on the project site. The restaurant would "daylight" above the existing ridgeline and be prominent from both US 395 and SR 120. The northern-most portion of the proposed housing would be visible from US 395, though not as prominent as the restaurant due to proposed setbacks from the ridgetop. Without adequate landscape buffering and use of naturally colored building materials, the proposed structures in these areas would potentially be visually intrusive. This is identified as a significant environmental impact.

<u>Scenic Highways Management</u>. The proposed project site is within the Mono County designated 1000 foot scenic corridor of both SR 120 and US 395. As discussed in "Visual Character" and "View Corridors" above, the proposed project is generally compatible with the Conservation/Open Space Element of the Draft Mono County General Plan. Where potentially significant and significant impacts have been identified, the identified mitigation measures would be required in order to mitigate impacts to less-than-significant levels.

The main entrance of the project is proposed to be at the location of an existing scenic turnout along SR 120 (see Plate E). The elimination of a scenic turnout would be in conflict with Objective D, Policy 1, Action 1.1 which calls for the construction of such turnouts. This is identified as a significant environmental impact which can be mitigated as recommended below.

<u>Mono Basin National Forest Scenic Area</u>. The proposed project would be generally compatible with the management prescriptions and guidelines of the Mono Basin National Forest Scenic Area. As the project site is adjacent to areas along SR 120 and US 395 that are within the "Developed Recreation Zone," the proposed land use would be compatible with stated Management Prescriptions of the area. Any potential impacts resulting from inadequate landscaping designs or blending with the natural environment are discussed above in "Visual Character" and "View Corridors." No other significant impacts are identified relating to project inconsistency with the Mono Basin National Forest Scenic Area.

<u>National Forest Visual Management System</u>. The proposed project would be visually compatible with the surrounding National Forest lands, provided that adequate building material blending and landscape designs are employed at the site (see "Visual Character" and "View Corridors" above). No significant

impacts relating to project inconsistency with the Forest Service's VMS are identified.

MITIGATION MEASURES

Unless otherwise noted, the following mitigation measures would mitigate significant and potentially significant impacts to less-than-significant levels:

Visual Character

- The project applicant should fully comply with all pertinent objectives, policies, actions of the Draft Conservation/Open Space Element of the Mono County General Plan (draft May 1992).

- Only glare resistant glass and building materials should be used in the construction of the proposed project. Prior to project approval, the applicant should submit a detailed list of proposed building materials and colors to the Mono County Planning Department. The planning director should approve building material list prior to project approval.

- Nighttime lighting should be designed with low mounting heights, shielded and direct. Nighttime lighting should be minimized to that necessary for safety and security.

- The project applicant should submit to the Mono County Planning Department a detailed landscape plan which specifies design, location, and species of vegetation. Existing trees on the project site should be maintained on site and incorporated into landscape plans. As required by County policy, landscape plans should be submitted and approved prior to issue of use permits.

View Corridors

- In developing the landscape plan, the applicant should take the visually prominent areas identified in Figure 1 into special consideration. In these identified areas, mature, native, drought resistant species should be planted in a manner which maximizes visual screening quality. Landscape berms should be employed in the restaurant parking area and on the ridgeline where homes are proposed.

Scenic Highways Management.

- If necessary, the existing Scenic Turnout and Kiosk near the proposed entrance of the project site should be moved at the developer's expense to a location agreed upon by the Mono County Planning Department and U.S. Forest Service.

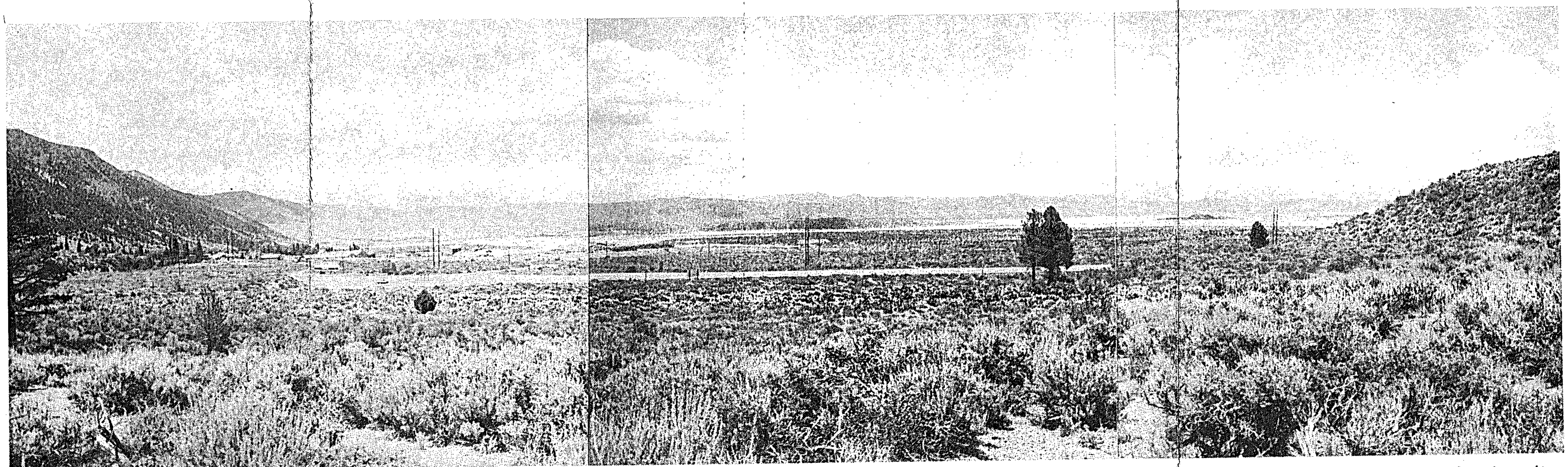


Plate A: View from center of project site looking north showing site characteristics.

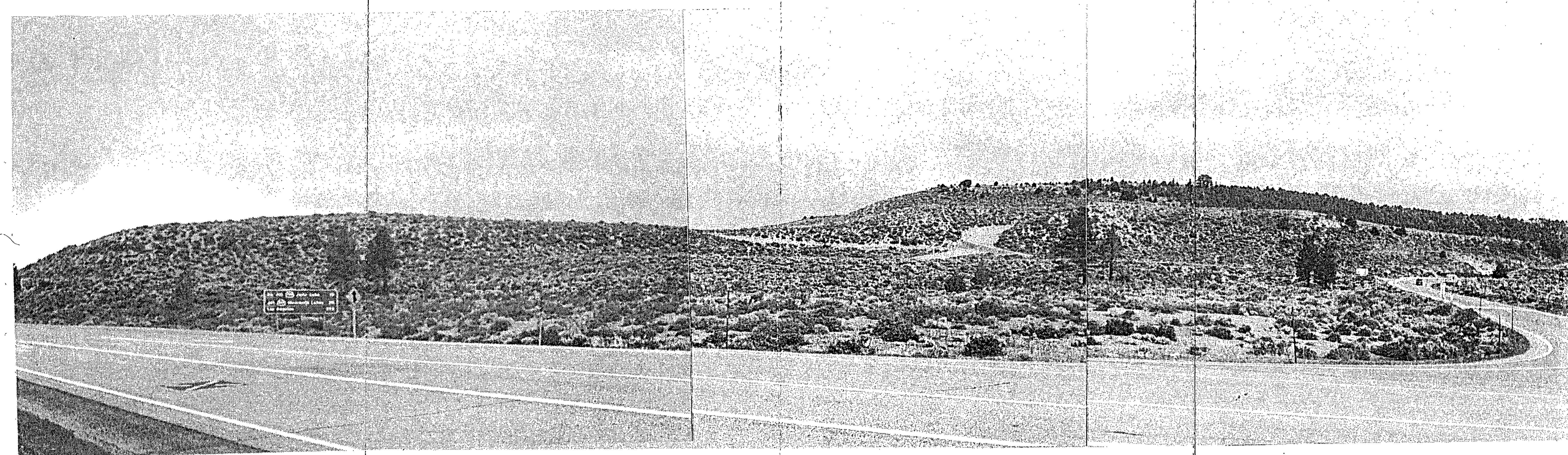


Plate B: View from north side of U.S. 395 at junction with S.R. 120 looking south across project site.

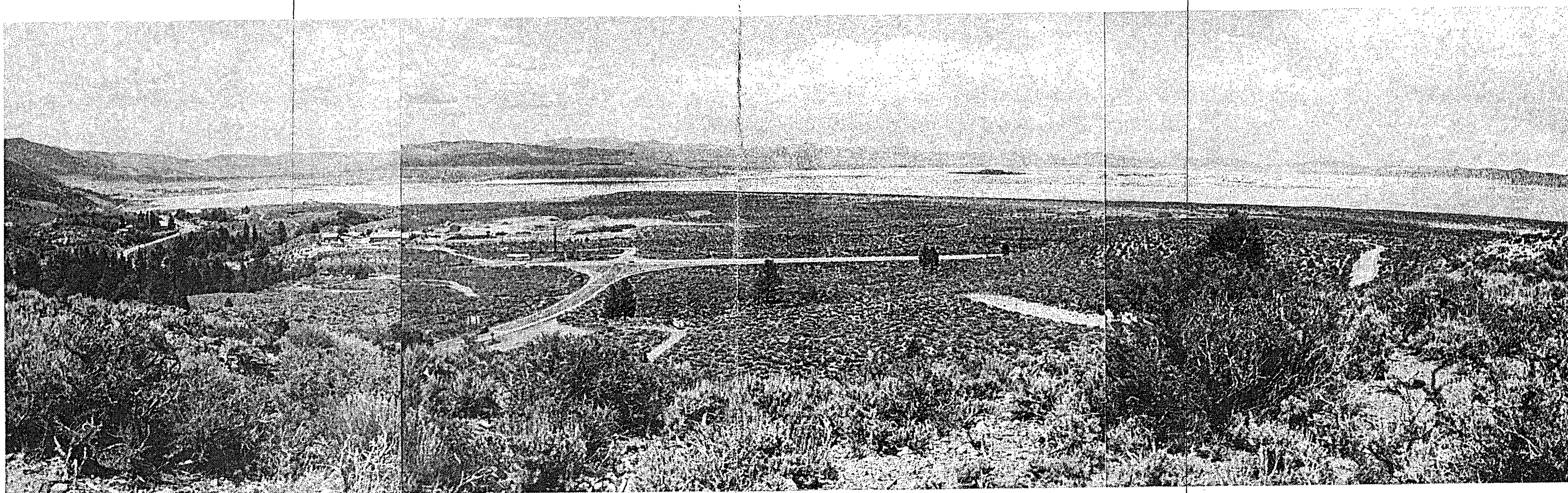


Plate C: View from upper plateau of project site looking north, showing panorama of Mono Basin and project site in foreground.

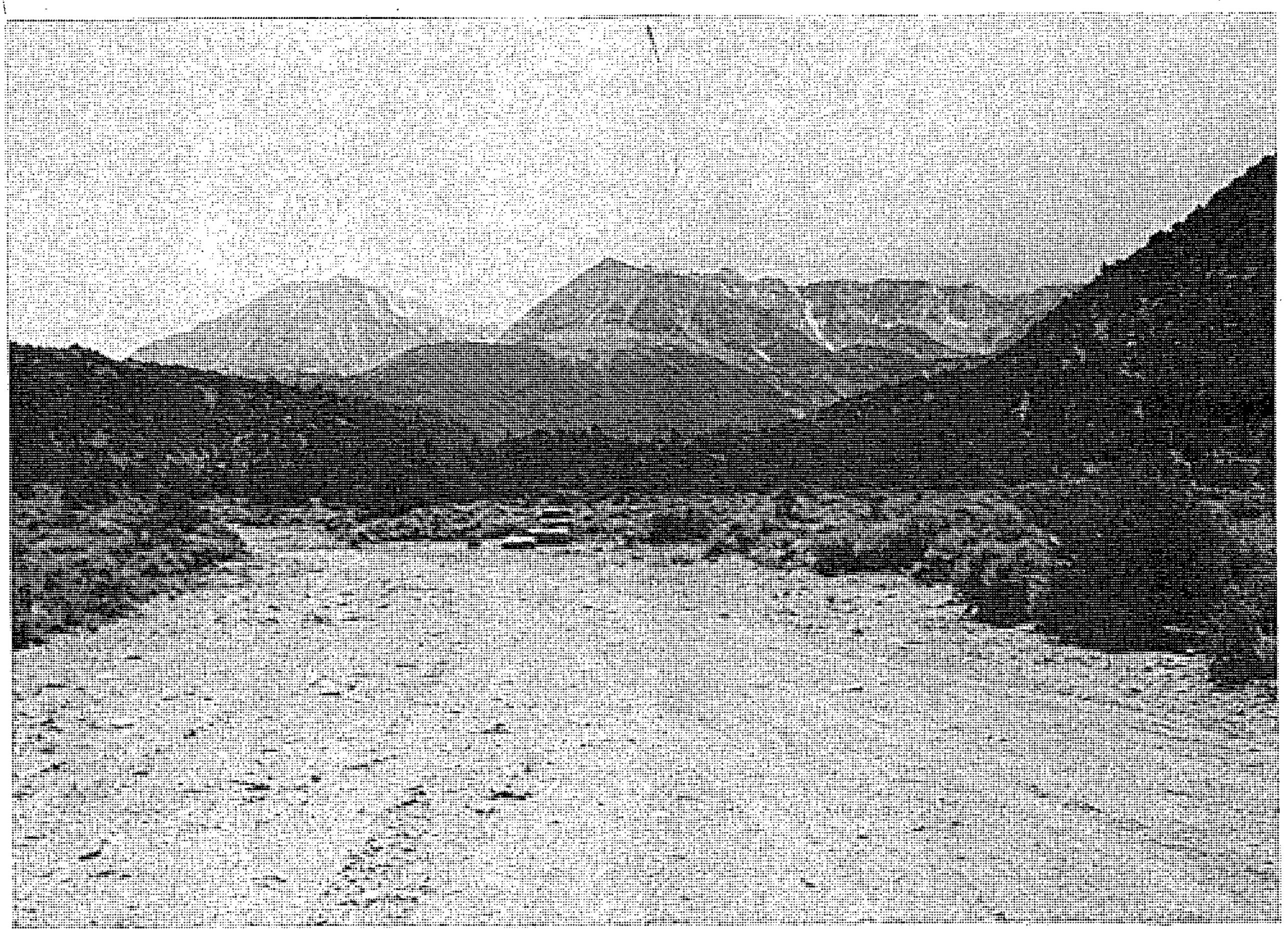


Plate D: View from upper plateau of project site looking south up Tioga Pass.

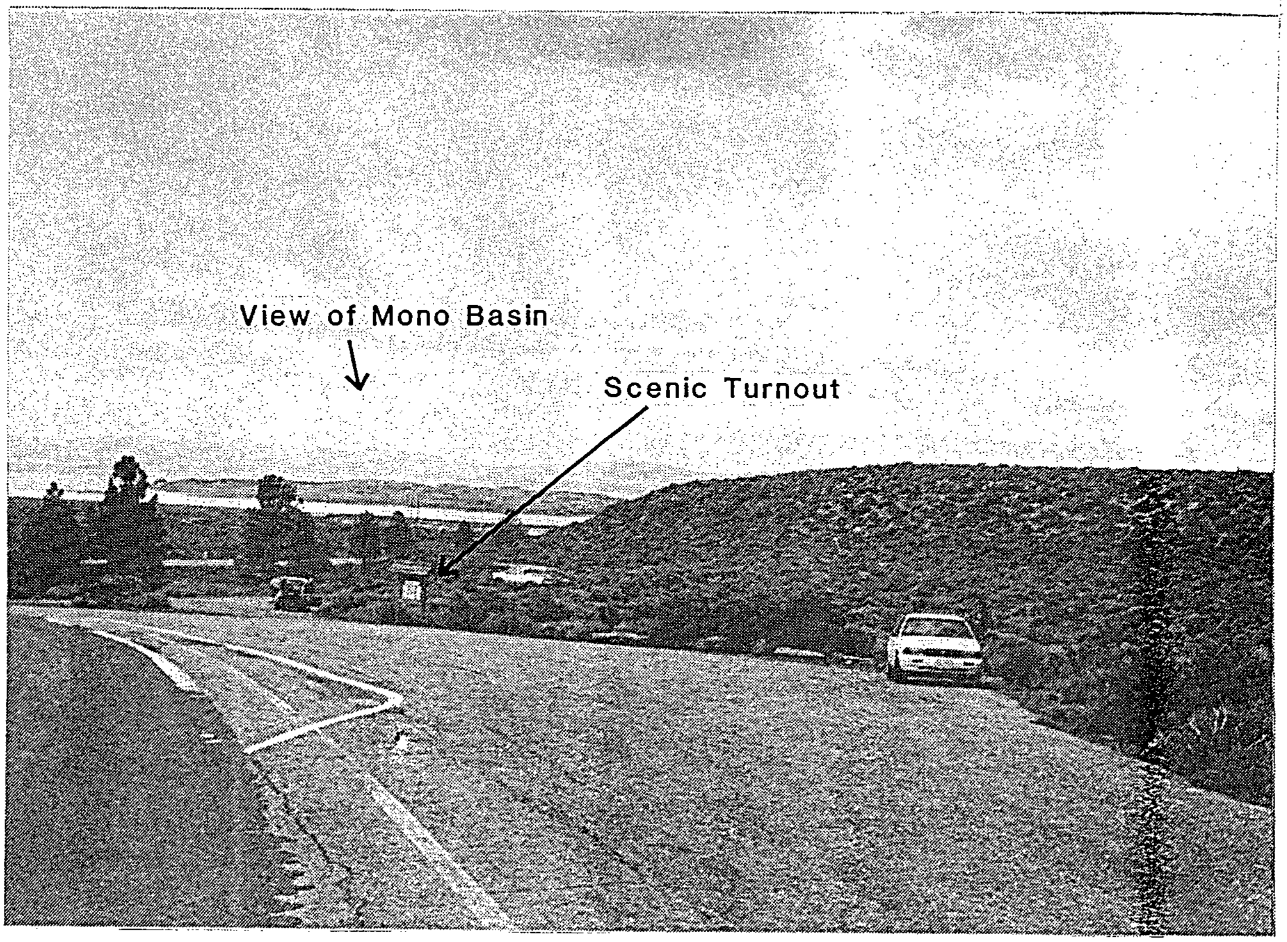


Plate E: View from S.R. 120 on western side of project site looking north showing scenic turnout and the S.R. 120-Mono Basin view corridor.

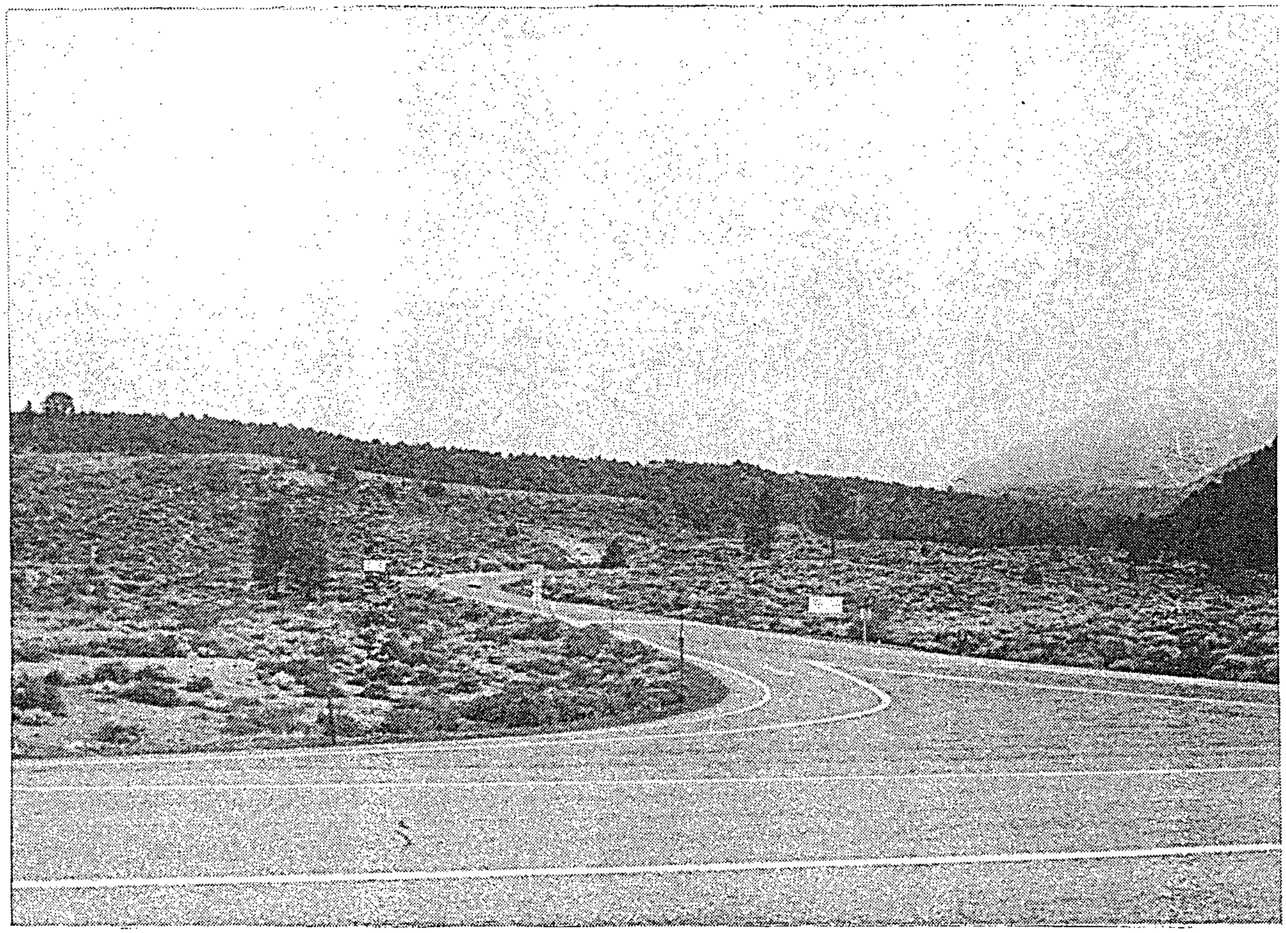


Plate F: View from north side of U.S. 395 looking south showing the U.S. 395-Tioga Pass view corridor.

Note: Distant view occluded by clouds.

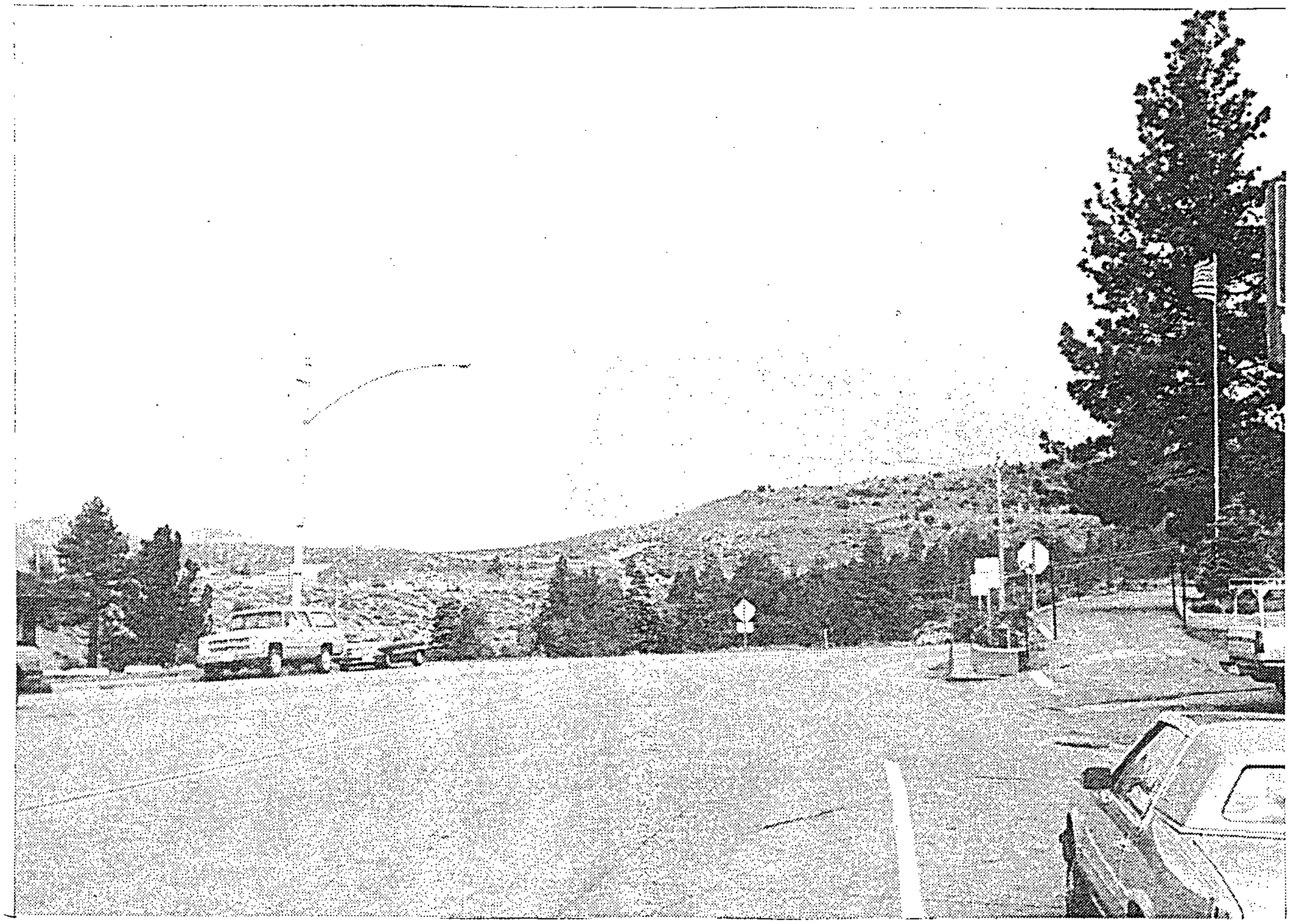


Plate G: View from State Route 395 in Lee Vining, looking southeast towards the project site.

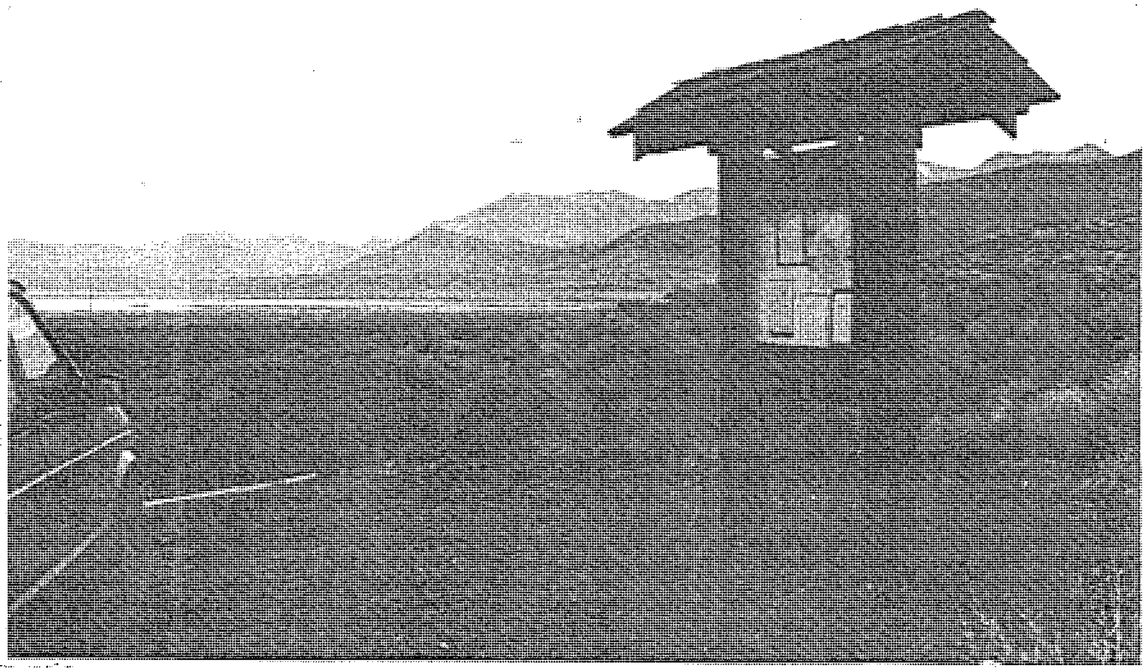


Plate H: View from Black Point looking south towards the project site.

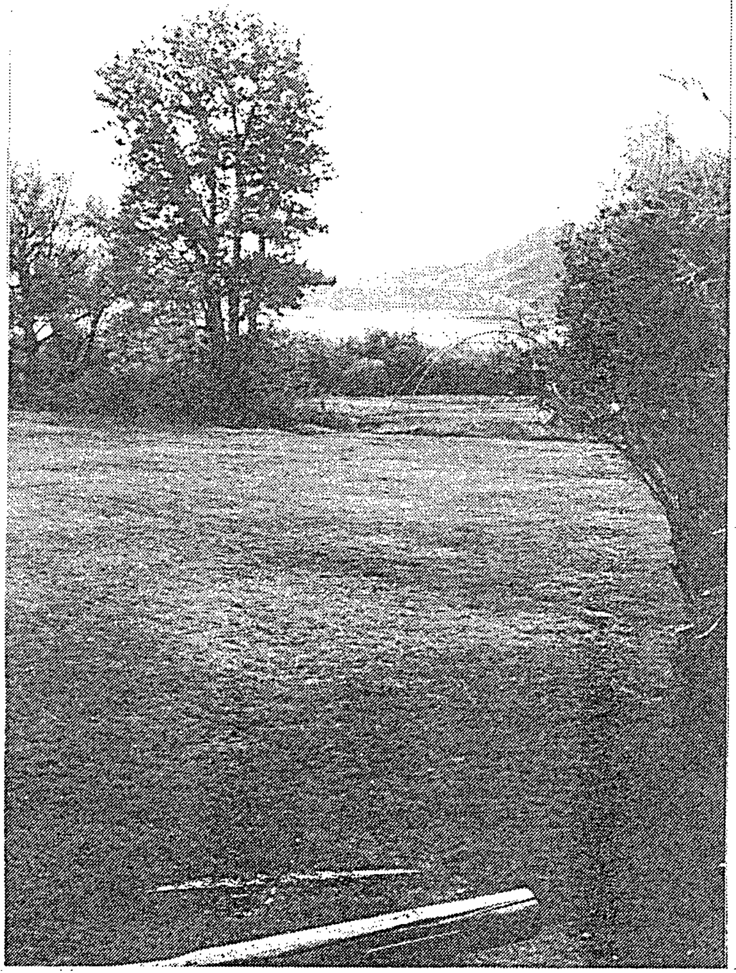


Plate I: View from county park looking south towards the project site.

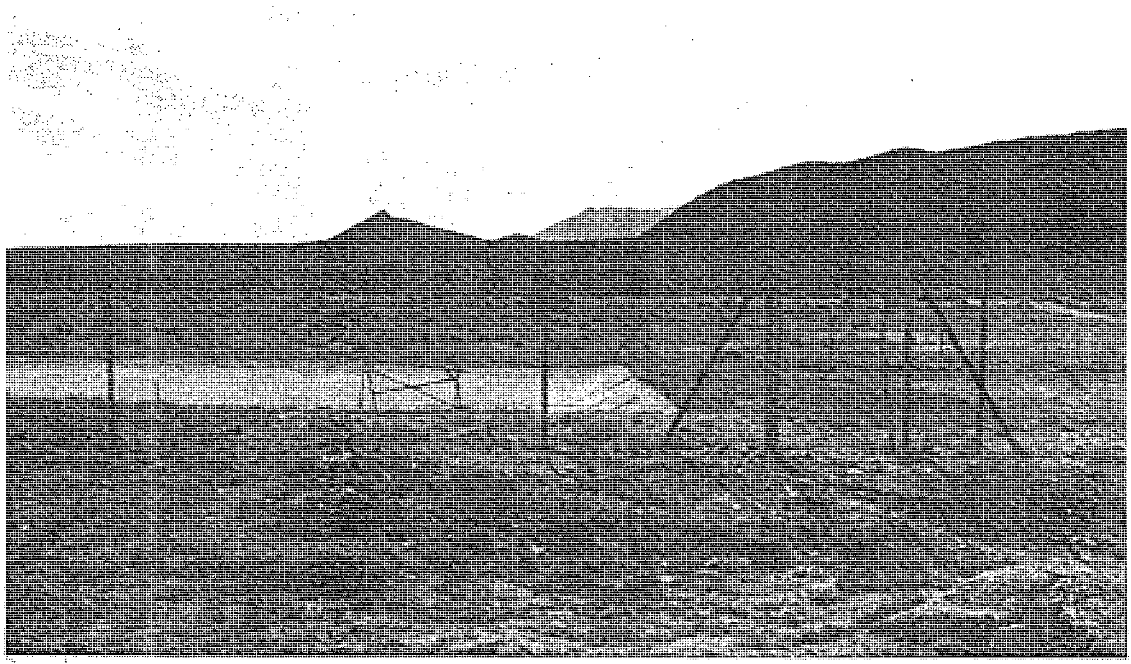


Plate J: View from bottom of Lee Vining Canyon at Mono Lake looking south towards the project site.

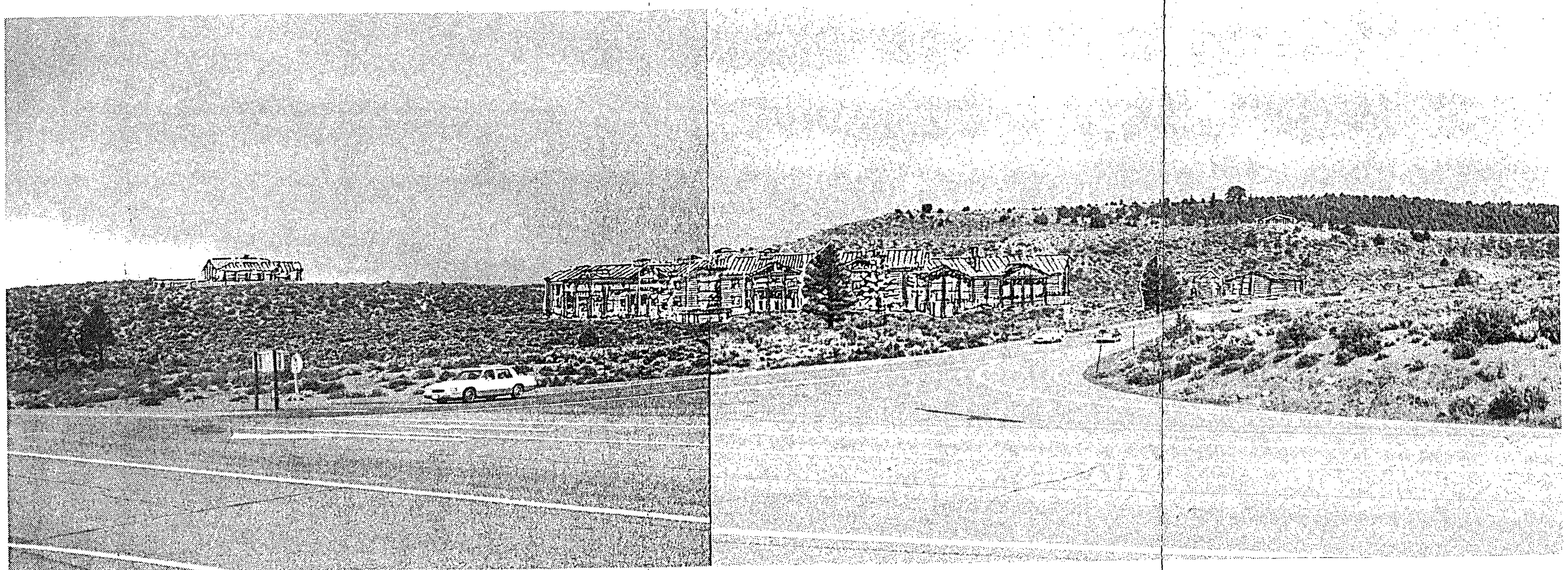


Plate K: Photosimulation of proposed project from north side of U.S. 395 at junction with S.R. 120 looking southeast.

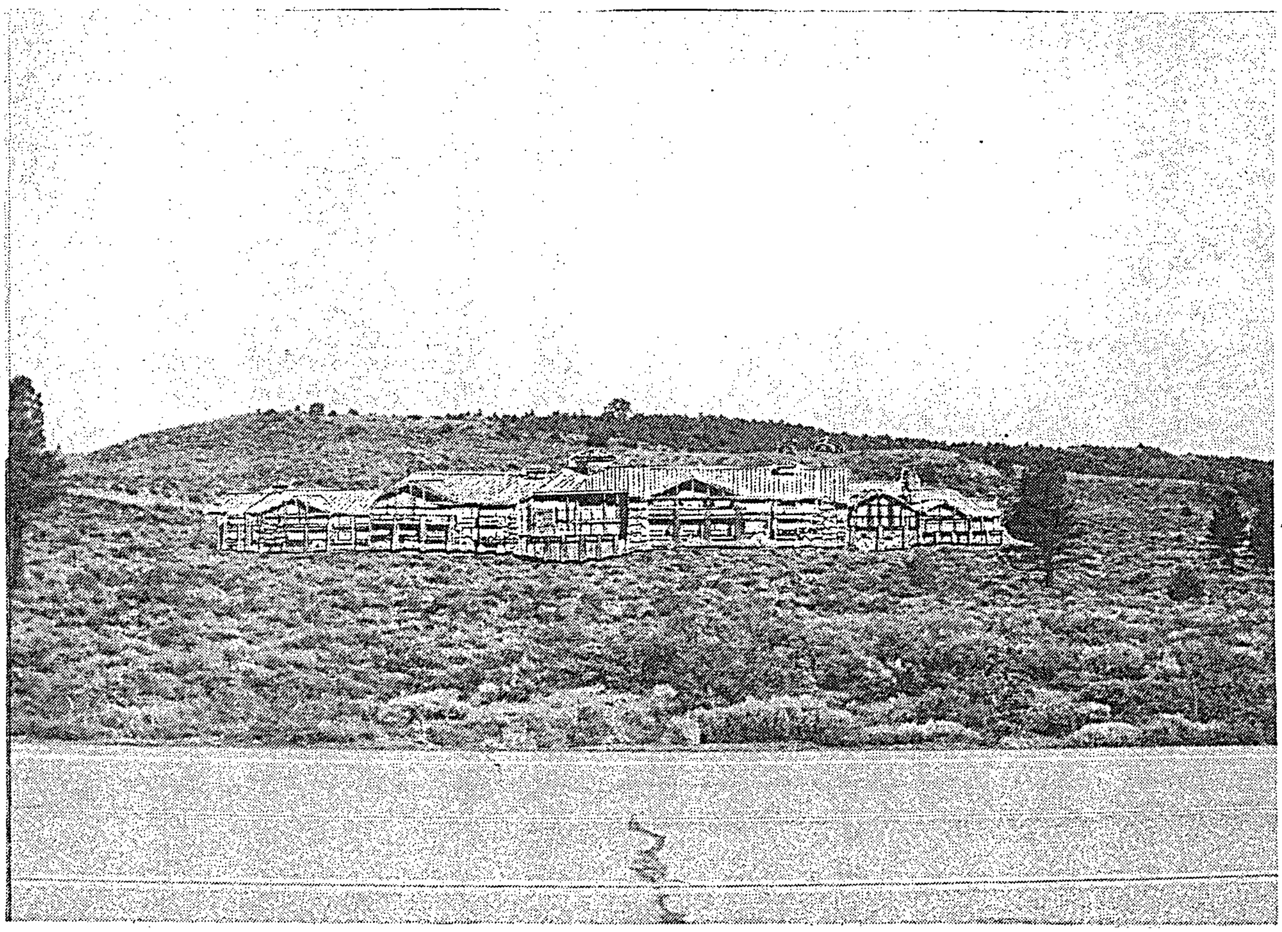


Plate L: Photosimulation of proposed project from north side of U.S. 395 looking south at the U.S. 395-Tioga Pass view corridor.

Note: Distant view occluded by clouds.

WILDLIFE and BOTANICAL REPORT

Report 3

TIOGA INN

VEGETATION AND WILDLIFE ASSESSMENT STUDY

FINAL REPORT

June 1992

Prepared for:

Mono County Planning Department
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TABLE OF CONTENTS

I. INTRODUCTION

The proposal to develop the Tioga Inn near Lee Vining, California, has raised concerns with respect to potential deleterious impacts on local wildlife, especially migratory Rocky Mountain mule deer (_Odocoileus hemionus_) which use the project area and vicinity. A brief evaluation of biological resources on the proposed project area was conducted by a private consultant on October 28, 1984 (White 1984). This assessment was considered by the California Department of Fish and Game (CDFG) and other agencies to be lacking information on site-specific mule deer use of the area. In addition, it did not address potential significant impacts of the proposed development on mule deer and other biological resources. In response to recognized concerns and in order to initiate the environmental review process pursuant to the California Environmental Quality Act (CEQA), the Mono County Planning Department (MCPD) contracted the present investigator to allow an assessment of the importance of the area to deer and other wildlife.

Deer which use the project area and vicinity are from the Casa Diablo herd, a migratory mule deer herd consisting of approximately 1,500 animals that winters at lower elevations near Benton, California, some 35 airline miles east of the Project Area (Figure 1). The herd summers primarily on the east slope of the Sierra Nevada, from Mammoth Lakes, north to Lundy Canyon. From January 1986-December 1988, an intensive ecological

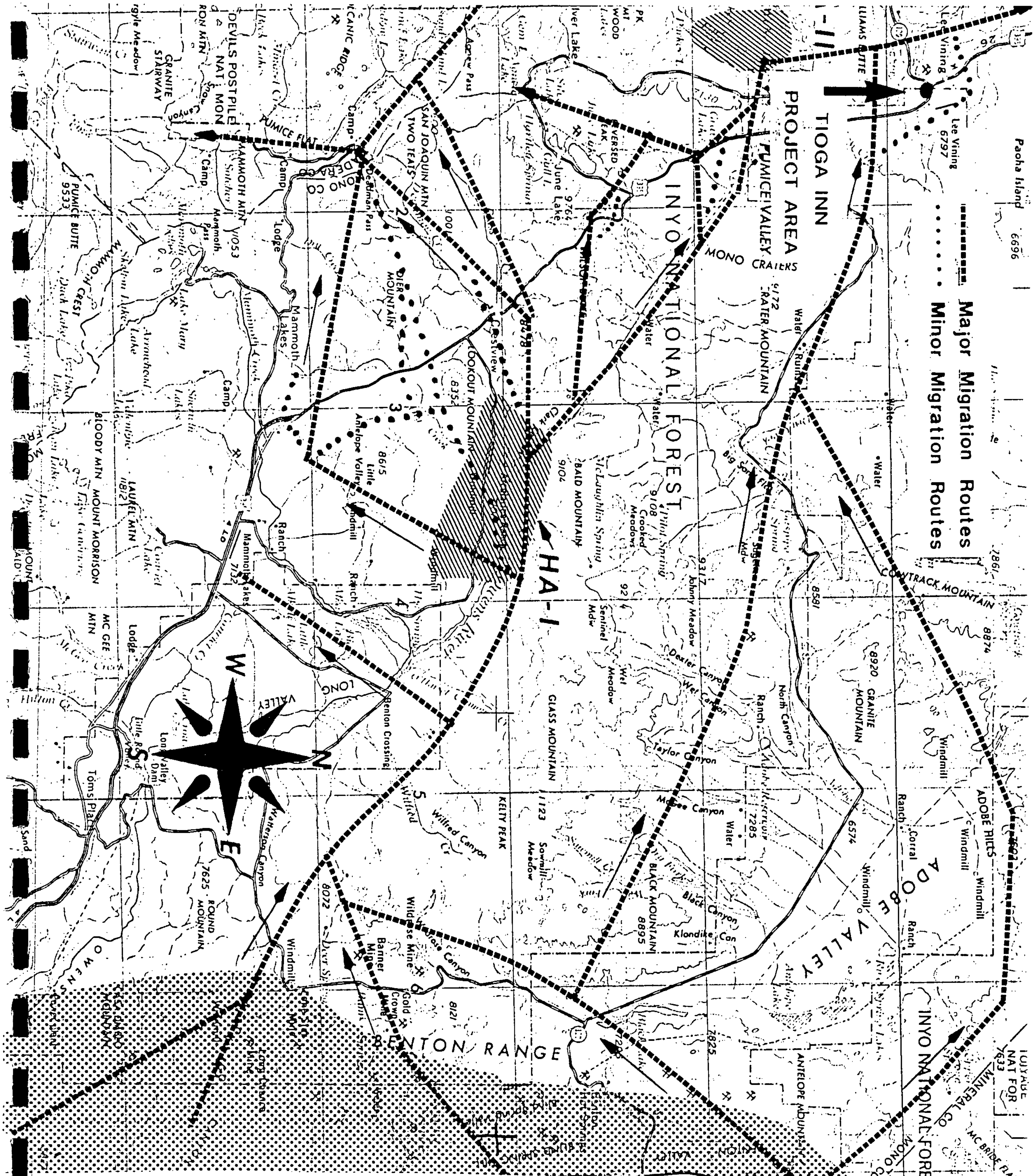


Figure 1. Regional map showing the location of the Tioga Inn Project Area in relation to Casa Diablo deer herd wintering areas, holding areas, and migration routes in Mono County, California (Taylor 1988).

investigation of the Casa Diablo deer herd was conducted by the present investigator under contract with CDFG (Taylor 1988a). This investigation revealed that approximately 26% of all deer which winter near Benton, migrate west to summer range located within and adjacent to the Lee Vining Canyon area.

A review of Laudenslayer Jr. et al. (1991) revealed that no federal or state-listed or candidate rare, threatened or endangered amphibians, reptiles, birds, or mammals are expected to occur within the Project Area. However, the Project Area is potential habitat for several "Special Animals" which refers to all vertebrate and invertebrate taxa of concern to the California Department of Fish and Game Natural Diversity Data Base (NDDB), regardless of their legal or protection status (CDFG 1988). "Special Animals" which are known within the vicinity of the Project Area include:

1) American Badger (Taxidea taxus)
   Status: CDFG species of special concern

2) Western White-tailed Hare (Lepus townsendii townsendii)
   Status: CDFG species of special concern

3) Golden eagle (Aquila chrysaetos)
   Status: CDFG species of special concern, California "fully protected" species, no federal status

4) Prairie falcon (Falco mexicanus)
   Status: CDFG species of special concern, no federal status

5) American Peregrine Falcon (Falco peregrinus anatum)
   Status: California-listed Endangered Species, Federal listed Endangered species, California Fully Protected species.

A review of the NDDB revealed that the following sensitive plants species are known to occur in the vicinity of the Project Area:

Mono Buckwheat (Eriogonum ampullaceum)
Status: no state status, federal Category 2 candidate, California Native Plant Society List 1B (rare, threatened or endangered in California and elsewhere)

The objectives of the present investigation are to: 1) describe and quantify the amount, timing, and specific locations of deer use of the Tioga Inn Project Area during the spring migration of 1992; 2) determine the relative abundance and habitats of Federal candidate, proposed or listed threatened or endangered species, state-listed species, and locally sensitive plant and animal species that are found at or near the Tioga Inn Project Area; 3) provide a complete description of all vegetative communities occurring within the Tioga Inn Project Area; 4) assess and quantify direct, indirect, and cumulative potential project-related impacts on wildlife and associated sensitive habitats; and 5) provide a specific mitigation plan to offset potential project-related impacts.

The information in this report will be incorporated into a Draft Environmental Impact Report (EIR) prepared for the Tioga Inn by the Mono County Planning Department.

II. ACKNOWLEDGMENTS

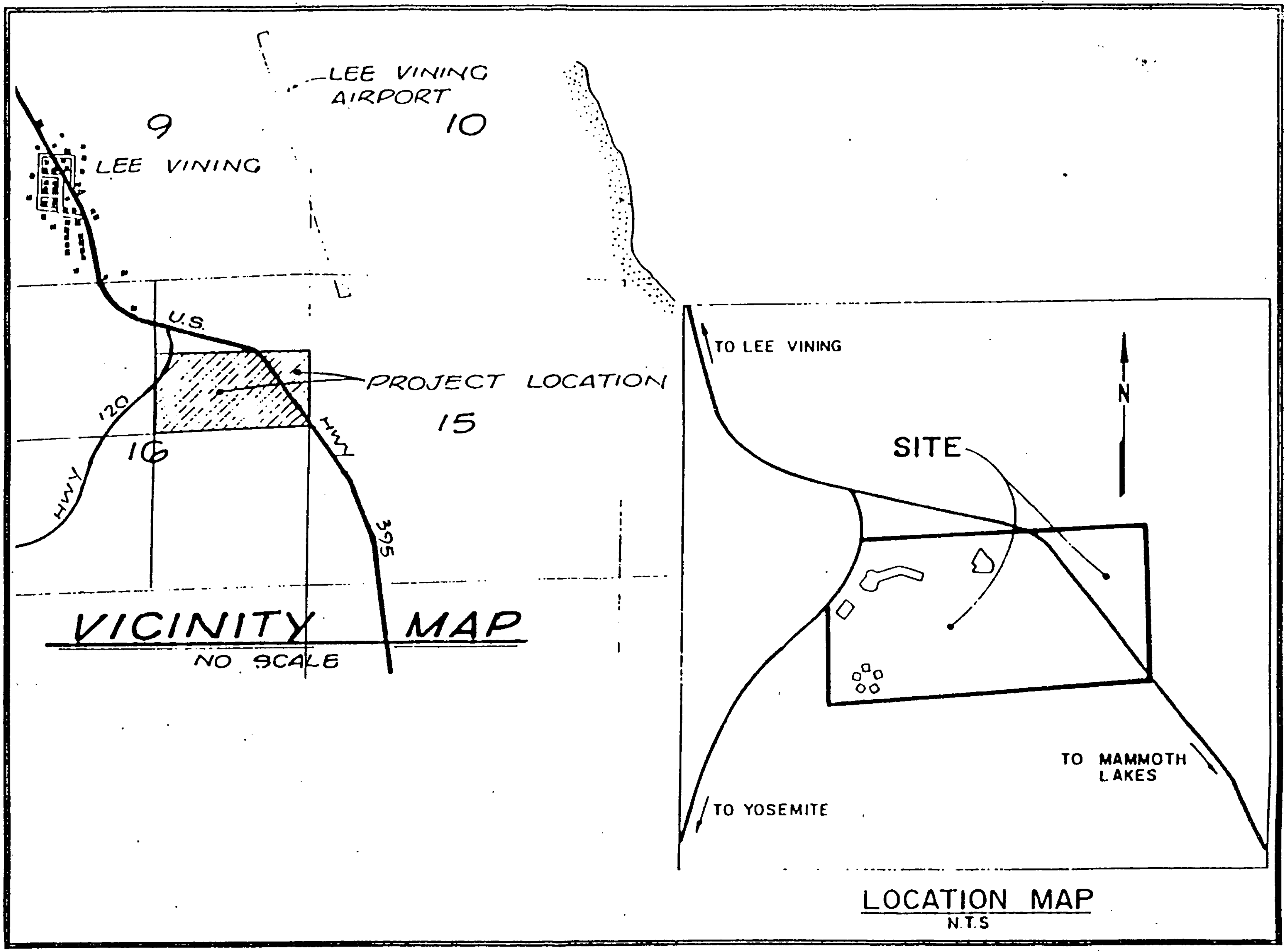
This investigation was conducted under a contract with the Mono County Planning Department, the lead agency for this

project. Some of the data presented here is from a DFG funded radio-telemetry study of the Casa Diablo herd which was conducted from January 1986-December 1988. The information presented in this report is to be used entirely for the purpose of assessing the environmental effects of the proposed Tioga Inn, and are not for publication, citation or other use without permission of the author.

III. STUDY AREA

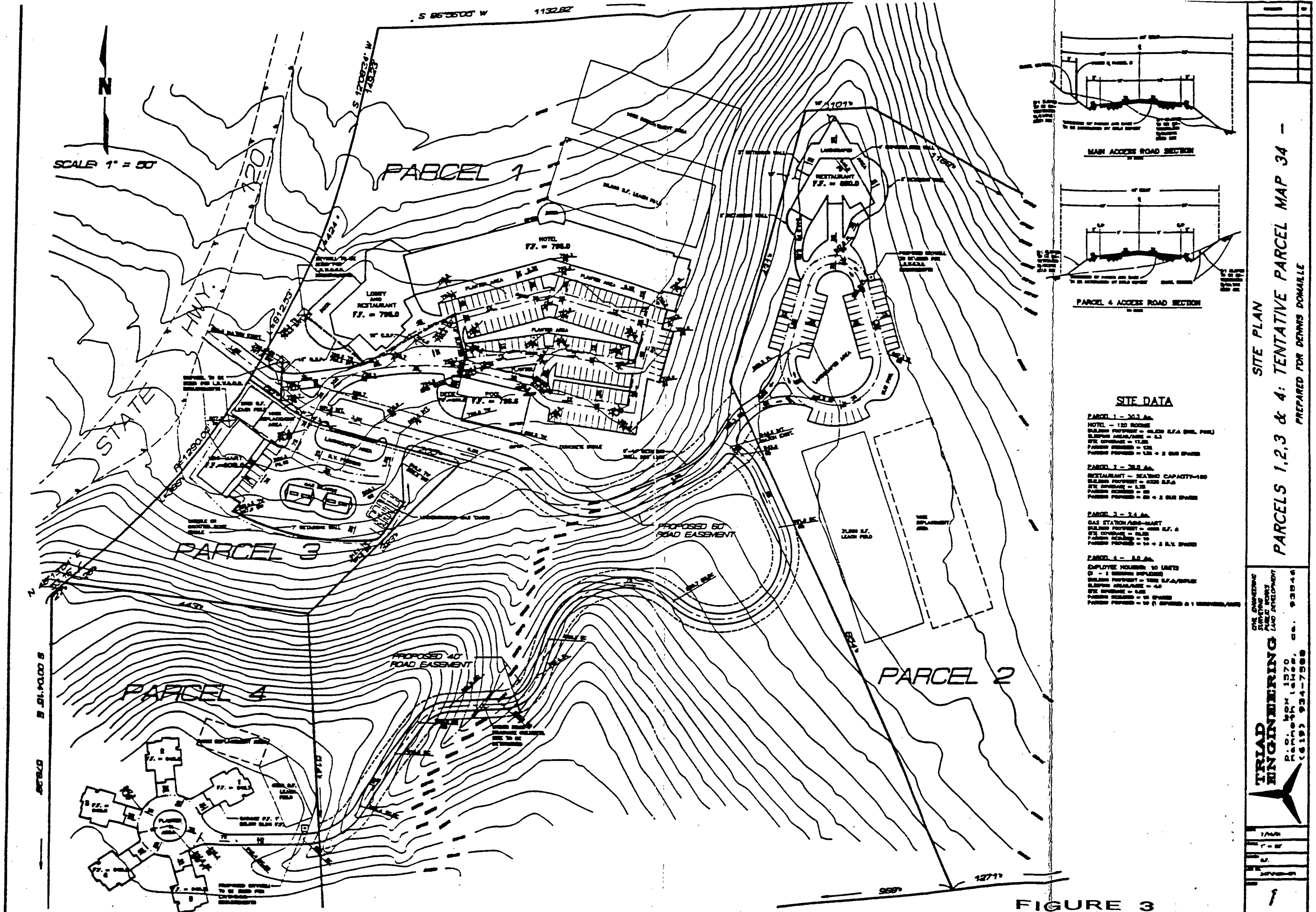
The site of the proposed Tioga Inn, hereafter designated the Project Area, is located approximately one-half mile south of Lee Vining, California, southeast of the intersection of Highways 395 and 120 in the S 1/2 of the NE 1/4 of Section 16, T. 1 N., R. 26 E (Figure 2). It encompasses approximately 70 acres and is bordered by Highway 120 on the north, Highway 395 on the east, and USFS land on the south and west. Elevations on the project area range from approximately 6,800 to 7,000 feet.

The proposed Tioga Inn will include a 120 room full service motel, a 100 seat restaurant, a gas station/mini-mart, and 10 units of residential housing (Figure 3). The hotel will be situated on Parcel 1 (30.3) about 800 feet south of the intersection of Highways 120 and 395. The proposed restaurant will be situated on Parcel 2 (36 acres), the gas station mini-mart on Parcel 3 (2.4 acres), and the 10 units of residential housing on Parcel 4 (5.0 acres).



PROPOSED TIOGA INN & RESTAURANT

Figure 2. Location of the Tioga Inn Project Area near Lee Vining, California.



N
SCALE: 1" = 50'
PARCEL 1
PARCEL 2
PARCEL 3
PARCEL 4
STATE HWY. 120
PROPOSED 60' ROAD EASEMENT
PROPOSED 40' ROAD EASEMENT
MAIN ACCESS ROAD SECTION
PARCEL 4 ACCESS ROAD SECTION
SITE DATA
SITE PLAN
PARCELS 1,2,3 & 4: TENTATIVE PARCEL MAP 34 -
PREPARED FOR DENNIS DOMAILLE
TRIAD ENGINEERING

FIGURE 3

IV. METHODS

Mule deer use of the project vicinity during the spring of 1992 was determined from a DFG funded radio-telemetry study of the Casa Diablo deer herd conducted from January 1986-December 1987, and track counts funded by the project proponent.

A) Mule Deer

1) Radio-telemetry

Deer were captured on Casa Diablo deer herd winter ranges from January 1986-March 1986 and February 1987-March 1987 using Clover traps (Clover 1956), drive nets and a Bell Jet Ranger III helicopter (Beasom et al. 1980), and a hand-held net gun. All captured deer were physically restrained and marked with large, plastic, consecutively numbered cattle ear tags (7.5 x 11.5 cm; Allflex Tag Systems, Harbor City, Calif.), color coded to wintering area. Twenty-four adult does were fitted with radio-collars. In addition, 1 adult male was instrumented with a radio transmitter mounted on expandable collars to allow for neck swell during the rut.

The locations of all radio-collared animals were obtained by triangulation from the ground or from a fixed-wing aircraft. Deer were located 3-4 times weekly during the spring and fall migrations. During the summer and winter months deer were located 1-2 times weekly. Initial ground locations were made from a vehicle equipped with a Telonics TR-2 receiver with an attached program/scanner (TS-1) and a base loaded whip antenna. Triangulation bearings were obtained using a hand-held, 2 element antenna (RA-2A; Telonics, Inc., Mesa, Ariz.). Visual sightings of radio-collared deer were made whenever possible. Radio locations and visual sightings of radio-collared deer were marked on U.S. Geological Survey 7.5 and 15 minute series topographic maps.

Fixed-wing flights were conducted once weekly, weather permitting, during the winter and summer months, usually between 0800 and 1000 hours. Flights were conducted from a Cessna 185 at air speeds of 120-180 km/hr.

2) Track Counts

From radio-telemetry studies (Taylor 1988), it was determined that deer migration through the project vicinity occurs generally in a westerly and northwesterly direction. Accordingly, the investigator selected a track count survey route that incorporated dirt roads running in a generally north-south direction through and adjacent to the Project Area, bisecting the direction of spring migration (Figure 4). The route selected was 0.7 miles in length and began approximately 0.4 miles south of the Project Area at the junction of Highway 120 and the Los Angeles Department of Water and Power (LADWP) aqueduct road. In order to increase specificity of data, the 0.7 mile survey route was divided into even length segments recognizable by

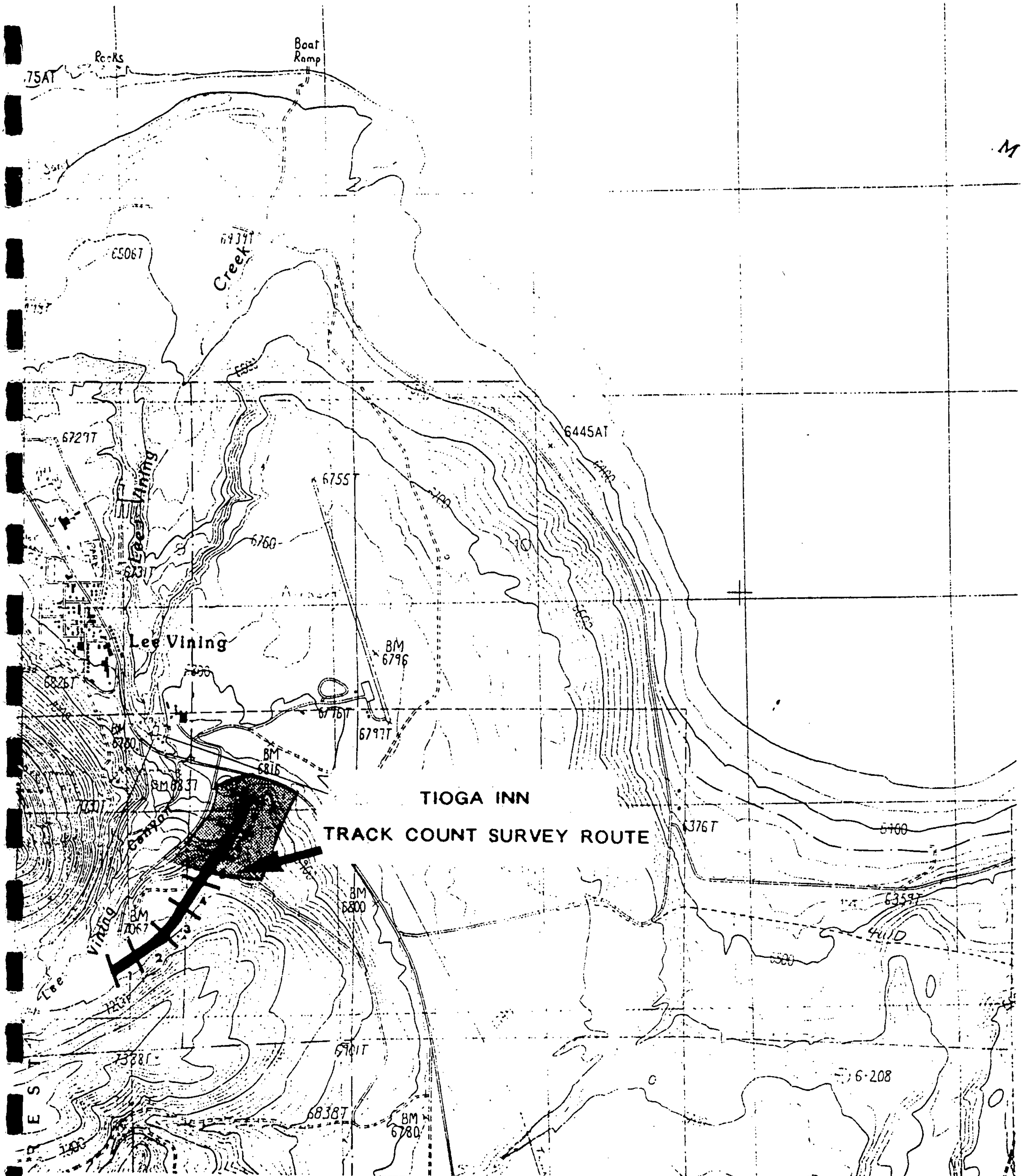


Figure 4. Location of the track count survey route within and adjacent to the Tioga Inn Project Area.

flagged local landmarks. Segments 1-4 were located along the aqueduct road; segments 5-7 were located within the Project Area (Figure 4).

On the evening prior to each track count survey, usually around 1700 hours, the road surface of each transect was prepared for counting by grading with a drag made of a 5 foot section of chainlink fence. Dragging erased old tracks enough so that new tracks were visible. During each track count survey, which was conducted the following morning between 0700 and 0800 hours, both transects were surveyed on foot and the number of all tracks observed were recorded along with their direction of travel. Thus, the elapsed time from road preparation to track counting ranged from 14-15 hours. The direction of travel assigned to a track was the actual compass direction in which it was headed, e.g., northeast, southwest, etc. A track headed down the road was followed until it turned off the road; the direction in which it turned was subsequently recorded as its direction of travel.

Recording tracks by road segment was designed for the purpose of providing a quantitative representation of deer movement through each parcel. Recording tracks by direction of travel was designed to allow for separation of localized back-and-forth movements, performed by holdover and resident deer, from migratory movements.

3) Ground Surveys

Ground surveys of the entire Project Area were conducted on a weekly basis to identify any particular important travel routes or feeding, fawning or resting areas. All deer observed during field work were counted, classified by sex and age (adult or fawn) and their locations recorded.

B) OTHER WILDLIFE

In order to determine the presence, relative abundance, and locations of species other than mule deer, ground surveys were conducted on a weekly basis throughout the entire Project Area. Surveys were conducted in a non-systematic way by walking over each parcel and recording the presence of all wildlife species observed. Once an animal was detected, its numbers were determined, and location and activity, e.g., feeding, perching, roosting, etc., identified.

C) RARE PLANT AND VEGETATION SURVEYS

Because Eriogonum ampullaceum typically flowers toward the latter part of July, field surveys for this small annual cannot be conducted until that time. Surveys for Eriogonum ampullaceum will be conducted by Mark Bagley, a local botanist familiar with this species. Prior to surveys for Eriogonum ampullaceum, the phenology of known populations of this species will be examined to facilitate proper identification. Surveys for Eriogonum ampullaceum will include systematic walking transects located at ≤ 50 foot intervals, providing an estimated 25-50% sample coverage of the Project Area. In addition all plant species seen on sight will be identified to at least genus and to the level necessary to ensure that they too are not sensitive species. Those species not readily identifiable in the field will be collected for later determination. A list of all plants encountered on the site will be compiled by vegetation type.

A vegetation map of the entire area was prepared by the investigator. All vegetative communities were identified, their major components quantified, and locations mapped on U.S. Geological Service 7.5 minute series topographic maps.

V. RESULTS

A. Mule Deer

1) Radio-telemetry

a) Seasonal Movements--The annual life-cycle of deer from the Casa Diablo herd consists of four periods: spring migration, summer, fall migration, and winter. The spring migration begins in early April when deer leave the winter range and move in a westerly direction, along the base of the southern escarpment of the Glass Mountains, to a large spring holding area located on the upper Owens River (Taylor 1988). Holding areas are bulbous expansions of the migration corridor located at intermediate elevations where deer congregate for 2-6 weeks during the spring and fall migrations (Bertram and Remple 1977). These areas are typical of migratory mule deer (Leopold et al. 1951, Russel 1932) and are recognized for their importance in providing nutritional spring forage for does in their third trimester of pregnancy (Bertram and Remple 1977, Bertram 1984, Loft et al. 1984, Kucera 1988). When deer increase their intake of easily and quickly digested types of forage, metabolites are readily absorbed and the net energy available to deer is greatly increased (Short 1981). As a result, deer are able to reverse the negative energy balance acquired over the winter and improve their overall physiological condition (Garrott et al. (1987).

Another reason for deer delaying spring migration on the upper Owens River holding area may be the effects of weather on plant phenology, which is paramount among factors that influence forage availability (Nelson and Leege 1982). Throughout the eastern Sierra, the availability of succulent forage is related closely to snow conditions in the spring, and these two factors appear to strongly influence the timing and rate of migration from lower to higher elevations. Delaying spring migration several weeks until snow conditions have retreated allows Casa Diablo deer to move quickly through the migration corridor to summer ranges where quality forage is readily available. By arriving on summer ranges at a time when the snowpack has receded and plant phenology is at a later stage, pregnant does with increased energy demands can maintain the high gross energy intake levels they experienced on lower elevation holding areas.

The timing of spring migration from the winter range was similar in 1986 and 1987, despite extreme differences in snowfall amounts recorded during the winters of 1985-86 and 1986-87. In both years, deer began arriving on the upper Owens River holding area in late March.

During the spring migrations of 1986 and 1987, 19 of 27 radio-collared deer from the Casa Diablo winter range migrated west along the south slope of the Glass Mountains to the holding area located near the upper Owens River (Figure 1) (Taylor 1988a). Of these 19 deer, 13 continued north from the upper Owens River to summer range located in the June Lake, Lee Vining and Lundy Canyon areas. After leaving the upper Owens River, these deer migrated around the south end of the Mono Craters and crossed Highway 395 near the Aeolian Buttes. They then continued in a westerly direction around the north end of Grant Lake to another spring holding area located in the Parker Bench/Sawmill Meadow areas. Deer remained on this holding area for an average of eight days, after which time they dispersed to their summer ranges. Six deer continued north, four of which summered in Lee Vining Canyon, one in Lundy Canyon and one at Lower Twin Lake near Bridgeport. Of the four deer which summered in Lee Vining Canyon, two summered on the Burger Preserve located on the north side of the canyon adjacent to the USFS Lee Vining Ranger Station; one summered on upper Lee Vining Creek near the

Southern California Edison Pool Plant; and one summered on lower Lee Vining Creek immediately adjacent to the Project Area. In addition, 12 non-radioed ear-tagged deer were also observed in Lee Vining Canyon during the summers of 1986 and 1987 (Taylor 1988a).

Assuming that the radioed sample was representative of the entire population of deer wintering in the Casa Diablo deer herd, a reasonable assumption given the trapping methods, about 22% of the Casa Diablo herd moved through or summered within the Lee Vining area during the spring and summer of 1986 and 1987. At that time, the Casa Diablo herd was estimated to have a winter population of about 1500 animals. Thus, it can be estimated that some 300 deer from the Casa Diablo deer herd summered within or migrated through the vicinity of Lee Vining.

Deer arrive on the summer range in May and June, produce fawns in July, and begin fall migration back to the winter range in October. Fall migration is more rapid than that of spring and is usually triggered by the first fall snow storm. The usual pattern is for the first fall storm to deposit snow at the higher elevations of the summer range during the first two weeks of October. This causes many high elevation deer to move to the upper Owens River holding area where they find adequate forage and cover. Then there is often a dry period until late October or early November when more severe storms move deer from the holding area to the winter range.

During the fall migration of 1986, 83% of radio-collared deer migrated from the summer range between 3 October and 8 November. In 1987, 82% of radio-collared deer migrated from the summer range between 11 October and 3 November. In both years, radioed deer spent an average of 10 days (range 1-41 days) during fall migrations on the Upper Owens River holding area (Timothy Taylor, pers. files). Deer were frequently observed on this holding area until mid-November, after which time they moved further east to the winter range. Radio-collared deer monitored for >2 consecutive years (n = 16) displayed strong fidelity to migration routes and holding areas. Deer arrive on the winter range in November and December, breed in December and January, and begin the annual life-cycle again.

2) Herd Characteristics and Management

The Casa Diablo deer herd has experienced extremely poor recruitment rates over recent years. Since 1986, spring fawn:doe ratios have averaged 22 fawns per 100 does. Reproductive studies of the Casa Diablo deer herd conducted in 1987 and 1988 suggest that poor fawn recruitment may be related to high neonatal losses on the summer range. Several factors are believed to contribute to neonatal losses including: 1) conflicts with land uses (i.e., OHV's, livestock grazing, recreation activities, etc.) that are either physically detrimental to deer habitat or decreasing the use of potentially productive deer habitat; 2) increased predation from mountain lions (_Felis concolor_) and other predators; and 3) the possible lack of adequate forage on spring and summer ranges as a result of seasonal drought and overgrazing by livestock, which may result in reduced maternal nutrition in pregnant does prior to fawning (Thomas 1985, Taylor 1988b).

Buck to doe ratios have fluctuated over the years within the Casa Diablo herd, and are currently low to due to low recruitment. From 1985-1991, post season buck ratios averaged 9.3 bucks per 100 does (DFG files). The most recent population estimate for the Casa Diablo herd based on the best available information is about 1500 animals (Ron Thomas, DFG, pers. comm.)

The primary management goal of DFG for the Casa Diablo herd is to restore deer numbers to levels compatible with existing range conditions and uses (Thomas 1985). According to the Casa Diablo deer herd management plan, this goal can be obtained by maintaining a spring population that is within carrying capacity of the range (2245 deer) (Thomas 1985). Therefore, current objectives are to maintain spring fawn ratios at 50 fawns per 100 does during cycles when the herd population is lower than usual, and to attain and maintain post season buck ratios of 20 bucks per 100 does (Thomas 1985).

3) Track Count Surveys

a) Timing and intensity of migration--Track count surveys were conducted between 17 April and 10 June 1992. A total of 16 surveys were performed during this 54 day survey period. The total number of individual track sets recorded during the survey period was 44. Appendix A, Table 1 presents the total number of tracks counted on each of the 16 surveys. The greatest number of tracks observed on any one survey was 12, on 5 May, after which there was a gradual, uneven diminution in deer activity through mid-June. There were no tracks recorded on surveys performed on 17, 20 and 23 April and 16 and 26 June.

Appendix A, Table 1 presents the breakdown of tracks counted by direction of travel. Of the 44 track sets recorded, 23 sets were headed north and west; 21 were headed south and east. For the purpose of this investigation, tracks crossing the survey route to the north and west are in the direction of spring migration; those to the south and east are opposite. Therefore, the net number of tracks crossing the route to the north and west are migrants while holdover deer or summer resident deer are represented by tracks crossing the route to the south and east.

The objective of this analysis is to treat the 16 surveys as a 16 day sample extending over a survey period of 54 days (17 April-10 June). Therefore, because the 16 surveys covered 29.6% of the 54 day survey period (54/16 = 29.6%), the estimated number of migrants calculated to have moved directly through or adjacent to the Project Area is 77.6 (23/.296 or 23 x 3.375). This number will likely be low since errors in track counting (i.e., missed tracks) may have occurred and daytime migrants are not included.

Now that a crude estimate of the number of migrants has been obtained, the next step is to calculate the amount of holdover or summer resident deer use of project vicinity during the 54 day survey period. Since each migrant is considered to be an individual deer, the number of holdover or resident deer can be stated as an individual deer for that day. This number is expressed in deer-days use. A deer-use day is the amount of use of any area made by one deer over a 24-hour period (Dasmann 1981).

To calculate deer-days of holding over, the number of migratory tracks (i.e., deer that moved toward the summer range) must be subtracted from the total tracks, and the difference divided by 2 to account for holdover deer crossing the survey route and subsequently returning. These calculations are shown in Appendix A, Table 2, where the total number of migrants in column B (23.0) is subtracted from the total number of tracks in column A (44) to derive the total number of nonmigratory tracks in column C (21). Dividing 21 in half to account for back-and-forth movements, yields a total 10.5 holdover deer (column D).

By comparing the migrants (Appendix A, Table 2, column B) with holdover deer (Appendix A, Table 2, column D), it can be seen that for every migrant, an average of 2.2 deer are holding over (sum of column D divided by sum of column B). Since the 16 surveys covered 29.6% of the survey period, a total of 35

(10.5/.279 or 10.5 x 3.375) deer days are represented by holdover deer (Appendix A, Table 2, column D total). A quick check of column D shows that 2.5 deer is the highest daily number of nonmigratory deer, and this is the absolute minimum number of deer holding over. Thus, each deer would have to remain in the project vicinity for about 14 days to account for the 35 deer days of holdover. At the other extreme, if each deer remained in the project vicinity for 1 day, then 35 deer would be involved. The actual number deer holding over between these two extremes cannot be determined.

Since one migrant is equivalent to one deer-use day, there was an estimated total of 113 (sum of columns B + D) deer-use days of the project during the spring survey period (sum of column E).

b) Locations of deer activity--Appendix Table 3 presents the total number of tracks sets counted in each of the seven survey segments. Deer activity was most concentrated in segments 1-4, located to the south of the Project Area. A total of 34 track sets or 77% of all tracks observed, were recorded in these 4 segments. Nineteen (43%) of all track sets observed were recorded in segment 4, located on the LADWP aqueduct road immediately south of the southern border of Parcel 4.

Approximately 23% of deer activity was recorded within the limits of the Project Area (segments 5-7). Most of this activity was restricted to segment 5, located in the upper southwest portion of Parcel 1 (Figure 3). Only 4 (9%) track sets were recorded in segments 6 and 7, located at the extreme northern end of the route in the central portion of Parcel 1.

Appendix Tables 4a and 4b present a breakdown of track count data for segments 1-4, located south of the Project Area, and segments 5-7, located within the Project Area. From Appendix Table 4a (column B), it can be seen that the total number of migrants estimated to have crossed segments 1-4 during the survey period was 61 (18 x 3.375) or 78% of the total number of migrants estimated to have crossed the entire survey route. It can also be seen that the number of nonmigrants estimated to have crossed segments 1-4 was 30 (9.0 x 3.375) or 86% of the total number of nonmigrants estimated to have crossed the entire survey route (Table 4a, column D). In addition, segments 1-4 received an estimated 88 deer days of use during the 54 day survey period or 78% of all total deer use recorded (column E).

Within the Project Area (segments 5-7), a total of 17 migrants and 8.5 nonmigrants, or 22% and 24% of the total number of migrants and nonmigrants recorded, respectively, were estimated to have crossed the survey route (Appendix Table 4b, columns B and D). In addition, the Project Area received a total of 25 deer days of use during the 54 day survey period or 22% of all total deer use recorded (column E).

There were no deer trails observed within the Project Area boundaries. However, some light trailing does occur above the LADWP aqueduct road, along the north slope of the mountain located to the immediate south of the Project Area.

The fact that deer tracks were observed during the last three surveys conducted on 2, 5 and 10 June, indicates that the project vicinity may be used by a few summer resident deer. The direction of movement of these tracks suggests that the Project Area, along with Lee Vining Creek and the mountain located to the immediate south, compose a portion the summer home range of these deer.

B. Other Wildlife

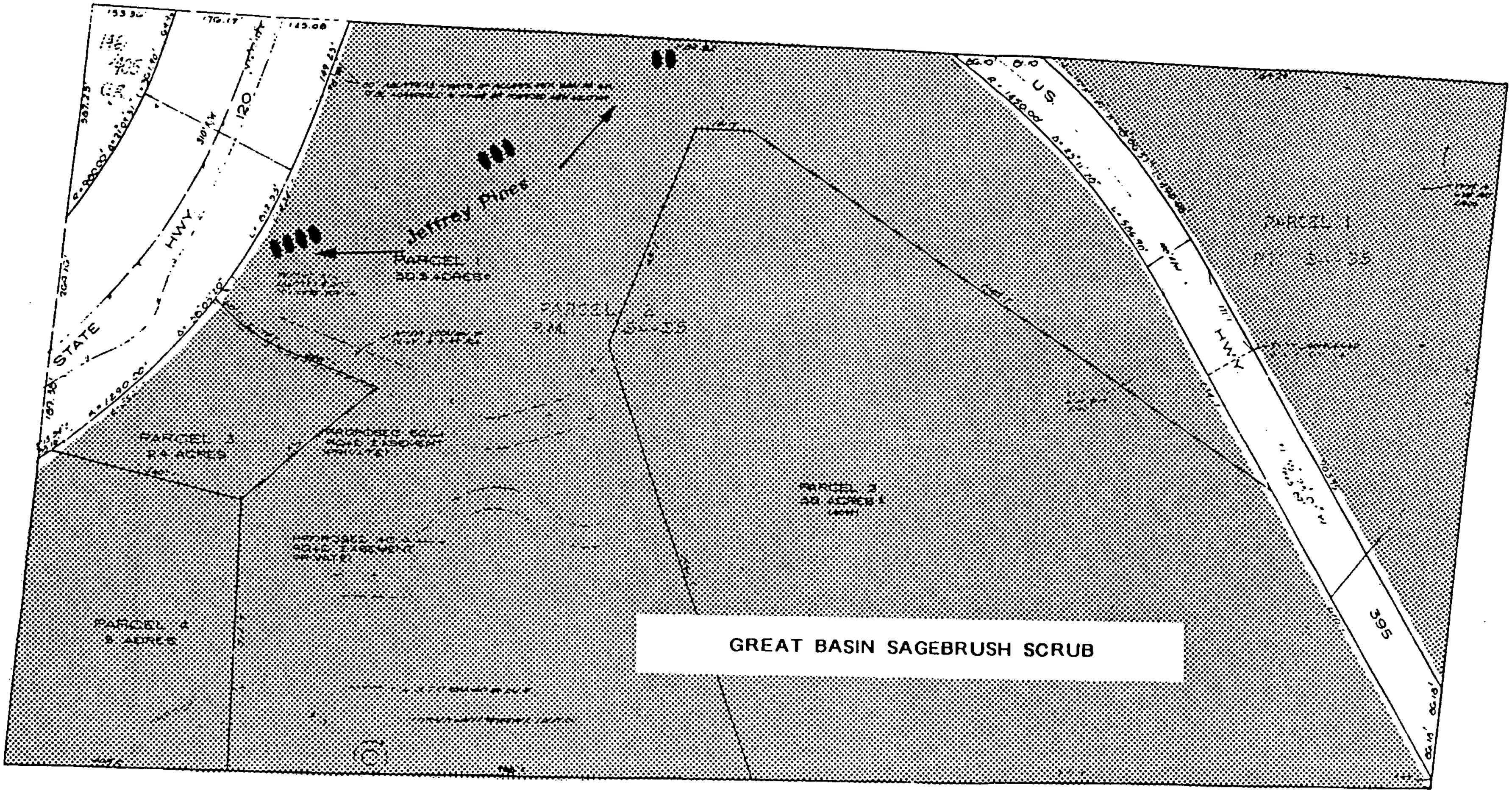
No federal or state-listed or candidate rare, threatened or endangered species were observed during surveys of the Project Area. Nor were any species listed on the California Department of Fish and Game Natural Diversity Data Base list of "Special Animals". However, the Project Area does provide potential habitat for a few "Special Animals" including the American Badger (Taxidea taxus) and the Western White-tailed Hare (Lepus townsendii townsendii). Both species are known within the vicinity of the Project Area. The American Badger prefers open areas with sandy soils for digging burrows and pursuing rodents, its main prey source, while the Western White-tailed Hare prefers open brushlands and meadows.

The only large carnivore positively detected within the project vicinity was the coyote (Canis latrans). Black-tailed Jackrabbits (Lepus californicus), Chipmunks (Tamiaus sp.), Golden-mantled ground squirrels (Spermophilus lateralis) and California ground squirrels (Spermophilus beecheyi) were all commonly observed in the Project Area. A list of all mammal species observed or expected to occur in the Project Area is provided in Appendix Table 5.

The Prairie Falcon (Falco mexicanus), a California species of special concern, and the Golden Eagle (Aquila chrysaetos), a California Species of Special Concern and a Fully Protected Species, may occasionally forage over the area. A list of all birds observed or expected to occur within the Project Area is presented in Appendix Table 6.

C. Vegetation Types

The entire Project Area is covered by a fairly uniform stand of Great Basin Sagebrush Scrub (Figure 5). This was a fairly tall stand (2-3 feet) and dense scrub (estimated at 50-70% shrub cover) dominated by antelope bitterbrush (Purshia tridentata) and scattered big sagebrush (Artemisia tridentata), desert peach (Prunus andersonii), rubber rabbitbrush (Chrysothamnus nauseosus), and horsebrush (Tetradymia comosa). A few scattered Jeffrey pine (Pinus jeffreyi) (8 trees) and 2 lodgepole pine (Pinus contorta) occur on the northwest corner of Parcel 1 (Figure 5). Additionally, a few Jeffrey pine and pinyon pine



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for: Dennis Domaille

Figure 5. Vegetation map showing locations of the Great Basin Sagebrush Scrub type in the proposed Tioga Inn project Area.

(*Pinus monophylla*) occur on the steep northwest slope of Parcel 4. The most common of the scattered herbs include needlegrass (*Stipa* sp.), squirreltail (*Sitanion* sp.), and Indian ricegrass (*Oryzopsis hymenoides*). Appendix Table 7 provides at least a partial list of plant species occurring in the Project Area. Other species may be added to this list during surveys conducted for *Eriogonum ampullaceum*.

VI. DISCUSSION

Impending development of the Tioga Inn and associated loss of habitat has created some concern for the future of mule deer which migrate through the area. From track count data, it was estimated that the Tioga Inn Project Area and adjacent vicinity received 113 deer days of use during the spring migration period. About 75% of this deer use, which equates to anywhere from 63 to 88 deer (61 migrants and 2-27 nonmigrants), is concentrated to the immediate south of the Project Area. There was only an estimated 25 deer days of use within the Project Area proper, the equivalent of about 17 migrants and anywhere from 1-8 nonmigrants.

Habitual behavior, topographic features, security cover, and human intrusion are factors which likely govern deer distribution within the Project Area and surrounding vicinity. The role that habitual behavior plays in deer migration has been widely documented in the eastern Sierra Nevada (Kucera 1988, Taylor 1988a, Taylor 1991) and other areas of California (Bertram and Remple 1977, Loft et al. 1989). Radio-collared deer from the Casa Diablo herd monitored for 2 or more successive years displayed strong fidelity to individual summer ranges and migration routes by returning to the same ranges year after year (Taylor 1988a). This is largely due to topography and landscape and the existence of natural travel lanes that become established trails.

Track counts and ground surveys indicate that as deer migrate west toward Lee Vining Canyon, they contour the northern side of the ridge located immediately south of the Project Area (Figure 3). This east-west orientation along the base of the slope is the likely reason deer intercept the track survey route in the general vicinity of segment 4, which begins just south of the Project Area's Parcel 4.

Hiding cover is a feature of habitat that provides an animal security or a means to escape predators or harassment (Skovlin 1982). For mule deer, hiding cover is generally recognized as some form of vegetation, such as a brushy thicket, but may also be a drainage corridor. The pinyon pine (Pinus monophylla) forest which occupies the lower north and west slopes of the ridge located just south of the Project Area (above the LADWP aqueduct road), likely provides migrant deer with adequate security cover as they move along the lower portion of the escarpment. With the exception of a few fragmented clumps of 3-5 foot high Sagebrush Scrub vegetation, the Project Area appears to be lacking adequate security cover for deer.

In addition to security cover, the Pinyon Pine type also provides habitat edge effect where it contacts the Sagebrush Scrub type just south of segment 4. An abrupt ecotone such as this likely furnishes deer with a greater variety of food and cover along the contact zone.

Because of the location of the Project Area near the intersections of Highways 120 and 395 (the gateway to Yosemite), human intrusion is rampant. Tourists seeking an unobstructed view of Mono Lake were often observed walking or driving roads located within and adjacent to the Project Area, especially within Parcel 1 which is adjacent to the Highway 120 pullout. This high level of human intrusion, when coupled with poor security cover and lack of habitat edge effect, likely makes the lower, more accessible portions of the Project Area unattractive to deer.

It is appropriate to emphasize that track counts provide a very crude estimate to deer numbers and usage throughout the Project area and surrounding vicinity. This is primarily due to problems associated with weather and poor tracking substrate which prevent track registration. According to Salwasser (1976) and Connolly (1981), track counts may underestimate total numbers of deer moving through an area for several reasons: rain, sleet, snow, or wind may prevent track registration; during periods of heavier movement some tracks may obliterate others.

Conversely, track counts can also overestimate animal numbers because a potential exists for multiple counts of the same animals tracks. This source of error is impossible to quantify especially for holdover and summer resident deer because it may be the same individuals holding over for an unknown number of days. For these reasons, estimates of deer abundance provided in this report are meant only as approximations of relative deer use within the Project Area and surrounding vicinity. Furthermore, the precise number of deer using the project area at one time is not important; what matters is the estimate of magnitude. Track count data indicates that the Project Area and vicinity was used by approximately 100 deer during the 1992 spring migration.

VII. ENVIRONMENTAL IMPACT ANALYSIS

A. INTRODUCTION

Impending development of the Tioga Inn has initiated concerns with respect to potential adverse impacts on migratory mule deer and other wildlife. Concerns regarding mule deer were based on knowledge obtained from a radio-telemetry studies of the Casa Diablo deer herd (Taylor 1988a) which indicate that approximately 300 deer migrate through the project vicinity. A site review of the Project Area conducted by White (1984) was considered by CDFG and other agencies to be deficient in data on the timing, amount and specific locations of migratory deer use. In addition, the White (1984) study did not address potential environmental impacts of the proposed development or provide mitigation measures to avoid or minimize impacts. The present investigator was subsequently contracted to update previous work and provide an assessment of migratory deer use of the area.

This section describes the potential environmental effects of the Tioga Inn on plant and animal communities occurring within the Project Area. Impact assessment will include an analysis of potential impacts of the project by describing activities associated with each phase of the proposed project description that may have a direct, and indirect significant effect on biological resources.

Accompanying the impact assessment will be mitigation measures which would avoid or minimize potentially adverse impacts to insignificant or acceptable levels. This section also identifies those significant environmental effects which cannot be avoided if the project is implemented, including those effects which can be mitigated but not to a level of insignificance. The discussion of impacts to biological resources also include discussions pertaining to cumulative impacts or the incremental impact of the project when added to other past, present and reasonably foreseeable future actions.

B. IMPACTS TO BIOLOGICAL RESOURCES

1. Loss of Native Vegetation and Wildlife Species

Construction of the proposed Tioga Inn will directly impact existing Great Basin Sagebrush Scrub vegetation, a significant environmental effect that cannot be avoided. However, the proportion of acreage taken out of production compared to the remaining acreage of Great Basin Sagebrush Scrub vegetation in the Mono Basin is very low. Removal of existing vegetation will result in decreased biomass production from replacement of vegetation by parking lots, roads and buildings. Vegetation removal would reduce the amount of suitable habitat for Sagebrush Scrub dependent species, since food and shelter resources provided by vegetation are no longer present. As a result, there would be a corresponding reduction in diversity and abundance of Sagebrush Scrub dependent species, both on the development site and in adjacent natural areas (Howald 1982). Most adversely effected would be animals having relatively small home ranges, such as small mammals and birds. Local abundance of common and typical wildlife species, e.g., chipmunk (*Tamias* sp.), ground squirrel (*Spermophilus* sp.) and Brewer's sparrow (*Spizella breweri*), will decrease, since development results in loss of high quality habitat. In most cases, it is not possible for displaced animals to successfully establish themselves in nearby natural areas, since these areas already contain as many animals as they can support (Howald 1982). If the area impacted by development is relatively small, larger wide-ranging species such as mule deer, coyote and mountain lion, can often find resources on adjacent ranges. However, when animals attempt to move, greater competition for scarce resources occurs, and weaker individuals gradually die out, resulting in decreased population size (Ingles 1965). Species diversity can also be reduced by local extirpation of common and typical species. This can occur when development eliminates or prevents the use of an essential resources in scarce supply, e.g., isolated thickets of vegetation required as hiding cover for mule deer fawns.

Natural plant revegetation within disturbed areas can be expected to develop extremely slow due to severe climate and poor soils. Secondary succession in disturbed areas would probably initially become dominated with a mixture of herbaceous species (grasses and forbs) and weeds. It is likely that shrub species would eventually reestablish on these sites provided that the soil resources were left intact.

Increased erosion potential on steep slopes within the Project Area would likely occur as a result of vegetation removal. The intensity of erosion would depend on a number of factors including volume and intensity of precipitation, relative slope of terrain, and soil condition (Owen 1975).

The potential impacts to wildlife from vegetation removal associated with the proposed project include:

* Over utilization of adjacent habitats
* Decreased availability of forage and cover (e.g., loss of _Purshia_ as browse for mule deer)
* Adverse physiological effects and reduce reproductive potential
* Interference or alteration of migration routes and movement patterns
* Reduced wildlife numbers

2. Impacts From The Spread of Weeds

Natural areas characterized by low levels of disturbance and relatively harsh climates, such as the Mono Basin, typically support few weed species (Howald 1982). However, soil disturbance over large areas, in conjunction with overgrazing from domestic livestock and increased traffic, results in the decline of native plant species (decreasers) and encourages the spread of more tolerant weed species (invaders) into the area. There are numerous plants from throughout the world that have been introduced into California. These plants have the ability to survive without cultivation (Raven and Axelrod 1977). The presence of weeds can inhibit regrowth of native vegetation and also alter the availability of food supplies for herbivores (Howald 1982). In addition, some species of weeds also produce toxins that can be debilitating to some animals (Cronin et al. 1978).

3. Impacts From Free Roaming Pets

A typical problem associated with most development located in rural areas is harassment of wildlife by domestic pets. Free roaming domestic dogs can create an intolerable stress to deer (Reed 1981) and other wildlife, including rodents and small mammals (Most 1981). Free roaming house cats can interfere with the courtship and feeding of birds and small mammals (Most 1980). Free roaming pets are a significant environmental effect which can be mitigated, but not reduced to a level of insignificance.

The potential impacts to wildlife from free roaming domestic pets associated with an increased population base include:

* Permanent decreased use or temporary desertion of traditional habitat
* Shift of home range and change in distribution
* Interference and alteration of migration routes
* Reduced wildlife numbers
* Reduced feeding efficiency
* Use of more marginal habitats
* Increased stress and energy expenditure
* Decreased productivity

4. Impacts From Noise and Lights

Noise generated during construction activities and operational phases of the project is a form of human intrusion that can adversely effect wildlife behavior (Howald 1982). Many animals respond to frequent noise disturbance by moving further from its source, resulting in lower wildlife diversity and abundance and crowding of adjacent natural areas (Howald 1982). Some species, however, which are less mobile or occupy smaller home ranges (e.g., small mammals) cannot readily vacate an area subjected to frequent noise disturbance. This can influence an individuals ability to forage efficiently and successfully rear young.

Night lighting, like noise, typically accompanies both construction and operation phases of development. The collective glow of lights associated with hotel, restaurant, mini-mart, and employee housing facilities will likely illuminate areas well outside the Project Area boundaries. This will inhibit nocturnal use of these adjacent areas by some species, (e.g., mule deer and owls). With respect to impacts to wildlife resources, noise and lighting are significant environmental effects which can be mitigated to a level of insignificance.

Collectively, potential impacts to wildlife from noise and lights associated with the proposed development include:

* Permanent decreased use or temporary desertion of traditional habitat
* Shift of home range and change in distribution
* Interference and alteration of migration routes
* Reduced wildlife numbers
* Reduced feeding efficiency
* Use of more marginal habitats
* Increased stress and energy expenditure
* Decreased productivity

5. Impacts to Mule Deer

There was an estimated 88 deer-days of use (75% of all deer use) of segments 1-4 during the 54 day survey period. As many as 60 migrants may have crossed this portion of the track survey route, illustrating its relative importance as a migration corridor.

The Project Area received an estimated 25 deer-days of use during the 54 day survey period. This relatively light amount of use indicates that the Project Area itself is of little importance to the Casa Diablo herd as a migration corridor, at least during the spring migration period. It may, however, be an important foraging area for a small number of summer resident and holdover deer.

a. Direct and Indirect Impacts

The construction and operation of the Tioga Inn within the proposed Project Area could impact deer use of the project vicinity in a variety of ways. The following discussion categorizes potential direct (primary), indirect (secondary) and cumulative effects to mule deer resulting from human intrusion, habitat removal, habitat alteration, and direct mortality. For clarity, direct, or primary impacts, are environmental effects resulting from development due to construction and operation activities (e.g., loss of foraging and fawning habitat for deer) (Comer 1982). Indirect (secondary) environmental effects typically occur outside the Project Area as the result of increased permanent or seasonal population growth within the community, and do not readily show a cause-effect relationship (Dodge 1992). Examples of indirect effect impacts include increased deer-vehicle collisions, increased physiological stress and lowered productivity in migratory and resident deer, and permanent decreased use or temporary desertion of traditional habitat due to human intrusion. Cumulative effects are the composite of all environmental effects (direct and indirect) for the region resulting from past, present and reasonably foreseeable projects that are not related to the proposed project.

Direct and indirect impacts that would occur within and adjacent to the Project Area as a result of habitat removal, habitat alteration, human intrusion, and direct mortality, could adversely effect the herd segment which migrates through the area, particularly those animals (2-25 deer) which currently use the Project Area. Secondary impacts that would mostly be independent of the Tioga Inn and that would occur outside the proposed Project Area as a result of project generated human growth, e.g., dog harassment, increased deer-vehicle collisions, could adversely effect that portion of the Casa Diablo herd which migrates to the immediate south of the Project Area. Potential significant adverse impacts to this herd segment could have deleterious effects to overall herd productivity by contributing to the already poor recruitment rates currently experienced by the Casa Diablo deer herd.

1) Human Intrusion: Reflects disturbances to deer behavior which would render undisturbed habitat immediately adjacent to the Project Area unsuitable for deer without physically impacting habitat (indirect impact). Human intrusion could result from construction and maintenance activities; and visual stimulus, noise, domestic dogs, increased human activity, and increased traffic associated with an increased permanent and seasonal (summertime) population.

Potential Impacts:

* Permanent decreased use or temporary desertion of traditional habitat: Construction activities (e.g., noise generated by heavy equipment), could displace migrant, holdover and summer resident deer which currently use the Project Area and immediate vicinity by forcing animals further upslope. This response

would constitute a significant environmental effect since as much as 3% of the Casa Diablo herd may be involved.

* Increased use of marginal habitat types: Migrant, holdover and summer resident deer which use habitats within and adjacent to the Project Area, could be forced to use less suitable habitat for migration, foraging and fawning (e.g., does which fawn near Lee Vining Creek could be forced to more marginal fawning habitats located further from Lee Vining Creek, an area which provides adequate food, cover and water).

* Alteration/interference of migration routes and shift of home ranges: Deer which currently migrate through the Project Area vicinity could abandon traditional habitats due to construction related activities (e.g., noise from heavy machinery) and operational phases (night lighting, human activity, dogs, etc.)

* Increased energy expenditure and stress: Increased physiological stress could result from increased energy expenditures associated with use of more nontraditional habitats for migration and summer range.

2) Habitat Removal: Reflects permanent physical reduction in the amount of available habitat within the Project Area due to the placement of facilities (primary effect), and outside the Project Area due to increased community growth (secondary effect). Considered to be a significant environmental effect.

Potential Impacts:

* Over utilization of adjacent habitat: Deer displaced from the Project Area (direct impact) and adjacent migration routes (indirect effect) could concentrate activity outside the project's zone of influence. This could create excessive crowding and increased competition for resources, which could, over time, result in over utilization of adjacent habitats. This response would constitute a significant environmental effect.

* Declines/elimination of forage and cover availability: Reductions in available deer habitat due to placement of facilities and increased community growth.

* Alteration/interference of migration routes and shift of home ranges: Deer which currently migrate through or summer within the project vicinity could abandon traditional habitats.

* Adverse physiological effects and reduced reproductive potential: Forage loss, alteration of migration routes, and over utilization of habitats could result in reduced productivity in migrant, holdover, and summer resident deer potentially displaced by the proposed development.

3) Habitat Alteration: Represents change in plant species composition and structural characteristics due to the growth inducing effects of development.

Potential Impacts:

* Change in availability of forage and cover within the Project Area and adjacent migration route.

* Change in utilization of adjacent habitats.

* Change in animal reproductive success: Increased physiological stress from habitat alteration from placement of facilities (direct impact) and increased community growth (indirect impact) resulting in decreased productivity.

4) Direct Mortality: Losses of deer due to construction activities as a result of increased deer-vehicle collisions created by utilization of alternate migration routes, e.g., across Route 395 or Route 120. Considered to be a significant environmental effect.

Potential Impacts:

* Decreased deer numbers.

* Decreased prey base for predators, mainly coyotes and mountain lions.

b. Cumulative Impacts

Comer (1982) defined cumulative effects as "the totality of interactive impacts over time; or the sum incremental synergistic effects on fish and wildlife habitats caused by all reasonable future actions over time and space". Cumulative impacts for an individual project may be minor, but collectively significant.

There are several reasonably foreseeable projects proposed on Casa Diablo deer herd migration routes and seasonal ranges which could have cumulative impacts to the Casa Diablo deer herd. These projects include:

* The Arcularius Ranch located on the upper Owens River holding area is planning a substantial expansion of their 1,080 guest ranch facility. The upper Owens River holding area is used by approximately 70% of the Casa Diablo deer herd during annual spring and fall migrations. For this reason, the holding area appears to be an extremely important component of the Casa Diablo deer herd's year-round range and likely plays an integral role in the productivity of this herd. Habitat degradation and human intrusion within the holding area could contribute to declining recruitment rates by lowering the ability of deer to overcome nutritional stress acquired over the winter.

* The California Department of Transportation (Caltrans) is proposing a highway expansion from 2-4 lanes within the vicinity of Sandhouse Hill, located between the south June Lake Junction and approximately two miles south of Lee Vining. Telemetry data (Taylor 1988a) and track count data (Taylor 1990) indicates that between 50% and 66% of the Casa Diablo herd crosses this section of highway during annual spring and fall migrations. Therefore, the proposed highway expansion could result in additional direct mortality of deer due to the increased risk of deer-vehicle collisions.

* Mammoth Mountain Ski Area has proposed development of the Hartley Springs, White Wing Mountain and San Joaquin Ridge areas for alpine skiing. These areas provide important migration and summer range habitat for the Casa Diablo herd.

Other considerations regarding migratory mule deer which should be addressed in the impact analysis include:

* The Casa Diablo deer herd is currently experiencing low recruitment rates primarily as a result of a prolonged drought.

1) <u>Human Intrusion</u>: Reflects disturbances to deer behavior which would render undisturbed habitat immediately adjacent to the Project Area unsuitable for deer (indirect impact). Human intrusion could result from construction and maintenance activities; and visual stimulus, ambient noise, domestic dogs, increased human activity, and increased traffic associated with an increased permanent and seasonal (summertime) population.

Potential Impacts:

* Permanent decreased use or temporary desertion of traditional habitat: Construction activities could displace migrant deer which currently use the area immediately south Project Area by forcing animals further upslope. This response would constitute a significant environmental effect since as much as 3% of the Casa Diablo herd may be involved.

* Increased use of marginal habitat types: Migrant, holdover and summer resident deer which use habitats south of the Project Area could be forced to use less suitable habitat for migration and foraging.

* Alteration of migration routes and shift of home ranges: Deer which currently migrate and summer adjacent to the Project Area could abandon traditional habitats.

* Increased stress and energy expenditure

2) Habitat Removal: Reflects permanent physical reduction in the amount of available habitat due to unrelated, reasonably foreseeable projects. Considered to be a significant environmental effect.

Potential Impacts:

* Declines/elimination of forage and cover availability and over utilization of adjacent habitats: Deer displaced from the increased growth could concentrate activity outside the project's zone of influence. This could create crowding and increased competition for resources, which could, over time, result in over utilization of adjacent habitats. This response would constitute a significant environmental effect.

* Interference to daily movement patterns of holdover and summer resident deer: As proposed, the locations of facilities could alter movement patterns of summer resident and holdover deer.

* Adverse physiological effects and reduced reproductive potential: Forage loss could result in reduced productivity of summer resident deer potentially displaced by the proposed development.

3) Habitat Alteration: Represents change in plant species composition and structural characteristics due to the

growth inducing effects of unrelated, reasonably foreseeable development projects.

Potential Impacts:

* Change in availability of forage and cover within the migration route.

* Change in utilization of adjacent habitats.

* Change in animal reproductive success: Increased physiological stress from increased community growth resulting in decreased productivity.

4) Direct Mortality: Losses of deer due increased deer-vehicle collisions on Mono County roadways.

Potential Impacts:

* Decreased deer numbers.

* Decreased prey base for predators, mainly coyotes and mountain lions.

C. MITIGATION MEASURES

Direct, indirect, and cumulative significant environmental effects to mule deer and other wildlife that would occur as a result of the proposed Tioga Inn development are attributed to human intrusion, permanent losses and alteration of existing habitat, and direct mortality. Mitigation measures designed to minimize the magnitude of a significant environmental effect or reduce impacts to a level of insignificance are presented below.

1. Construction Activities

During spring migration, mule deer does in their third trimester of pregnancy are experiencing increased nutritional demands due to accelerated fetal development and migration to the summer range. Mule deer does from the

Casa Diablo herd typically breed in late October and early November and give birth to fawns in late June and early July (Taylor 1988b). Noise, lights and other forms of human intrusion associated with construction activities could disturb pregnant does migrating through the project vicinity in the spring, resulting in increased stress and reduced reproductive success.

Impacts from construction activities will be minimized through the following measures:

* Construction will be scheduled to minimize disturbance to migratory deer during the spring and fall migration/holding periods. Track count data indicates that in the spring deer arrive in the project vicinity as early as late April. The fall migration period can extend from mid-September through mid-December depending on the severity of weather. Therefore, construction activities within Parcel 4 should be scheduled during the interim period between spring and fall migration periods (1 June-15 September).

  The objective of this measure is to minimize disturbance to migrant deer which use the project vicinity, especially the area south of Parcel 4, during the spring and fall holding/migration periods. Restricting the timing of construction to the interim period between spring and fall migrations will reduce, but not to a level of insignificance, direct human intrusion impacts associated with construction activities. However, this measure will not minimize construction associated impacts to summer resident deer. Nor will it reduce impacts to migratory deer in the event of an early migration (prior to 15 September).

* Construction will be conducted during daytime hours in order to reduce disturbance to nocturnal wildlife species, particularly migratory mule deer.

2. <u>Control of Domestic Dogs</u>

Many researchers have documented cases of deer mortality from dog attacks (Lindsale and Tomich 1953, Boyles 1976, Moser 1975, Dasmann and Taber 1956). For this reason domestic dogs would be controlled within the Project Area during both construction and operation phases. Mono County leash laws would be enforced to the greatest extent possible through adequate signing and regular patrol. Hotel guests and all patrons will be provided an enclosed area located away from the migration corridor to walk pets. Tioga Inn employees will be required to keep dogs in an enclosed area. A full-time project employee will likely be needed to successfully enforce this measure.

Implementation of this measure will minimize direct and indirect significant adverse impacts associated with human intrusion, and direct and indirect mortality, injury and harassment of deer and other wildlife from free roaming domestic dogs.

3. Noise and Lights

* Vegetative Screening--Screening cover will be established on the south, west and east sides of Parcel 4 where employee housing is proposed. Screening cover should be planted in a 20 foot wide band consisting of an inner strip of native shrubs and an outer strip of trees. This design will effectively reduce illumination and noise into the migration corridor, screen employee houses from migrating deer, and provide additional wildlife habitat. Smith and Conner (1989) suggested that deer avoidance of structures declines with the amount of vegetation adjacent to them. Vegetative screening also has the function of sound pollution abatement, because it is particularly effective in absorbing high frequency sounds (Owen 1975). Visual screening will not be effective until a number of years after its implementation, when plants are large enough to provide a visual barrier. Therefore, the use of larger planting stock is recommended in order to accelerate this process. Fast growing tree species that may work well as screening cover and provide migrating and holdover deer with additional forage once they become established include; poplars (Populas sp.), alder (Alnus sp.), and willow (Salix sp.). Willow and alder are hydrophilic species that require copious amounts of water in order to survive. For this reason, it will be necessary to establish an irrigation system to ensure both rapid growth and longevity of these species. Poplars require less water than willows and alders, but still need mesic soils in order to survive. Slower growing endemic species requiring less water include: Jeffrey pine (Pinus jeffreyi), single-leaf pinyon pine (Pinus monophylla), western juniper (Juniperus occidentails) (Appendix Figure 8).

  Regardless of the tree species used as screening cover, it will be necessary to protect the terminal shoots of young individual trees from deer, rodents and domestic livestock. Several types of individual tree barriers have been designed to protect tree leaders, allowing them to grow quickly beyond the reach of deer. Wire cages have been widely used (Longhurst et al. 1962, Mealy 1969), but are expensive and must be removed as enclosed trees grow. Yawney and Johnson (1974) found that a 1.52 m (5 ft) wire fence surrounding seedlings worked well to protect them from deer. Vexar tubing (E.I. DuPont de Nemours and Company, Inc.) has been successful in protecting Douglas fir seedlings (Campbell and Evans 1969) and oak seedlings (Lasher and Hill 1977).

* Impacts from night lighting can also be minimized by avoiding unnecessary lights and unnecessarily bright

lights. Lights which could potentially illuminate the migration corridor should be avoided or adequately screened.

Implementation of these measures would minimize direct and indirect significant adverse impacts associated with human intrusion resulting from employee housing and commercial lighting.

4. Fencing

Fencing, depending on the type and location, can have indirect significant adverse effects on deer by interfering with migration and the use of seasonal habitats. Fencing can also result in direct mortality of deer (Urness 1976, Papez 1976). Therefore, any wire fences, except those required for retaining pets, will be prohibited. Any other impediments to deer movements such as spoil piles, open ditches, and excessive cut-fill slopes will be minimized to the greatest extent possible. For example, care must be taken to avoid leaving ditches or trenches open for a prolonged period of time since they can be hazardous to migrating deer and other wildlife.

5. Utilize Existing Dirt Roads

Access and maintenance roads will be designed to follow existing dirt road alignments whenever possible to avoid unnecessary removal of additional vegetation. This would minimize significant environmental effects associated with habitat loss and alteration.

6. Establish Driver Warning Signs

Establishing driver warning signs along Highway 395 and Highway 120 (west), would minimize significant environmental effects associated with direct mortality from deer-vehicle collisions.

7. Controlling Vehicle Access

Limiting vehicular access within the migration corridor immediately south of the Project Area would minimize significant environmental effects to deer resulting from increased human intrusion.

8. Maintain Existing Native Vegetation

Vegetative disturbance due to construction activities would be confined only to those areas designated for development to protect surrounding vegetation. In this way, landscaping needs are minimized by retaining the maximum amount of native vegetation possible. The pad cleared for a particular building usually alters more habitat then just the building itself. Development designers are encouraged to use techniques to reduce the area altered by pads and drives. This could minimize significant environmental effects to deer associated with habitat loss and alteration.

9. <u>Revegetation with Native Plants</u>

Revegetation of disturbed areas shall be conducted using native plants as soon as possible following construction. This could reduce significant environmental effects to deer associated with habitat loss and alteration. A list of native plants appropriate for revegetation are provided in Appendix Figure 8.

10. <u>Control of Weeds</u>

At the Tioga Inn project site, the spread of weeds can be deterred by revegetating disturbed sites as soon as possible, using mulches free of weed seeds, and covering stockpiled topsoil (Dodge 1992).

11. <u>Control of Erosion</u>

Unfortunately, many development projects are associated with extensive soil erosion largely because of either lack of planning or carelessness. For example, studies by the Soil Conservation Service (USDA 1970) have shown that erosion of soils on land used for development projects (highways, buildings, homesites, etc.,) is 10 times greater than on land in pasture and 2,000 times greater than on land in timber. Erosion control measures that might be effectively implemented at the construction site include:

* No more vegetation should be removed from the site than is absolutely necessary for immediate construction purposes.

* Steep road cuts should be revegetated as soon as possible after construction.

* Disturbed areas should be reseeded as soon as possible after construction with native vegetation.

* Temporary catch basins may be constructed to intercept run-off water and trap its sediment load. After construction has been completed and revegetated, the basins may be removed and the area graded and blended into the surrounding landscape.

* Boards can be arranged in rows across steep areas to serve as temporary terraces, thus establishing soils and allowing seeding (USDA 1970).

12. Mitigation Monitoring

Several mitigation measures will require monitoring. California law (PRC 210801.6) requires that mitigation monitoring be conducted. A plan will be developed to comply with measures outlined in the mitigation plan.

VIII. REVIEW OF LITERATURE RELEVANT TO THE PROPOSED PROJECT

According to Wallmo et al. (1976) and Bormann (1976), rural housing developments in deer habitat with their accompanying increases in automobiles, snowmobiles, off-road vehicles, dogs and human activity, affect large areas beyond the actual boundaries of the development. As a result, the overall effect of these encroachments on mule deer habitat is greater than indicated by analysis of the actual area involved. Disturbances associated with housing developments on and adjacent to deer winter range significantly alter, reduce or eliminate deer use of an area (Mackie and Pac 1980). Smith and Conner (1989) reported that a one-acre loss in habitat can equate to a 2.5 acre loss in deer habitat due to significant reductions in deer use around the area developed. Smith and Conner (1989) also suggested that when a house is built on deer range, deer affected by the house redistribute their use to just outside the zone of influence of the house. This could result in over utilization of more marginal habitats outside the zone of influence through increased interspecific competition for food and cover resources. Armstrong et al. (1983), indicated that cottage development in Ontario reduced the quality of winter white-tailed deer habitat. Mann (1985), suggested that deer use of an area decreased with increased development of recreational lot and second home subdivisions, but the intensity of use is dependent upon location, year, season and human activity. Cornett et al. (1979), provided evidence that deer use of a meadow near cabins received only 40 percent of the use of a similar control meadow located in an undisturbed area. Cornett et al. (1979) also reported that deer use was reduced by 30 percent within a 30-50 yard distance to hiking trails. Freedy et al. (1986) concluded that mule deer were more disturbed by people afoot then by snowmobiles.

Reproduction and condition studies of several local deer herds have shown that deer in the eastern Sierra exist on a negative energy budget during the winter months (Kucera 1988, Taylor 1988b). The energy required by activity is derived from products of digestion and stored fat reserves. In the winter, deer rely heavily on fat stores accumulated over the summer and fall months to supplement digestible energy available from the winter range (Mackie and Pac 1980, Short 1981). Deer also attempt to conserve energy by lowering their metabolic rate and by conducting energy-efficient activity and range use patterns (Mackie and Pac 1980). When normal activity patterns are disrupted due to development, drought, overgrazing, excessive snowfall, interaction with humans, or other factors, digestible energy intake can be reduced severely and the rate at which fat reserves are used will increase. This will ultimately decrease an animals ability to survive the winter and reproduce the following year (Mackie and Pac 1980). This is especially true of deer with limited fat reserves, such as fawns or animals from poor-quality summer or intermediate ranges. In severe winters, these animals can tolerate little additional energy costs if they are to survive. Under repeated harassment, they will rapidly deplete stored fat and succumb to malnutrition when sufficient energy is no longer present to maintain normal bodily functions (Short 1981). According to Mattfeld (1973), the energy costs of running, especially in deep snow, is many times that of walking on bare ground.

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APPENDIX A

Appendix Table 1. Total number of tracks by direction of travel recorded on 16 track count surveys conducted in the Tioga Inn Project Area from 17 April-10 June 1992. Tioga Inn wildlife and vegetation study.

Survey No.	Date	NW	SE	Total
1	041792	0.0	0.0	0.0
2	042092	0.0	0.0	0.0
3	042392	0.0	0.0	0.0
4	042892	2.0	0.0	2.0
5	050192	2.0	0.0	2.0
6	050592	7.0	5.0	12.0
7	051092	5.0	4.0	9.0
8	051392	3.0	2.0	5.0
9	051692	0.0	0.0	0.0
10	052092	0.0	1.0	1.0
11	052392	2.0	3.0	5.0
12	052692	0.0	0.0	0.0
13	053092	2.0	2.0	4.0
14	060292	0.0	2.0	2.0
15	060592	0.0	1.0	1.0
16	061092	0.0	1.0	1.0
		23.0	21.0	44.0

Appendix Table 2. Calculated data from 16 track counts conducted in the Tioga Inn Project Area from 17 April-10 June 1992. Tioga Inn wildlife and vegetation assessment study.

A = Total number of tracks observed on 16 surveys.
B = Total number of tracks attributable to migrants (determined by tracks N and W)
C = Total number of tracks attributable to nonmigrants (A-B).
D = Total number of deer on a given survey represented by tracks of nonmigratory deer (C/2).
E = Total deer on a given survey (B + D).

Survey No.	Date	A	B	C	D	E
1	041792	0.0	0.0	0.0	0.0	0.0
2	042092	0.0	0.0	0.0	0.0	0.0
3	042392	0.0	0.0	0.0	0.0	0.0
4	042892	2.0	2.0	0.0	0.0	2.0
5	050192	2.0	2.0	0.0	0.0	2.0
6	050592	12.0	7.0	5.0	2.5	9.5
7	051092	9.0	5.0	4.0	2.0	7.0
8	051392	5.0	3.0	2.0	1.0	4.0
9	051692	0.0	0.0	0.0	0.0	0.0
10	052092	1.0	0.0	1.0	0.5	0.5
11	052392	5.0	2.0	3.0	1.5	3.5
12	052692	0.0	0.0	0.0	0.0	0.0
13	053092	4.0	2.0	2.0	1.0	3.0
14	060292	2.0	0.0	2.0	1.0	1.0
15	060592	1.0	0.0	1.0	0.5	0.5
16	061092	1.0	0.0	1.0	0.5	0.5
Sum X 3.375		44.0	23.0	21.0	10.5	33.5
			77.6	70.8	35.4	113.0

Appendix Table 3. Total number of track sets recorded in each survey segment of the Tioga Inn track count survey route on 16 track count surveys conducted from 17 April-10 June 1992. Tioga Inn wildlife and vegetation assessment study.

Survey No.	Date	Segment Number 1	2	3	4	5	6	7	Total
1	041792	0	0	0	0	0	0	0	0
2	042092	0	0	0	0	0	0	0	0
3	042392	0	0	0	0	0	0	0	0
4	042892	0	0	0	0	2	0	0	2
5	050192	0	0	0	1	1	0	0	2
6	050592	2	0	2	6	0	0	2	12
7	051092	1	1	1	5	0	1	0	9
8	051392	0	0	1	3	0	1	0	5
9	051692	0	0	0	0	0	0	0	0
10	052092	0	1	0	0	0	0	0	1
11	052392	2	1	0	2	0	0	0	5
12	052692	0	0	0	0	0	0	0	0
13	053092	0	0	0	2	2	0	0	4
14	060292	1	1	0	0	0	0	0	2
15	060592	0	0	1	0	0	0	0	1
16	061092	0	0	0	0	1	0	0	1
Total		6	4	5	19	6	2	2	44

Appendix Table 4a. Calculated data from 16 track counts conducted adjacent to the Tioga Inn Project Area (segments 1-4) from 17 April-10 June 1992. Tioga Inn wildlife and vegetation assessment study.

A = Total number of tracks observed on 16 surveys.
B = Total number of tracks attributable to migrants (determined by tracks N and W)
C = Total number of tracks attributable to nonmigrants (A-B).
D = Total number of deer on a given survey represented by tracks of nonmigratory deer (C/2).
E = Total deer on a given survey (B + D).

Survey No.	Date	A	B	C	D	E
1	041792	0.0	0.0	0.0	0.0	0.0
2	042092	0.0	0.0	0.0	0.0	0.0
3	042392	0.0	0.0	0.0	0.0	0.0
4	042892	0.0	0.0	0.0	0.0	0.0
5	050192	1.0	1.0	0.0	0.0	1.0
6	050592	10.0	7.0	3.0	1.5	8.5
7	051092	8.0	4.0	4.0	2.0	6.0
8	051392	4.0	3.0	1.0	0.5	3.5
9	051692	0.0	0.0	0.0	0.0	0.0
10	052092	1.0	0.0	1.0	0.5	0.5
11	052392	5.0	2.0	3.0	1.5	3.5
12	052692	0.0	0.0	0.0	0.0	0.0
13	053092	2.0	1.0	1.0	0.5	1.5
14	060292	2.0	0.0	2.0	1.0	1.0
15	060592	1.0	0.0	1.0	0.5	0.5
16	061092	0.0	0.0	0.0	0.0	0.0
Sum X 3.375		34.0	18.0	16.0	8.0	26.0
			60.8	54.0	27.0	87.7

Appendix Table 4b. Calculated data from 16 track counts conducted in the Tioga Inn Project Area (segments 5-7) from 17 April-10 June 1992. Tioga Inn wildlife and vegetation assessment study.

A = Total number of tracks observed on 16 surveys.
B = Total number of tracks attributable to migrants (determined by tracks N and W)
C = Total number of tracks attributable to nonmigrants (A-B).
D = Total number of deer on a given survey represented by tracks of nonmigratory deer (C/2).
E = Total deer on a given survey (B + D).

Survey No.	Date	A	B	C	D	E
1	041792	0.0	0.0	0.0	0.0	0.0
2	042092	0.0	0.0	0.0	0.0	0.0
3	042392	0.0	0.0	0.0	0.0	0.0
4	042892	2.0	2.0	0.0	0.0	2.0
5	050192	1.0	1.0	0.0	0.0	1.0
6	050592	2.0	0.0	2.0	1.0	1.0
7	051092	1.0	1.0	0.0	0.0	1.0
8	051392	1.0	0.0	1.0	0.5	0.5
9	051692	0.0	0.0	0.0	0.0	0.0
10	052092	0.0	0.0	0.0	0.0	0.0
11	052392	0.0	0.0	0.0	0.0	0.0
12	052692	0.0	0.0	0.0	0.0	0.0
13	053092	2.0	1.0	1.0	0.5	1.5
14	060292	0.0	0.0	0.0	0.0	0.0
15	060592	0.0	0.0	0.0	0.0	0.0
16	061092	1.0	0.0	1.0	0.5	0.5
Sum X 3.375		10.0	5.0	5.0	2.5	7.5
			16.8	16.8	8.4	25.3

Appendix A Table 5

The following list includes those mammal species most likely to be found at or adjacent to the Tioga Inn Project Area. Information used in this report comes from direct observations and from the following sources (Engles 1965).

Symbols

Abundance	Status in Habitat	Sightings
C Common	G General Habitat, present year-round	O Observed
U Uncommon	B Breeding Habitat	E Expected
R Rare	S Summer Resident	
	M Migrant	
	V Occassional Visitor	
	U Unknown	

Common Name	Scientific Name	Si	A	St
MAMMALS	CLASS MAMMALIA			
Sierra Nevada golden-mantled ground squirrel	Spermophilus lateralis	O	C	G
Porcupine	Erethizion dorsatum	E	C	U
Coyote	Canis latrans	O	C	G
Black bear	Euarctos americanus	E	C	V
Bobcat	Lynx rufus	E	C	G
Striped skunk	Mephitis mephitis	E	C	G
Mule deer	Odocoileus hemionus	O	C	G
Gray fox	Urocyon cinereoargenteus	E	U	G
White-tailed hare	Lepus townsendii	E	C	G
Black-tailed jackrabbit	Lepus californicus	O	C	G
Long-tailed weasel	Mustela frenata	E	C	G
Audubon's cottontail	Sylviligus audubonii	O	C	G
Northern pocket gopher	Thamomys talpoides	E	U	G
Sagebrush vole	Lagurus curtatus	E	C	G

Appendix A Table 6

The following list includes those bird species most likely to be found at or adjacent to the Tioga Inn Project Area. Information used in this report comes from direct observations and from the following sources (Peterson 1961, Storer and Usinger 1963, Gaines 1965).

Symbols

Abundance	Status in Habitat	Sightings
C Common	G General Habitat, present year-round	O Observed
U Uncommon	B Breeding Habitat	E Expected
R Rare	S Summer Resident	
	M Migrant	
	V Occassional Visitor	
	U Unknown	

Common Name	Scientific Name	Si	A	St
Birds	Class Aves			
Red-tailed hawk	Buteo jamaicensis	O	C	G
American kestrel	Falco sparverius	E	C	G
Rough-legged hawk	Buteo lagopus	E	U	M
Golden eagle	Aquila chrysaetos	E	U	G
Great-horned owl	Bubo virginanus	E	C	G
Common nighthawk	Chordeiles minor	E	C	M
Poorwill	Phalaenoptilis nuttallii	O	C	S
Common raven	Corvus corax	O	C	G
Common flicker	Sphyrapicus varius	E	U	S
Gray flycatcher	Empidonax wrightii	O	C	S
Say's phoebe	Sayornis saya	E	C	S
Olive-sided flycatcher	Nuttallornis borealis	E	C	G
Pinyon jay	Gymnorhinus cyanocephala	O	C	G
Stellar's jay	Cyanocitta stelleri	O	C	G
Clark's nutcracker	Nucifraga columbiana	O	C	G
American robin	Turdus migratorius	O	C	G
Mountain bluebird	Sialia currocoides	E	C	G
Brewer's blackbird	Euphagus cyanocephalus	O	C	S
Brewer's sparrow	Spizella breweri	O	C	S
Brown headed cowbird	Molothrus ater	O	C	S
Green-tailed tohee	Pipilo chlorurus	O	C	S
Fox sparrow	Passerella iliaca	O	C	S
Song sparrow	Melospiza melodia	O	C	S
Black-billed magpie	Pica pica	O	C	G
Dark-eyed junco	Junco hyemalis	O	C	G

Appendix A Table 7

The following list includes those plant species observed in or adjacent to the Tioga Inn Project Area.

Common Name		Scientific Name
	Shrubs	
Big sagebrush		Artemisia tridentata
Antelope bitterbrush		Purshia tridentata
Rubber rabbitbrush		Chrysothamnus nauseosus
Twisted rabbitbrush		Chrysothamnus viscidiflorus
Desert peach		Prunus andersonii
Horsebush		Tetraddymia comosa
	Trees	
Pinyon pine		Pinus monophylla
Jeffrey pine		Pinus jeffreyi
Lodgepole pine		Pinus contorta
	Perennial Grasses	
Indian ricegrass		Oryzopsis hymenoides
Giant wildrye		Elymus cinereus
Needlegrass		Stipa sp.
Squirrel tail		Sitanion sp.
	Perennial Flowering Plants	
Prickley phlox		Leptodactylon pungens
Sulphur-flowered eriogonum		Eriogonum umbellatum
Prickley poppy		Aregemone munita
Cryptantha		Cryptantha circumscissa
Hoary aster		Machaeranthera canescens
Mule ears		Wyethia mollis
Indian paintbrush		Castilleja sp.
Lupine		Lupinus sp.

Appendix A Table 8

Native Plants Recommended For Revegetation in the Tioga Inn Project Area.

Common Name	Scientific Name	
Shrubs		
Antelope bitterbrush	*Purshia tridentata*	*
Big Sagebrush	*Artemisia tridentata*	*
Curl-leaf mountain mohogany	*Cercocarpus ledifolius*	*
Rubber rabbitbrush	*Chrysothamnua nauseosus*	
Mormon Tea	*Ephedra nevadensis*	*
Wood's rose	*Rosa woodsii*	*
Slender-leafed willow	*Salix exigua*	
Trees		
Pinyon pine	*Pinus* sp.	*
Lanceleaf cottonwood	*Populus acuminata*	*
Desert willow	*Chilopsis linearis*	*
Western juniper	*Juniperus occidentalis*	
Jeffrey pine	*Pinus jeffreyi*	
Perrenial Grasses		
Indian ricegrass	*Oryzopsis hymenoideds*	*
Squirrel tail	*Sitanion hysterix*	
Needlegrass	*Stipa comata*	
Wild rye	*Elymus* sp.	

* These plants are available from:

Plants of the Southwest
930 Baca St.
Santa Fe, NM 87501
(505) 983-1548

FISCAL IMPACT ANALYSIS

Report 4

FINAL
ECONOMIC IMPACT
AND
FISCAL ANALYSIS
FOR
THE TIOGA INN
SPECIFIC PLAN AND EIR

PREPARED FOR:

MONO COUNTY PLANNING DEPARTMENT

DECEMBER 1992

FINAL

ECONOMIC IMPACT AND FISCAL ANALYSIS

FOR

THE TIOGA INN SPECIFIC PLAN AND EIR

Prepared for:

MONO COUNTY PLANNING DEPARTMENT

December 1992

Prepared by:

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1. INTRODUCTION

PURPOSE OF ECONOMIC AND FISCAL ANALYSIS

CERTIFIED/Earth Metrics was retained by the Mono County Planning Department to conduct a study of the potential market demand and fiscal effects upon the county of a proposed hotel development to be located at the intersection of U.S. Highway 395 (US 395) and State Route 120 (SR 120), south of Lee Vining. The proposed development, called Tioga Inn, consists of a 120 unit hotel, a 100 seat restaurant, a service station/mini-mart, and 10 units of on-site housing.

This report is the product of CERTIFIED/Earth Metrics and consists of independent market research and objective evaluation relative to the market demand and fiscal effects of the proposed development. CERTIFIED/Earth Metrics has no financial interest in the subject hotel development.

STUDY APPROACH

Market analysis presented in this report evaluates the potential market demand for the hotel, restaurant, and service station/mini-mart portions of the proposed project. Current supply and potential market demand for lodging, restaurant, and service station/mini-mart are evaluated using a variety of techniques for market analysis. The proposed project is considered in terms of access, visibility, and proximity to visitor attractions, and is compared to competitive supply in the defined "market area." Data consisting of California tax and economic development data, traffic counts, visitor counts, archival and original survey data are assembled and reviewed in this market analysis.

A primary market area is defined, to distinguish between the proposed hotel's probable competition east of Yosemite National Park in Mono County and less probable competition with existing hotels on the "west-side" outside of Mono County. Price ranges and quality of competitive lodging and restaurants in the primary market area are documented. Historical trends in visitation and tourism are considered to form an opinion of potential market demand for the proposed hotel, restaurant, and service station/mini-mart.

Shift share analysis is provided to evaluate the baseline performance of the proposed hotel and amenities. Shift share refers to the proportionate share of an existing market that a proposed new commercial enterprise can be expected to capture, all locational and competitive factors being equal among the competitors. When there is competition for like-kind services, the market share captured by the new enterprise is shifted within the existing marketplace. The concept of shift share is important in fiscal analysis because fiscal benefit (i.e., tax revenue) does not necessarily accrue from shifting patrons among competitors within the boundaries of a taxing entity. Maximum fiscal benefit generally accrues instead from new business development in unserved or underserved markets.

SUMMARY

There appears to be unmet demand for lodging in the Lee Vining vicinity in summer. A small portion (one-in-six) of visitors attracted from Yosemite National Park to Mono Basin in summer are currently attracted to stay overnight in the basin. The constraint appears to be limited lodging supply. In winter, with Tioga Pass closed, shift share analysis demonstrates that the proposed 120-room hotel could potentially achieve 50 percent occupancy. Net revenue generation, exclusive of one-time fees intended to cover the costs of specified county services, is conservatively estimated to be $195,000 (first full year after opening) to $304,000 (fifth year). Fully 90 percent of the revenue would be derived from property tax and transient occupancy tax; therefore, the estimate is not sensitive to evaluations of the other project elements (i.e., restaurant, service station/mini-mart).

2. MARKET ANALYSIS

LOCAL SETTING

Mono County has a permanent population of approximately 10,403 persons (Department of Finance, 1992). The county experienced an average annual growth rate of 5.3 percent per year from 1970 to 1980, which slowed to an average of 1.4 percent per year between 1980 and 1990 (see Figure 1). Employment in Mono County is heavily weighted in the tourist industry with approximately 25 percent of all jobs held in the county resting in the hotel/motel industry, and 16 percent in eating/drinking establishments (see Table 1). Employment in the tourism industry is seasonal (Employment Development Department, 1990).

The location of the project site at the intersection of US 395 and SR 120, just south of Lee Vining, marks a key crossroads in the scenic eastern Sierra Nevada, one of the fastest growing tourist visitor areas in the state. The area surrounding the project site provides a wealth of scenic resources and summer recreational opportunities. Lee Vining's main attraction is Mono Lake, the focal point of the Mono Basin National Forest Scenic Area, and the Mono Lake Tufa State Reserve. Mono Lake is famous for its dramatic scenery (tufa towers) and is host to a wide variety of wildlife including large numbers of seagulls and migratory waterfowl. The newly constructed Mono Basin National Forest Scenic Area Visitor Center offers educational exhibits, art galleries, a 98 seat theater, bookstore, and other services for Mono Lake's estimated 200,000 yearly visitors.

According to interpretation of visitation records of the Mono Lake Committee Visitor Center in downtown Lee Vining, 64.5 percent of visitation is in the summer months (June through September) and 83 percent during the extended dry season (May through October). Visitation at the Mono Lake Committee Visitor Center in downtown Lee Vining is itself approximately 40,000 persons per year in recent years according to the Mono Lake Committee (Mono Lake Committee, 1992).

Lee Vining's motto of "Gateway to Yosemite" partly describes this community's favorable geographical position only 14 miles from Yosemite National Park's eastern entrance at Tioga Pass. World renown Yosemite National Park hosts over 3 million tourists per year, approximately 500,000 or 15 percent of whom travel through the Tioga Pass entrance in the summer months (see Figures 2 and 3). Other outdoor recreation opportunities can be found in the Inyo National Forest which hosts 27 campgrounds in the Lee Vining Ranger District, and in the nearby Toiyabe National Forest.

Northeast of Lee Vining is the historic town of Bodie, the most well preserved and largest authentic ghost town in the country. This old gold mining town has come to personify the "rowdy" spirit of the old west. The town is now a State Historic Park that offers a museum and self guided tours.

Another popular visitor area in the project site vicinity is the June Lake Loop and its surrounding recreational opportunities. The June Lake Loop offers spectacular vistas, four alpine lakes, 14 miles of fishing creeks, and several trailheads to backcountry terrain. In the winter months, nearby June Mountain offers skiing on over 500 acres and access from eight chairlifts. June Mountain is visited by approximately 75,000 skiers and winter sports enthusiasts each year. Mammoth Mountain, a much larger ski area, is located approximately 45 miles to the south of the project site.

Interpretation of Mono Basin visitation estimates and California Department of Transportation (CALTRANS) average daily traffic volume counts of U.S. 395 and S.R. 120 reveals that 1000 vehicles per day (vpd) are, during the summer months, attracted to the local Mono Basin attractions. This latter volume represents 25 percent of the daily traffic volume on U.S. 395 and 50 percent of the daily volume on SR 120.

Figure 1 Mono County Population
1970 – 1992

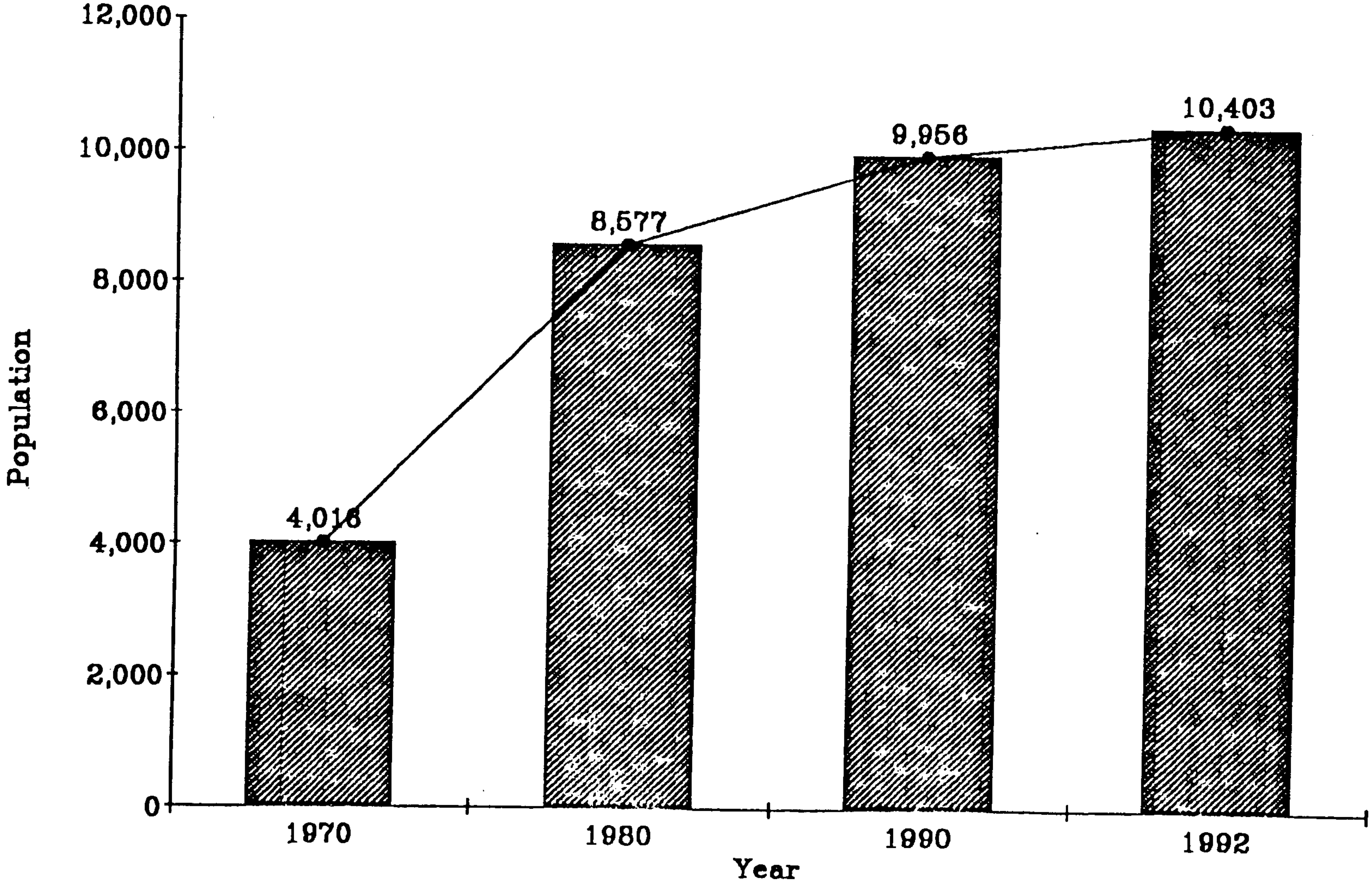


Figure 2 Yosemite National Park

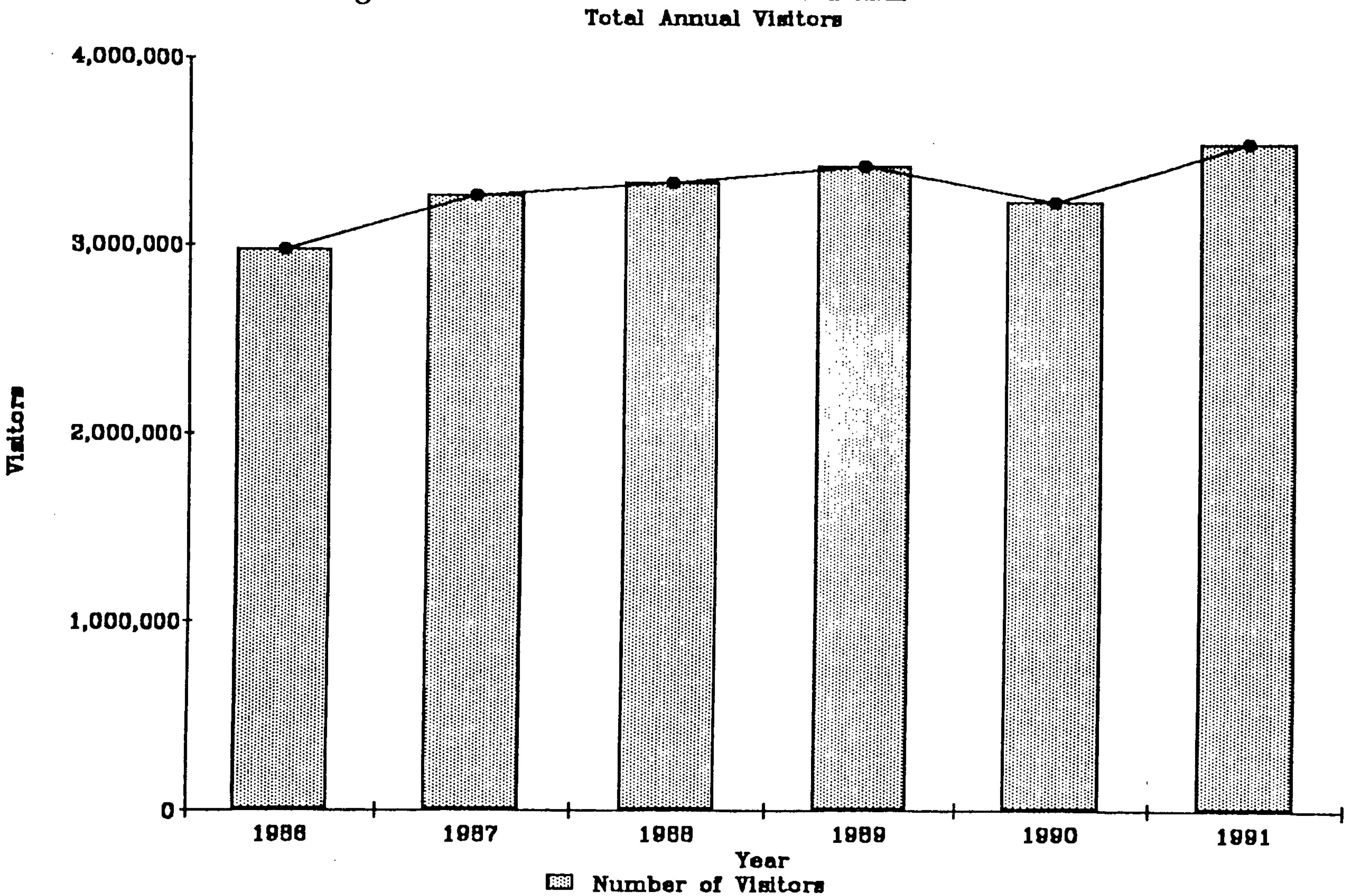


Figure 3

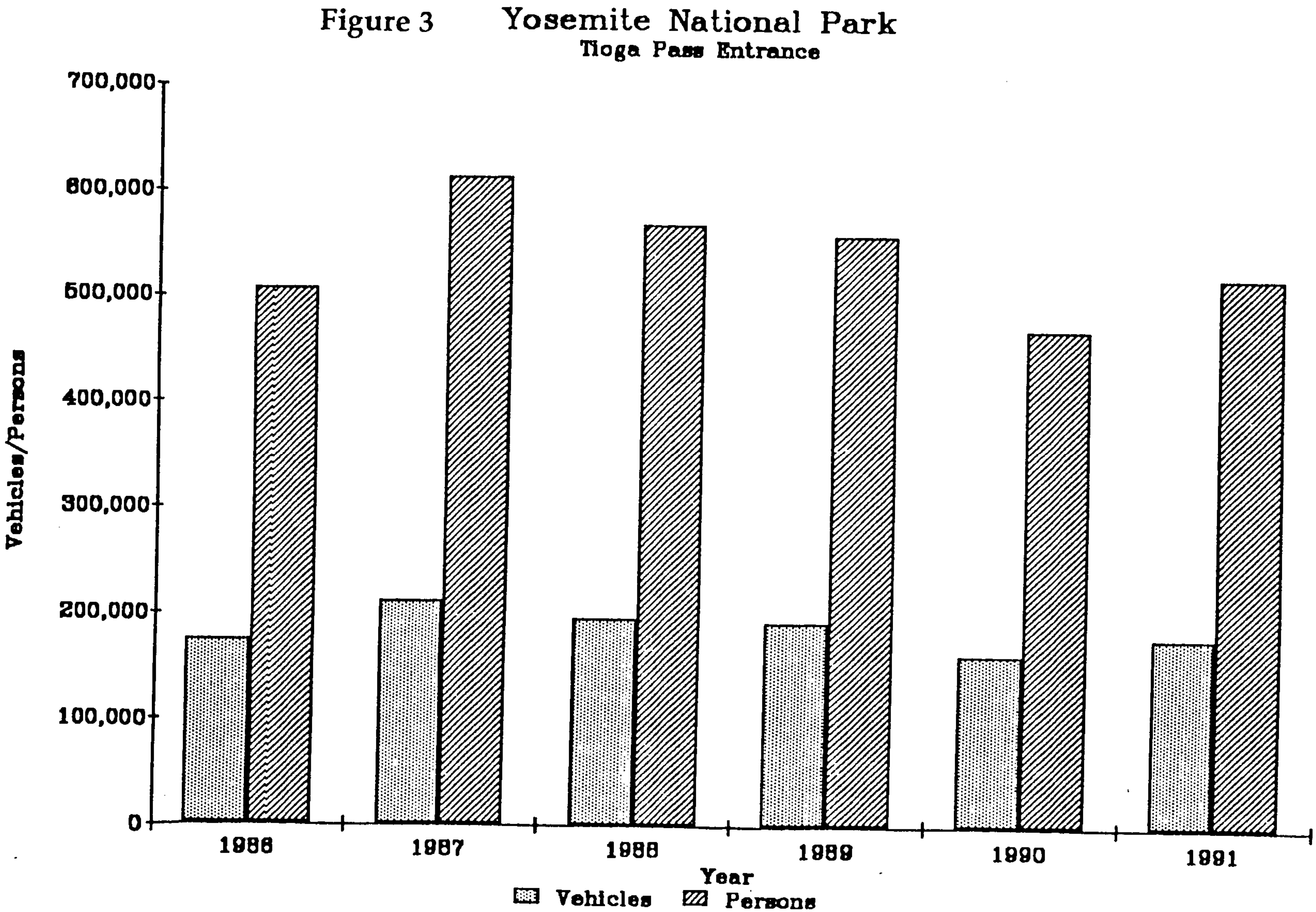

Yosemite National Park
Tioga Pass Entrance
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Vehicles/Persons
1986
1987
1988
1989
1990
1991
Year
Vehicles
Persons

TABLE 1. 1990 MONO COUNTY EMPLOYEE COUNT BY INDUSTRY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVERAGE
Federal Government	99	96	92	107	138	183	208	195	195	132	115	176	145
State Government	148	149	141	119	112	111	108	106	102	106	124	140	122
Local Government	865	725	732	651	659	735	524	528	664	712	701	570	727
Agriculture	48	53	51	60	65	73	77	79	77	72	60	42	63
Mining/Construction	381	351	365	429	479	584	648	720	693	571	559	541	535
Manufacturing/Transportation	41	41	39	44	46	50	46	47	49	41	40	46	44
Communications/Utilities	66	64	68	70	71	68	73	76	77	70	72	70	70
Wholesale/Building Materials/ Hardware	57	58	55	59	59	56	66	60	58	57	58	57	58
General Merchandise/Food Stores	97	92	98	81	92	108	206	217	218	177	170	174	141
Auto Dealers/Service Stations	56	51	50	56	63	65	83	82	73	53	52	54	62
Eating/Drinking Places	956	990	1,038	879	745	745	926	911	867	694	634	654	837
Miscellaneous Retail	356	350	357	293	274	275	290	291	286	267	305	309	300
Financial/Insurance/Real Estate	418	451	443	365	354	326	317	350	331	294	316	373	362
Hotels/Motels	2,225	2,183	2,128	1,813	997	993	1,055	1,040	1,010	891	1,010	898	1354
Personal/Business Services	63	68	64	70	53	60	50	60	63	65	56	62	61
Automotice/Miscellaneous Repair	46	41	44	49	46	50	51	46	44	49	50	50	47
Amusement/Recreation	59	57	54	78	61	79	70	63	59	48	40	46	60
Health/Legal Services	193	199	197	201	198	187	191	192	187	190	195	198	194
Education/Social Services/ Membership Organizations	140	141	138	113	104	121	99	91	95	84	85	90	108
Engineering/Accounting/ Management Services	85	94	92	84	91	100	103	101	98	133	123	125	102
Miscellaneous	10	9	8	12	8	6	15	11	8	10	9	7	9
Total Government	1,112	970	965	877	909	1,029	840	961	829	950	940	886	994
Total Private	5,297	5,293	5,289	4,756	3,806	3,946	4,366	4,437	4,293	3,766	3,834	3,796	4407
Total All Industries	6,409	6,263	6,254	5,633	4,715	4,975	5,206	5,266	5,254	4,716	4,774	4,682	5401

Hotel/Motels % of Total: 25%
Eating/Drinking Places % of Total: 16%

Source: California Employment Development Department, 1992.

MARKET AREA

A market area is defined as a geographic area from which future consumers of a proposed commercial project may originate. The proposed Tioga Inn development would consist of visitor-serving commercial uses. Residents of Lee Vining could also patronize the proposed restaurant and service station/mini-mart.

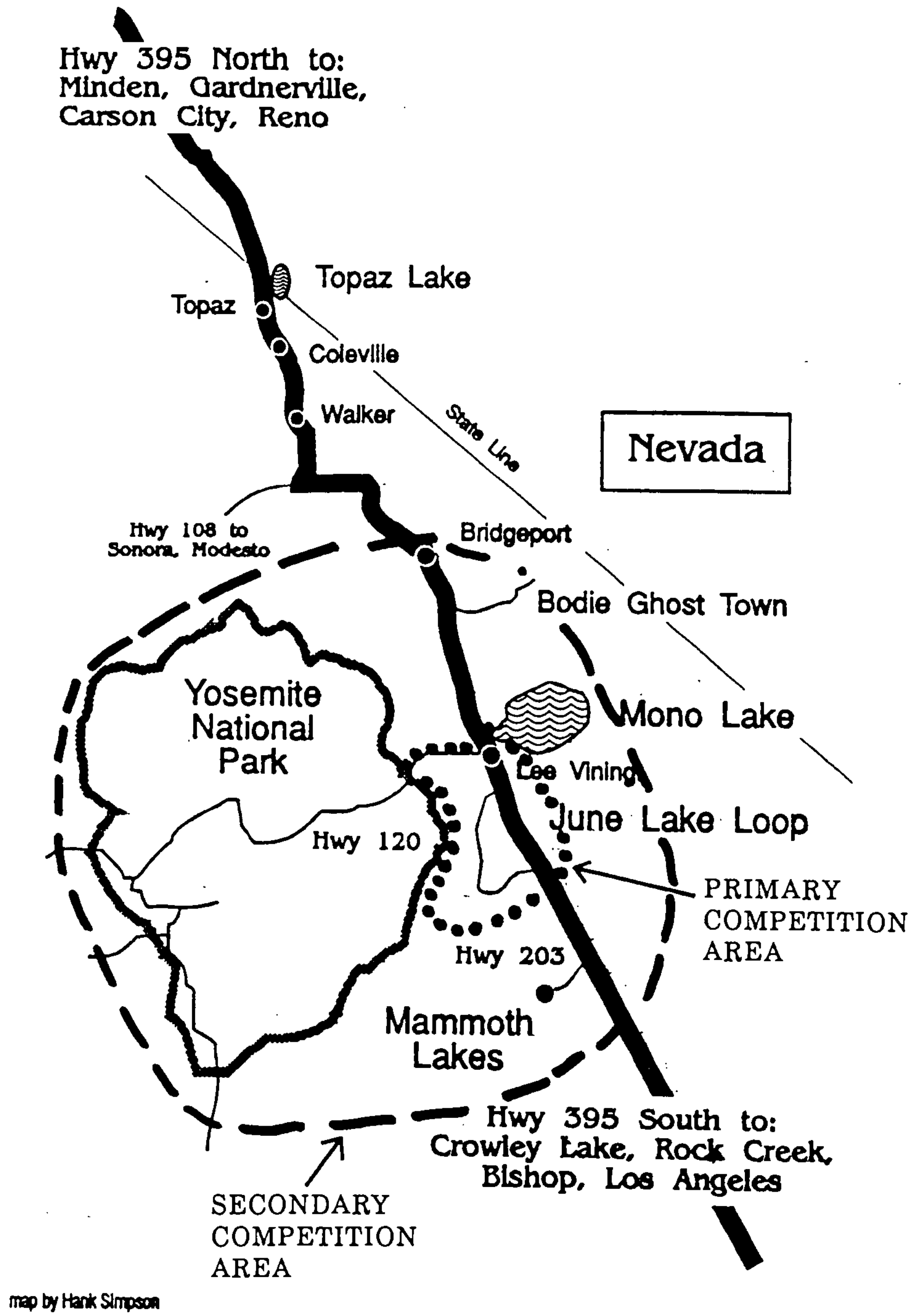
The primary market area is defined relative to the project site, where given a choice between similar alternatives, 75 to 85 percent of consumers will normally choose services located within this area. The secondary market area is the area where given a choice between similar alternatives, approximately 85 to 100 percent of consumers will normally choose services located within this area.

Estimation of the primary market area is based on a number of factors including kind of services, geographic position, quality of competitive services, proximity to visitor attractions, road access, driving times, and visibility. Different kinds of commercial uses (ie. hotel, restaurant, service station/mini-mart) can have different consumption patterns, hence different market areas.

The primary market area for lodging consists of Mono Basin and the area south to June Lake, east of Yosemite National Park (see Figure 4). Mammoth Lakes is excluded from the primary market area because it is approximately 35 miles south of the project site. Moreover, Mammoth Lakes is a destination vacation area with its own attractions, and the proposed hotel will not be in primary competition with the visitor attractions in Mammoth Lakes. Bridgeport was similarly excluded owing to its distance and lack of significant visitor attractions. The secondary market area for the proposed hotel extends south to Mammoth Lakes, north to Bridgeport, and, during summer, would also extend west to Yosemite National Park.

In summer, it is estimated that approximately 75 to 85 percent of visitors seeking lodging in the project site vicinity would stay within the primary market area. Nearly 100 percent of visitors seeking lodging would stay somewhere within the larger secondary market area which includes Yosemite National Park. The proposed site of the Tioga Inn is situated centrally, at the junction of two key highways (US 395 and SR 120), and close to the Lee Vining airstrip.

The primary market areas for restaurants and service stations/mini-marts are typically smaller than those for hotels. Convenience and attraction of passby traffic are the primary determinants for service stations/mini-marts. Consumers are less likely to travel more than a five mile radius to purchase similar services of food, automotive service, and mini-market goods. Because of this geographic limiting factor, a secondary market area is not considered meaningful for restaurants and service station/mini-marts. Therefore, the primary market area for the proposed restaurant and service station/mini-mart includes the community of Lee Vining only (see Figure 4).



earth metrics

SCALE
NO SCALE

FIGURE 4. PRIMARY AND SECONDARY COMPETITION AREAS

LODGING DEMAND

Lodging demand in the primary market area varies seasonally and differs by community. Lee Vining receives the majority of its visitors between the months of May and October. This visitor pattern is consistent with the availability of nearby summer attractions (e.g., Mono Lake, Yosemite National Park, and the Inyo National Forest). Based on figures of monthly attendance at the Mono Lake Committee Information Visitor Center, it is estimated that on an annual basis approximately 65 percent of visitors visit Lee Vining in the dry season (June through September) and over 80 percent visit in the extended dry season (May through October). Lodging demand in Lee Vining follows this above seasonal pattern.

Approximately 75 percent of all Yosemite visitors are from California (Gramman, 1992). No formal visitor surveys have been completed for the Lee Vining area including Mono Lake, but the Lee Vining area could be expected to have hybrid tourist demographics combining those of Yosemite National Park and June Lake.

Lodging demand in June Lake is relatively less seasonal than lodging demand in Lee Vining owing to the winter attraction of June Mountain ski area. The June Lake Chamber of Commerce is currently performing a study to determine seasonal variations in tourism. Based on variations of lodging prices by season, it would appear that summer (May through September) and winter "ski weekend" demand are roughly equal.

Based on a report prepared by Quad Consultants, "Winter Population Survey: Mammoth Lakes/June Lake" (1983) average winter vacancy rates ranged from 24 percent in Mammoth Lakes to 30 percent in June Lake. Because of a drop in tourism experienced in the past two years during the nationwide recession, vacancy rates have been abnormally high.

In the summer motel/lodging survey conducted for the Yosemite Area Regional Transit Study approximately 44 percent of respondents indicated they would visit Mono County attractions (18 percent-Bodie Ghost Town, 17 percent-June Lake/Mammoth Lakes, and 9 percent-Mono Lake). Approximately 60 percent travelled by automobile or van. The motel/lodging survey was conducted by the Mariposa County Department of Public Works, in August and September 1991, at a total of 25 lodging places.

Of the 25 lodging places surveyed, three on Yosemite's east side were included (i.e., The King's Inn, Best Western Lakeview, and Gateway). Of the 443 survey questionnaires analyzed, approximately 11 percent (51 survey questionnaires) were survey questionnaires completed by guests at the three Mono County lodging facilities. If these 51 survey responses are excluded, then the proportion of "west-side" lodging patrons who also visited attractions on Yosemite's east side, but did not necessarily stay overnight on the east side, is 36 percent.

In a separate summer 1990 survey, called the Yosemite National Park (YNP) survey, approximately 24 percent of respondents stated they were spending at least one night in lodging in a nearby community. Approximately 6.5 percent of respondents noted specifically they were staying overnight in lodging on Yosemite's east side, from Mammoth to Bridgeport.

In number, these above Mariposa and YNP survey responses are equivalent to a potential 195,000 overnight visitors per summer season (1100 overnight visitors per day), who desire to stay at least one night in lodging on Yosemite's east side. At three persons per room average occupancy, this number equates to 65,000 booked room nights per season (350 booked room nights per day). A small proportion (one-in-six) of visitors attracted from Yosemite National Park to Mono Basin are currently attracted to stay overnight in Mono Basin. These numbers demonstrate that, in the summer season, bookings are apparently constrained not only by visitor preferences in lodging but also by the limited supply of lodging in Mono Basin.

Lodging Supply And Competition

The proposed hotel would be unique among existing lodging facilities in the primary market area, that is, east of Yosemite National Park in the Lee Vining and June Lake vicinity. The proposed hotel would have 120 rooms, lobby, in-hotel restaurant, indoor pool, and health club. The estimated cost of an average room at the proposed hotel at opening is approximately $100 per night. On the eastern side of Yosemite National Park, there are currently no full service hotels of this type north to Lake Tahoe, and south to Mammoth Lakes. Within the primary market area, which is Mono Basin east of Yosemite National Park, 120 rooms would represent approximately 25 percent of the total supply of lodging rooms if the proposed Tioga Inn were built.

The recent growth in destination-type hotels on the western side of Yosemite shows the strong expected growth of tourism to the Yosemite area from the western side. The new Marriott Tenaya Lodge in Fish Camp and the proposed "Yosemite Springs Resort" are manifestations of the unmet or latent demand for major destination hotels in the Yosemite National Park area. Because there is currently no high-end, amenity-rich lodging near Yosemite's eastern entry, the proposed Tioga Inn could be expected to attract patrons to stay overnight, who intend to visit Yosemite's east side, but who would not normally seek overnight accommodations or would seek them elsewhere outside of Mono Basin.

The competitive supply of lodging in the primary market area is presented in Table 2. As review of Table 2 shows, the proximate competitors consist of motels (primarily in Lee Vining) or motel/cabins (primarily in June Lake). June Lake also has a number of condominium units for rent which were not included in this analysis because they are not considered to be like-kind lodging. The lodging in the primary market area most comparable to the proposed project is the Boulder Lodge in June Lake. The proposed Tioga Inn is more accessible from Yosemite than Boulder Lodge, being located on SR 120 east of Tioga Pass.

Within the secondary market area there are a number of hotels that would provide a similar level of service, amenities, and price as the proposed Tioga Inn. In Yosemite National Park, the Yosemite Lodge ($57-$90 per night), Ahwahnee Hotel ($177-$201 per night), and Wawona Hotel ($60-$80 per night) would be in a comparable range of service and price. On the western side of the park, the Marriott at Fish Camp would provide similar amenities at slightly higher prices. In Mammoth Lakes, Mammoth Mountain Inn ($69-$145 per night), Jagerhof Lodge ($69-$135 per night), Quality Inn ($69-$140 per night), Shilo Inn ($69-$110 per night), Sierra Lodge ($65-$85 per night), and Travelodge ($57-$105 per night) would be in a comparable price/amenity range as the proposed hotel.

Shift Share Analysis

As is common in new hotel developments in developed resort areas or other developed tourist destination areas, early business success typically depends upon competitive displacement or "shift" of patrons from existing lodging within the market area. Because the proposed Tioga Inn would be unique in Lee Vining in its provision of accommodations and amenities (rooms are expected to cost almost twice as much as the average in the area), competitive displacement can expected to be minimal and not sufficient to assure the proposed hotel's success. The viability of the proposed hotel would depend instead upon management's ability to attract summer visitors of Mono Lake/Mono Basin National Forest Scenic Area and Yosemite National Park to stay overnight.

Existing lodging in the primary market area would not be in direct competition with the proposed Tioga Inn for provision of like-kind services. Existing lodging in the primary market area would continue to serve the market for rooms in the $40 to $70 range; in contrast, the proposed hotel is planned to serve the higher-end, $100 to $150 range. One target market consists of the one-in-six Yosemite visitors who although interested in visiting attractions in Mono Basin seek overnight accommodations elsewhere outside the primary market area.

In summer, the proposed hotel could be expected to attain a maximum of 10 to 15 percent of its booked room nights from displacement of patrons of existing lodging within the primary market area. Most bookings would have to be obtained from the numerous visitors attracted to Mono Basin and Yosemite National Park who do not currently seek overnight accommodations or who currently seek accommodations elsewhere outside the primary market area. A modest percentage (3 to 5 percent) of patrons of existing lodging facilities in Mono Basin could potentially be attracted to upgrade to the $100 to $150 per night range from the $40 to $70 per night range. This estimate is approximate, based on the above-described dissimilarity of the proposed hotel accommodations and accommodations of existing lodging in the Mono Basin, and is intended to emphasize that displacement of patrons from existing lodging facilities in Mono Basin would not be sufficient for financial feasibility of the proposed hotel.

In winter, with Tioga Pass closed, the proposed 120-room hotel would be dependent upon displacement of patrons of existing lodging within the primary market area. Much of the winter attraction to the Mono Basin is derived from skiing. Based on shift share analysis, if the proposed Tioga Inn captured a proportionate share (25 percent) of the existing winter room bookings (45,000 booked room nights per season or 250 booked room nights per day), the proposed inn could potentially achieve 50 percent occupancy (60 booked room nights per day).

A proportionate share is expected when competing facilities are comparable and similarly located. The proposed Tioga Inn would generally have superior amenities and room accommodations, would be closer to the Lee Vining airport, but would be farther from the local ski areas. Mammoth Mountain ski resort, for example, is approximately 45 miles south of Lee Vining.

A smaller 60-room hotel in winter could potentially achieve 60 percent occupancy (35 booked room nights per day). This potential booking in winter is calculated from the same assumption of proportionate share of existing room bookings. The proportionate share for a new 60-room hotel is 14 percent, based upon the estimated existing supply of rooms in hotel-type lodging (360 rooms).

TABLE 2. HOTEL-TYPE LODGING WITHIN THE PRIMARY MARKET AREA

NAME	ROOM TYPE/RATE	UNITS	AGE
Best Western- Lakeview Lodge Lee Vining	<u>Summer</u> Sing. $65 Dbl. 75 <u>Winter</u> Sing. $47 Dbl. 57	47	No Information
Blue Skies Motel Lee Vining	<u>Summer</u> Sing. $37 Dbl. 60 <u>Winter</u> Closed	11	50+ Yrs.
El Mono Motel Lee Vining	<u>Summer</u> Sing. $49 Dbl. 65 <u>Winter</u> Closed	10	65 Yrs.
Gateway Motel Lee Vining	<u>Summer</u> Sing. $69 Dbl. 74 <u>Winter</u> Sing. $35 Dbl. 45	12	40 Yrs.
King's Inn Lee Vining	<u>Summer</u> Sing. $45-48 Dbl. 51 <u>Winter</u> Closed	14	56 Yrs.
Murphey's Motel Lee Vining	<u>Summer</u> Sing. $63 Dbl. 73 <u>Winter</u> Sing. $44 Dbl. 51	44	2-30 Yrs.

(CONTINUED)

TABLE 2 (CONTINUED). HOTEL-TYPE LODGING WITHIN THE PRIMARY MARKET AREA

NAME	ROOM TYPE/RATE	UNITS	AGE
Whispering Pines June Lake	Summer (Aug. & Holidays) Dbl. Motel - w/kitchen $55 Winter Dbl. Motel - w/kitchen $60	65	0-30 Yrs.
June Lake Motel and Cabins June Lake	Summer (July to August) Dbl. Motel $50 Winter (weekend) Dbl. Motel $52	26	20+ Yrs.
June Lake Village June Lake	Summer (weekend/holiday) Dbl. Motel $59 Winter Dbl. Motel $54	22	Approx. 20+ Yrs.
Boulder Lodge June Lake	Summer (July - August) Dbl. Motel $75 Winter (holiday) Dbl. Motel $68	60	36 Yrs.

Source: CERTIFIED/Earth Metrics, 1992.

Lodging Demand Conclusions

CERTIFIED/Earth Metrics estimates that the proposed 120-room hotel would in the long-term (after five years of operation) be able to achieve an average occupancy rate of 85 percent or better during the summer months (May through October), and 50 percent occupancy in the winter months (November through April). The former summer rate is based on the preceding analysis which demonstrates demand for lodging by visitors of Mono Basin and limited supply. The latter winter rate is based on the reasoning presented previously that the proposed Tioga Inn could potentially capture a proportionate share (25 percent) of winter bookings in "east-side" lodging. The lower winter occupancy level results from winter closure of Tioga Pass, lack of winter attractions in the immediate area of Lee Vining, and availability of competitive lodging in June Lake and Mammoth Lakes.

The nation and region are in an economic recession. Travel by Americans including Californians is in a slump. Considering these current market factors and competitive factors, it is the opinion of CERTIFIED/Earth Metrics that in the first year of operation, the proposed 120-room hotel could attain average occupancy rates of 65 percent at $100 per room night in the "summer" months (May to October), and 40 percent at $74 per room night in the "winter" months (November to April). As summer occupancy rates improve to 85 percent or better in subsequent years, summer room rate increases of approximately 4 to 5 percent per year would be attainable.

In summer the proposed Tioga Inn hotel could achieve a strong level of market support while not displacing a significant number of patrons from existing lodging in Mono County. In winter with the closure of Tioga Pass the proposed hotel would be dependent upon displacement of patrons of existing lodging in Mono County. These conclusions follow from the market analysis and market conditions presented herein and summarized below:

- The facilities, services, and quality of accommodations of the proposed hotel could be unique in the primary market area.

- The project site location is ideal for attracting visitors from Yosemite National Park and Mono Lake. Specific attractions to the site are the panoramic views of the surrounding Mono Basin and its proximity to Yosemite's Tioga Pass entry.

- The proposed hotel in summer could attract tourists to stay overnight in the Lee Vining area, satisfying the latent demand of 6.5 percent of existing Yosemite National Park tourists for lodging in Mono Basin, rather than shifting patrons from existing Lee Vining lodging.

- Growth in popularity of Yosemite National Park as a national and international tourist destination, combined with the limited amount of lodging inside the park boundaries, enhances the long-term outlook for peripheral hotels including the proposed Tioga Inn.

- In winter the proposed Tioga Inn could attract some of the existing patrons of June Mountain and Mammoth Mountain ski areas to stay overnight at the proposed inn. For a new 120-room hotel a proportionate share of the market is estimated to be 25 percent or, equivalently, 60 booked room nights per day. Some of this potential represents spillover from Boulder Lodge in June Lake.

RESTAURANT DEMAND

The proposed development would include two restaurants: a coffee shop style restaurant located within the hotel building and a separate 100 seat restaurant located on top of the site's eastern ridgeline. This analysis focuses on the separate 100 seat restaurant (the "proposed restaurant"). The proposed restaurant is expected to have lunch entrees in the $6.00 to $10.00 range and dinner entrees in the $12.00 to $22.00 range. The restaurant would also offer panoramic views of the Mono Basin area.

The primary market area would consist of the Lee Vining area only. Given a choice among similar alternatives, 95 percent of consumers, including guests of the proposed Tioga Inn, would be expected to eat within a 10 mile radius of the project site.

Restaurant Supply and Competition

A list of restaurants and entree price ranges in the Lee Vining area is presented in Table 3. As Table 3 shows, the proposed restaurant would compete with a number of restaurants in both the lunch and dinner trades. The main competitors for the lunch trade would be Nicely's, Blue Skies (open in summer only), and the Yosemite Trails Inn. The main competitors for the dinner trade would include the Yosemite Trails Inn and the Mono Inn (open in summer only).

TABLE 3. RESTAURANTS WITHIN THE PRIMARY MARKET AREA

RESTAURANT	LUNCH $	DINNER $	OPEN
Blue Skies	$4.25 - $8.00	$4.25 - $8.00	Summer only
Bodie Mike's	N/A	N/A	Summer only
Kellogg's	N/A	N/A	N/A
Mono Cone	N/A	N/A	Summer only
Mono Inn	N/O	$9.50 - $16.00	Summer only
Nicely's	$3.25 - $5.00	$6.95 - $10.95	Year round
Yosemite Trails Inn	$4.00 - $6.30	$8.95 - $15.95	Year round

N/A - Not available at time of survey
N/O - Not open

Source: CERTIFIED/Earth Metrics, 1992.

The location of the proposed restaurant has good visibility and access from both US 395 and SR 120. This preferred location could enable market penetration into the tourist restaurant market.

The proposed restaurant would derive its core of patronage from guests of the proposed hotel. Their patronage can be expressed in summer and winter seatings. For the proposed 120-room hotel, the baseline number of seatings in summer could potentially be 200 seatings per evening (two turns per evening). In winter, the baseline number of seatings could potentially average 120 seatings per evening (1.2 turns per evening). A "turn" or "turnover" refers to the number of times the tables at the restaurant would be used in one evening. The above baseline estimates are based soley on the core or "baseline" patronage of hotel guests.

Shift Share Analysis

Owing to direct competition between the proposed restaurant and select existing restaurants in Lee Vining (i.e., Mono Inn and Yosemite Trails Inn), the proposed restaurant could potentially shift a percentage of existing business. Maximum patronage shift, during the first two years of the proposed restaurant's opening, is estimated based upon the concept of proportionate market share. Expressed as a percentage of the lunch and dinner trade in Lee Vining area restaurants, the maximum percent shift is 20 to 25 percent (average three percent per restaurant for each of the seven existing restaurants open in summer). Patronage shift could vary among individual restaurants.

This above percent shift of the existing lunch and dinner trade to the proposed restaurant is the maximum, near-term shift conservatively estimated based upon simple shift share analysis. The actual shift could potentially be less owing to mitigating factors:

i) co-location. The proposed hotel, service station, and restaurant would tend attract new lunch and dinner patrons among highway travellers and hotel guests rather than shift patrons away from existing Lee Vining area restaurants; and,

ii) principle of comparability. The proposed restaurant entree prices as conceived by the project applicant are relatively higher compared to those of the existing competitive restaurants.

In the long-term, within five years of opening, the proposed hotel/restaurant is expected to capture enough trade consisting of highway travellers, hotel patrons attracted to stay overnight, and Yosemite National Park/Mono Basin visitors, that there would be a net increase in the local lunch and dinner business. Additional business attracted by the proposed project after two years could also have a positive "spill-over" effect upon the existing local restaurants (e.g. Nicely's) and other businesses in Lee Vining.

Restaurant Demand Conclusions

CERTIFIED/Earth Metrics estimates that the proposed restaurant could achieve a baseline summer season seating of 50 to 60 percent of capacity within two years. Capacity is three turns per evening or, equivalently, 300 seatings. With establishment of market identity in ensuing years, capacity levels of 70 to 80 percent (210 to 240 seatings per evening) could be achievable.

In the winter season, restaurant patronage is likely to be reduced from the summer levels as described in the discussion entitled "Lodging Demand Conclusions." In winter, baseline seating of 30 to 40 percent of capacity could be achievable within two years. In ensuing years capacity levels of 50 to 60 percent (150 to 180 seatings per evening) could be achievable.

The above estimates are based on core or baseline patronage by hotel guests. Shift share analysis demonstrates that maximum restaurant patronage shift from the existing Lee Vining area restaurants to the proposed restaurant could be 20 to 25 percent. The maximum shift is not expected owing to mitigating factors described above.

The proposed 100 seat restaurant could potentially achieve a high level of market support owing to the following factors:

- Excellent location, visibility, and access from US 395 and SR 120.

- Unique restaurant location that would provide panoramic views.

- Creation of restaurant market demand from the hotel portion of the proposed project.

SERVICE STATION/MINI-MART DEMAND

The proposed project would also include a service station and mini-mart. The service station/mini-mart would be located at the main entrance to the development near the existing scenic turn-out on SR 120, south of US 395.

Service Station/Mini-Mart Supply and Competition

The market area for a service station/mini-mart is geographically limited by consumer preferences purchase fuel and convenience food and other convenience within a short distance of the consumer's travel path. Location is the most important determinant in the capture of trade at service stations. When a motorist needs to purchase gasoline, he/she generally does so at the closest possible, or most convenient service station. Only gross price differences or credit card/brand name loyalty between competitive suppliers could potentially sway this general consumer preference for convenience. For this reason, the primary competition area for the proposed service station/mini-mart at its largest consists Lee Vining.

Average daily traffic (ADT) volumes on U.S. 395 and SR 120 are illustrated in Figure 5. These figures reflect ADTs, in both directions combined, counted on US 395 south of SR 120, and on SR 120 at US 395. As is evident in Figure 5, US 395 carried at least 4000 vehicles per day (vpd) and SR 120 carried at least 2300 vpd, in each year during 1987 to 1991. This traffic volume has supported three service stations in Lee Vining.

Lee Vining currently has three service station/mini-mart combinations: B-P, Chevron, and Union 76. The Blue Skies Motel also has a mini-mart, but is not considered competitive owing to its lack of a service station element. These above three service stations are located within a quarter of a mile of each other in downtown Lee Vining.

The proposed service station/mini-mart would achieve a high degree of market capture owing to its superior highway visibility and location on SR 120 and near US 395. With name-brand recognition and competitive pricing, it could attain a high percentage share of the business of motorists. The proposed project would create some demand for the service station from patrons of the proposed hotel and restaurant, and the service station itself could potentially attract business to the proposed coffee shop and gift shop.

Shift Share Analysis

Patronage of the existing service stations in Lee Vining would be shared with the new service station at the proposed project. Based on existing traffic volumes and preferred location on US 395 and SR 120, the proposed service station could be expected to capture at least a proportionate share (25 percent) of fuel and mini-market sales from existing service providers in Lee Vining.

The existing service stations (B-P, Chevron, and Union 76) could potentially continue to operate at reduced shares of patronage consisting of motorists travelling north/south on US 395 and other motorists who have strong brand-name loyalty. It is also possible that one of the existing service station operators could seek to relocate at the proposed site rather than operate at 75 percent of his existing business volume.

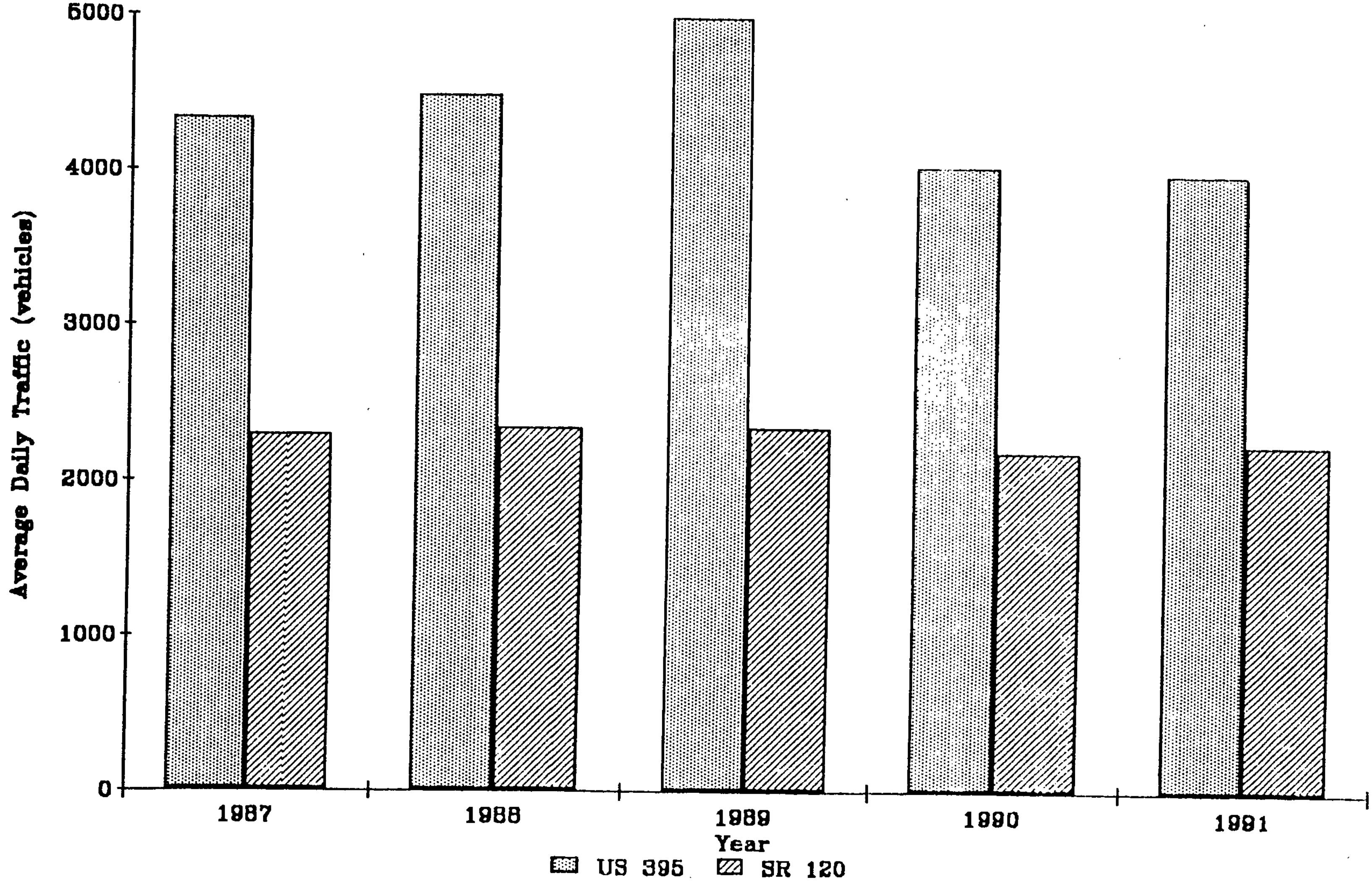
Service Station/Mini-Mart Demand Conclusions

The proposed service station/mini-mart could attain at least a proportionate share of the trade in the Lee Vining area for the following reasons:

- Preferred location, visibility, and access from US 395 and SR 120.

- Creation of service station/mini-mart market demand by the hotel and restaurant portions of the proposed project.

Figure 5 **Average Daily Traffic Volume**
U.S. 395 and S.R. 120



3. FISCAL IMPACT ANALYSIS

The following fiscal analysis focuses on evaluating potential fiscal effects of the proposed project on Mono County. The analysis addresses the direct changes in revenues and public service costs resulting from the proposed project. As most of the on-site infrastructure improvement cost would be provided by future developers, on-site capital improvement costs are not included as part of this analysis. Other jurisdictions (State of California, U.S. Forest Service, etc.) could also be fiscally affected by the implementation of the proposed project. The proposed project would be expected to favorably impact the tax and revenue collection of the county.

EMPLOYMENT

The proposed project, at full build-out, would be expected to generate an estimated 108 permanent and/or seasonal jobs (see Table 4) and an undetermined number of temporary construction related jobs. Based on an average household size in the unincorporated areas of Mono County of 2.56 persons, at 100 percent occupancy the housing portion of the proposed project (ten units) could be expected to house up to 26 persons including employees of the proposed project. This additional employment would also result in generation of local sales tax and property tax revenues by the employed residents, would be a positive fiscal benefit to the county.

TABLE 4. PERMANENT AND SEASONAL EMPLOYMENT PROJECTIONS FOR THE PROPOSED TIOGA INN PROJECT

BUSINESS	EMPLOYMENT DENSITY (1)	EXPECTED EMPLOYMENT
Hotel	0.67 employees/room @ 120 rooms	80
Restaurant	0.22 employees/seat @100 seats	22
Service Station with Mini-Mart	6 employees/station	6
Total		108

(1) Average employment densities from Trip Generation (1991). Hotel employment density of 0.67 per room is average of hotel and motel densities.

Source: Trip Generation Institute of Transportation Engineers (1991), and CERTIFIED/Earth Metrics (1992).

REVENUE GENERATION

Three main sources of locally generated tax revenue in the county are property taxes (secured and unsecured), sales/use taxes, and transient occupancy tax which collectively accounted for approximately 95 percent of the total collected taxes in Mono County in fiscal year 1990-1991 (Mono County Final Budget, County Assessor's Office, 1992). The main license fees and permit fees the proposed project can be expected to generate are pool and food permits, business license fees, construction permits, and well and septic permit fees. The estimated taxes, license fees, and fees that would be generated by the proposed project are detailed below.

Property Tax Revenue

The project site (Assessors Parcel Numbers 21-08-11 and 12) has an assessed value of $154,069 (Mono County Tax Assessor, 1992). At a property tax rate of one percent, the county currently collects $1,541 in property tax revenue per year from the project site. The proposed project would substantially increase the assessed value of the subject property because of the addition of the proposed improvements.

Table 5 presents the estimated increase in the assessed value of the property and improvements. The estimated construction cost of the proposed project was adjusted by 25 percent to reflect an estimated assessed value of the project improvements (Mono County Assessor's Office, 1992).

The hotel portion of the project would have an estimated assessed value of approximately $4.2 million. The restaurant and service station/mini mart together would have an estimated assessed value of $757,000. The proposed five duplex housing units would have an estimated assessed value of $1.2 million. The proposed project, property and improvements, at full buildout, would have an estimated assessed value of $6.32 million and generate an estimated $63,217 in property tax revenue in 1992 dollars.

TABLE 5. ESTIMATED PROPERTY TAX REVENUE FOR THE PROPOSED TIOGA INN PROJECT

PARCEL NUMBER	CURRENT ASSESSED VALUE		CURRENT PROPERTY TAX @ 1%
21-08-11	$117,678		$1,177
21-08-12	36,391		364
Subtotal	$154,069		$1,541
PROPOSED IMPROVEMENTS	ESTIMATED COST OF CONSTRUCTION	ADJUSTMENT (25%)	ESTIMATED PROPERTY TAX
Hotel	$3,383,325	$4,229,156	$42,292
Restaurant and Service Station/mini-mart	$605,745	$757,181	$7,572
Houses (Ten Units)	$945,000	$1,181,250	$11,813
Subtotal	$4,934,070	$6,167,588	$61,676
TOTAL (Existing with Improvements)		$6,321,657	$63,217
NET INCREASE IN PROPERTY TAX			$61,676

Source: Mono County Tax Assessor, 1992.

CERTIFIED/Earth Metrics, 1992.

Transient Occupancy Tax

The proposed project would include a 120-room, full service hotel (see Section 2, Market Analysis). Based on market projections, the proposed hotel could ultimately be expected to achieve an average occupancy rate of 85 percent during the "summer months" of May through October. The winter occupancy rate is estimated to average 50 percent. Given an average summer room rate of $100 per night and an average winter room rate of $74 per night, the proposed hotel could be expected to generate approximately $213,000 per year (1992 dollars) in occupancy tax revenue by the fifth year after opening. This figure is net additional transient tax revenue, which accounts for 10 percent shifted patronage from other existing lodging in the county (see Table 6). In the initial years if the proposed hotel were open only in the summer or extended summer season, the transient tax increment received by Mono County from the proposed Tioga Inn would be at least $114,000.

TABLE 6. ESTIMATED TRANSIENT OCCUPANCY TAX REVENUE FROM THE PROPOSED TIOGA INN (EXPRESSED IN 1992 DOLLARS)

PERIOD	AVERAGE OCCUPANCY RATE (%)	BOOKED ROOM NIGHTS	ROOM REVENUE	TAX REVENUE AT 9 PERCENT
Summer (May-October $100/night	85	18,360	$1,836,000	$165,240
Winter (November-April) $74/night	50	10,860	803,640	72,328
Year One(a)	65(a)	14,040	1,404,000	
Year Two(a)	74(a)	15,984	1,598,400	
Year Three(b)	55	24,090	2,213,860	
Year Four	65	28,470	2,556,060	
Year Five and Later	67.5	29,220	$2,639,640	$237,568
Shifted Patronage Adjustment (-10%)				$213,811

Notes: All revenue is expressed in uninflated 1992 dollars.

(a) Hotel open in summer season only. Occupancy is for six months.

(b) Hotel opens in winter season. Occupancy is the annual occupancy rate.

Source: CERTIFIED/Earth Metrics, 1992.

Sales Tax

The proposed project would generate additional sales tax revenue for Mono County. The county currently collects sales tax on all taxable sales at a rate of 7.25 percent. One percent of all sales generated at the project site (except hotel rooms and nontaxable food items) would return to Mono County. An additional 0.25 percent of sales generated at the project site would also return to the county in the form of transportation funds. Therefore, Mono County can expect to receive 1.25 percent of taxable sales from the project site.

The estimated sales and sales tax revenue of the proposed project are presented in Table 7. Sales tax calculations assume full project build-out of all ancillary commercial elements (i.e., gift store, service station, minimart, 100 seat restaurant and coffee shop) and are expressed in uninflated 1992 dollars, that is, as if the taxable sales were at today's prices.

TABLE 7. ESTIMATED SALES TAX REVENUE FROM THE PROPOSED TIOGA INN PROJECT

BUSINESS	ESTIMATED ANNUAL SALES (a)		COUNTY SHARE OF SALES TAX REVENUE (1.25%)
Restaurant	Hotel guests	$1,470,000	
	Other patrons	800,000	
	Subtotal	$2,270,000	$28,375
Service Station/ Mini-Mart	3 year average of all service stations in Mono County = $227,400 per station + 10% adjustment		
	Subtotal	229,600	2870
TOTAL		$2,299,000	$31,245
INCREMENT	- Accounting for 25 percent shifted patronage (b)		$28,000
	- Accounting for maximum shifted patronage and relocation of one service station to Tioga Inn (c)		$18,375

(a) Assumes full operation in year five after initial startup. Sales are expressed in uninflated 1992 dollars.

(b) Shifted patronage adjustment is applied only to "restaurant--other patrons" and "service station/mini-mart." It is not applicable to "restaurant--hotel guests" which guests are assumed to be attracted to the area because of the hotel and, therefore, do not represent patrons shifted from existing restaurants.

(c) Maximum patronage shift is defined as follows: $800,000 per year of the proposed restaurant's trade is shifted from existing restaurants and one of the existing three service stations relocates to the Tioga Inn site.

Source: CERTIFIED/Earth Metrics, 1992.

The estimated taxable sales of the proposed 100 seat restaurant and coffee shop were calculated in two different ways: i) by restaurant patronage of hotel guests only and ii) by restaurant seating capacity and average per person meal tabs. CERTIFIED/Earth Metrics conservatively estimated that at full project buildout, the restaurant could be expected to attain nearly 100 percent of the business of hotel patrons. The average per person restaurant receipt, with appetizer, entree, and beverages, was estimated at $8.00 for lunch and $17.00 for dinner. The proposed restaurant could potentially generate an estimated $1.47 million per year in gross food and beverage sales to hotel guests. Based upon seating,--two seatings or "turns" at dinner and three at lunch, 65 percent seating, and restaurant service 300 days per year,--the project restaurant could generate total receipts of $2.27 million per year (see Table 7).

The estimated taxable sales of the proposed service station/mini-mart were calculated by averaging the per station taxable sales in Mono County from 1989 - 1991 based on State Board Equalization taxable sales data. As all service stations in Mono County do not contain mini-marts, this figure was adjusted upward by 10 percent. The proposed service station/mini-mart was estimated to generate approximately $229,600 in sales, and $2870 in annual sales tax revenue to the county (1992 dollars).

All of the taxable sales generated by the proposed project would not reflect "new" business or incremental sales tax in Mono County. A portion of the sales volume at the project site would represent shifted patronage from the competitors in the Lee Vining and June Lake area. CERTIFIED/Earth Metrics conservatively estimates that 25 percent of specified taxable food and retail sales of the proposed project could potentially reflect shifted patronage or spending that could have occurred elsewhere at existing outlets in the county. The sales tax figures in Table 7 were adjusted accordingly.

Several fees would be collected by Mono County. The purpose of the fees listed below is to pay for the costs of specified service provision by Mono County. Fees are summarized in Tables 8 and 9.

TABLE 8. OTHER ANNUAL REVENUE FROM THE PROPOSED TIOGA INN

FEE	UNITS	FEE PER YEAR
Business Licenses		
$25 per business	3	$75
Pool Permits		
$60 per pool or spa +	1	$60
$50 per additional unit	1	$50
Food Permits		
Variable amount based on restaurant size 100 seat restaurant = $140 per year	1	$140
TOTAL		$325

Source: CERTIFIED/Earth Metrics, 1992.

TABLE 9. ONE-TIME FEE REVENUE FROM THE PROPOSED TIOGA INN

Building Permit Fees

IMPROVEMENTS	COST OF CONSTRUCTION	PERMIT REVENUE
Hotel	$3,383,325	$37,924
Restaurant Gas Station/Mini-Mart	$605,745	8,140
Homes	$945,000	$12,889
TOTAL	$4,934,070	$58,953

School Impact Fees

CONSTRUCTION TYPE	SQUARE FOOTAGE	REVENUE
Commercial @ $0.26/square foot	60,700	$15,782
Residential @ $1.56/square foot	13,500	$21,060
TOTAL	74,200	$36,842

Well and Septic Permits

SYSTEM	NUMBER ON SITE	PERMIT REVENUE
Commercial Septic @ $25 per system	1	$25
Residential Septic @ $50 per system	1	$50
Commercial Well @ $100 per Well	1	$100
Residential Well @ $50 per Well		$50
TOTAL		$225

Source: CERTIFIED/Earth Metrics, 1992.

Business License Fees

Mono County would receive approximately $75 for new business licenses see Table 8).

Pool And Food Permit Fees

The Mono County Health Department collects annual fees for pools, spas, and restaurants in the county. The current annual fee for a commercial pool is $60 per pool or spa, plus an additional $50 per year for each additional pool or spa. The proposed project is expected to have a pool and a spa which would generate $110 per year in annual permit revenue.

The annual Health Department fee for restaurants varies depending on the size of the restaurant. The current fee for a 100 seat restaurant is $140 per year (see Table 8).

Construction Permit Fees

The county collects one time construction permit fees based on the estimated construction cost of a proposed project. Table 9 presents the estimated construction costs of the proposed project at build-out and the estimated permit fee revenue. The county can expect to collect an estimated $58,953 in construction permit fee revenue from the proposed project (see Table 9).

Well And Septic Permit Fees

The Mono County Health Department collects one time fees for private well and septic system permits, both of which are proposed as part of the project. The current health department fee for well permits is $50 per residential well, and $100 per commercial well. The current fee for septic systems is $25 per residential system and $50 per commercial system. The proposed project would have one commercial and one residential well which would generate $150 in fee revenue. The project would have one residential and one commercial septic system, generating $75 in fee revenue. The Mono County Health Department can expect to collect at least $225 in one time well and septic permit fees (see Table 9).

School Impact Fees

Owing to overcrowding of many of California's schools, the state has authorized school districts to collect school impact fees from development projects. These fees are designated for the construction of school facilities and are intended to mitigate the student generation impacts of development projects. The project site is located within the boundary of the Eastern Sierra Unified School District. The district currently collects fees of $0.26 per square foot of commercial development and $1.56 per square foot of residential development. Table 9 shows the estimated school impact fee revenue generated from the proposed project at full buildout. At the proposed building density, the proposed project can be expected to generate approximately $36,842 in one time school impact fee revenues (see Table 9).

Fire Impact Fees

The Lee Vining Fire Department would receive fire mitigation fees of $0.50 per square foot of covered structure (Strazdins,1992). The total fire mitigation fee is estimated to be $37,100 based on a total of 74,200 proposed square feet.

TAX AND FEE REVENUE SUMMARY

Within five years at full buildout of all commercial elements, the proposed project could be expected to generate an estimated $304,000 incrementally to Mono County in additional annual local taxes and annual fee revenues. The county could also expect an estimated $133,000 in one time fee revenues (see Table 10). One-time fee revenues are intended to cover the cost of specified services provided by Mono County and do not, therefore, represent any budget surplus.

TABLE 10. REVENUE SUMMARY FOR MONO COUNTY FROM THE PROPOSED TIOGA INN

REVENUE SOURCE	ONE-TIME FEES	ANNUAL REVENUE First Year	ANNUAL REVENUE Fifth Year
Property Tax		$63,217	$63,217
Sales Tax		18,000	28,000
Transient Occ. Tax		114,000	213,000
Business Licenses		75	75
Pool Permits		110	110
Food Permits		140	140
Building Permits	$58,953		
School Impact Fee	$36,842		
Fire Mitigation Fee	$37,100		
Well and Septic Permits	$225		
TOTAL	$133,120	$195,000 (rounded)	$304,000 (rounded)

Source: CERTIFIED/Earth Metrics, 1992.

4. PUBLIC SERVICE COSTS

FIRE DEPARTMENT

Mr. Tom Strazdins of the Lee Vining fire station was contacted to assess the potential fiscal impact of the proposed project on the fire station. The Lee Vining area is served by an all volunteer fire department. The Lee Vining area is served by one station located in town. This station is equipped with a total of three trucks including one rescue truck and two structure rigs with 35 foot ladders. The volunteer man power includes a total of 20 volunteers.

Mr. Strazdins stated that new equipment could potentially be required as a result of the proposed project. Mr. Strazdins also noted that he is familiar with the proposed project plan for Tioga Inn. Sprinklering, hydrant placement, and water storage requirements would be reviewed by the Fire Department as part of the Building Permit process. Mr. Strazdins was particularly concerned with the water system which he understood to be a private well system, not Lee Vining's municipal water system.

COUNTY SHERIFF

Lieutenant Padilla of the Mono County Sheriff's office was contacted to assess the potential fiscal impact of the proposed project on law enforcement. Police protection in the Lee Vining area is served by the Mono County Sheriff's office. Sheriff deputies based in Bridgeport routinely patrol the Lee Vining area from 8:00 A.M. to 12:00 P.M. The area employs a residential deputy system where local residents are on-call for any potential law enforcement needs 24 hours per day. These deputies are reimbursed on a per call basis. The Sheriff's office currently utilizes two residential deputies in June Lake and one in Lee Vining. Calls in the area are generally for family disturbances and bar fights. Calls for disturbances at local hotels is generally very light (Padilla, 1992).

Lt. Padilla did not foresee any need for additional personnel, equipment, or patrolling resulting from the proposed project.

SCHOOLS

Mr. Rick Miller, Superintendent of the Eastern Sierra Unified School District, was contacted to determine the potential fiscal impact of the proposed project on schools. The Lee Vining area is served by the Eastern Sierra Unified School District which administers Lee Vining Elementary and Lee Vining High School. The high school currently enrolls approximately 51 students and has no capacity problem. The elementary school currently enrolls approximately 120 students and is close to capacity (Miller, 1992).

At an average student generation rate of 0.4 students per household (grades K-6), the proposed 10 housing units would be expected to generate approximately four new elementary students. Also, a portion of the estimated permanent employment generated by the proposed project could potentially represent new residents to the community and, hence, children of these employees of the proposed project could add to the current school enrollment. If this student generation falls mainly in the elementary grades, Lee Vining Elementary may experience overcrowding.

Mr. Miller noted that at a worst case scenario, the proposed project may cause the school district to employ a portable classroom at the elementary school. It is expected that the district collected developer fees ($36,842) would pay for the proposed project's fair share of any portable classroom additions. Mr. Miller also noted that the project applicant may enter into negotiations with the district to pay for any additional classroom needs resulting from the proposed project.

OTHER COUNTY SERVICES

Because the vast majority of the proposed project would consist of visitor serving commercial uses, the impact to other county services would be expected to be minimal. While any addition to the permanent population to the area would generate incremental costs to county services, these costs are considered to be too small to quantify.

COST SUMMARY

The proposed project could potentially generate net revenue in excess of public services costs to Mono County and the Mono County School District. Fire and police protection services do not anticipate any quantifiable increase in the cost of providing services to the Lee Vining area. Although the project could potentially create, as a "worst case," the need for a portable classroom at Lee Vining Elementary, developer fees and/or developer negotiation with Eastern Sierra Unified School District could mitigate the cost of such a portable classroom. Any incremental costs of additional county services resulting from permanent population increases would be considered minimal.

5. SHORT-TERM BENEFITS VERSUS LONG-TERM PRODUCTIVITY

SHORT-TERM BENEFITS

The proposed project could potentially have a number of short-term benefits to the county. The construction of the proposed project would bolster the local building industry and generate a substantial number of construction jobs. The increased construction activity would in turn fuel local retail sales in Lee Vining as construction workers patronize local shops, restaurants, and service stations. The proposed project would also generate an estimated $133,000 in one-time permit and fee revenue to Mono County (1992 dollars).

LONG-TERM BENEFITS

The proposed project could also have a substantial number of long-term benefits to the county. At full buildout, the proposed project would generate approximately 100 permanent or seasonal jobs, and provide housing for approximately 26 residents. This estimated permanent and seasonal employment could further stimulate the local economy.

The county could also expect a net increase in tax and fee revenues if the project were implemented (see above). In each year after opening tax and fee revenues to the county would exceed the estimated cost of providing county services to the project.

6. SOCIOECONOMIC IMPACTS

According to CEQA guidelines, economic or social effects of a project shall not be treated as significant effects on the environment. Only by linking a socioeconomic impact to a physical change in the environment, can this type of impact be considered significant under CEQA guidelines.

The proposed project is demonstrated herein to have a net positive effect on the economic and social condition of the county. As discussed above, the proposed project could generate tax and fee revenues in excess of services costs to the county. The proposed project would include 10 housing units which would house approximately 26 persons. With an estimated employment of 108 persons at build-out, the proposed project could be expected to stimulate the local economy through local spending by the project employees. This statement applies even allowing for hiring of current residents of Mono County who are unemployed or underemployed.

One negative socioeconomic aspect of the proposed project could be the perception of local businesses that the proposed project would detract from their business. In fact, the proposed hotel and restaurant would not be economically viable if they did not attract new patrons to the area. This analysis estimates that the proposed hotel would derive no more than 10 percent of its booked room nights from patronage shifted from local lodging. The proposed restaurant would derive no more than 25 percent of its trade from patronage shifted from competing restaurants in the primary market area.

From the perspective of owners of existing lodging, restaurants, and other retail outlets in the primary market area, potential reductions in business volume can be expected to be small and short-term. For the existing service stations, relocation of one of the three existing outlets to the proposed project site is considered; relocation would have no adverse socioeconomic consequence. For the existing eating places, three percent for each business is estimated; and for each lodging facility, three percent or no reduction is estimated. Business failures are not forecast.

In the long-term (after five years of opening) the project could have a net positive benefit on the local economy. A portion of Tioga Inn guests could patronize the shops, restaurants, and service stations in nearby Lee Vining and June Lake, who otherwise might not have stopped in the area. Under CEQA guidelines competition and potential for shifted patronage are not to be considered as adverse environmental impacts.

7. ALTERNATIVE PROJECT PHASING

The applicant has tentatively proposed a phasing plan as follows:

- Phase 1: hotel
- Phase 2: portion of housing
- Phase 3: service station/mini-mart
- Phase 4: portion of housing
- Phase 5: restaurant

By implementing the proposed project in the Applicant's Phasing Plan, competing restaurant, service station and mini-mart businesses in the primary market area could potentially be less affected than if all were project elements were implemented concurrently. In Phases 1 and 2 (above), the primary beneficiaries of the applicant's phasing concept would be local restaurants and service stations. In Phases 3 and 4, the primary beneficiaries would be local restaurants.

The Applicant's Phasing Plan may not be practical from the perspective of hotel viability. Restaurant service would most certainly be a requisite to the financial success of the proposed hotel. Also, related to the success of the hotel, provision of less than full-service lodging could potentially result in reduced occupancy rates and room rates, reductions which could also translate into reduced tax and fee revenues.

Alternatives to the Applicant's Phasing Plan were considered. In Alternative Phasing #1, hotel, restaurant, and housing elements of the proposed project would be constructed concurrently exclusive of the proposed service station/mini-mart and coffee shop, which would be constructed later. The alternative phasing concept could provide essential services demanded by patrons of high-end lodging accommodations, and create additional demand for highway commercial services in Lee Vining. Tax and fee revenues would be reduced to approximately $170,000 per year in the first years after opening from the $195,000 per year estimated for the complete "build-out" project.

In Alternative Phasing #2, the service station/mini-mart and coffee shop would be constructed later after the hotel, restaurant, and housing. The hotel would be constructed in two phases, hypothetically of 60 rooms each. Room rates in phase one could potentially be increased slightly, and occupancy rates would increase, compared to the room rates and occupancy rates documented herein in this report for the 120 room hotel. Alternative Phasing #2 could have minor benefits for the existing local lodging facilities and for Mono County. Phase one (60 rooms) would place the proposed Tioga Inn on a scale more similar to that of existing lodging facilities. The proposed hotel could nevertheless target patrons of higher-end accommodations. Tax and fee revenues would be reduced in phase one to approximately $100,000 per year from the $195,000 per year estimated for the complete project. Property value and tax increment on the subsequent second phase could potentially be assessed at somewhat higher levels, to the potential fiscal benefit of Mono County.

E1

SIERRA GEOTECHNICAL SERVICES, INC.

ENVIRONMENTAL • GEOTECHNICAL • GEOLOGY • HYDROGEOLOGY • MATERIALS • MINING

July 18, 2017 SGS Job No: 3.31393

Dennis Domaille
Tioga Gas Mart
22 Vista Point Drive
Lee Vining, CA 93541

Subject: **TECHNICAL MEMORANDUM**
Pumping Test Results
Tioga Gas Mart Water-Supply Well
Lee Vining, California 93541

Reference: Kleinfelder, 1992, "Modified Phase I Groundwater Resources Assessment and Review of a Fault Investigation Report for the Tioga Inn Specific Plan, Lee Vining, California, August 21.

Mr. Domaille:

Pursuant to your request, Sierra Geotechnical Services, Inc. (SGS) is pleased to present this Memorandum regarding our pumping test of your existing domestic water well located at the Tioga Gas Mart, Lee Vining, California.

Introduction

Provided herein is a summary of the findings and results of a recent pumping test conducted by Sierra Geotechnical Services, Inc (SGS) in an existing domestic water well at the Tioga Gas Mart (TGM), which is located approximately 2,340 ft southeast of the intersection of Highway 120 and Highway 395 near the town of Lee Vining in Mono County, California. Figure 1, "Well Location Map," illustrates the location of the subject well. In addition, and at the request of Mono County Planning Department representatives, water levels in a nearby observation well were also monitored during the pumping test of the subject water well; the location of this offsite well is also shown on Figure 1. This offsite water well, the Winston Well, which is at the site of a former Union 76 fueling station, has reportedly never been placed into service; the SGS geologist observed conditions that indicate this offsite well has not been used for many years.

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Well Construction Data and Prior Testing Information

Pumping Well

The pumping well for the subject recent pumping test was constructed in 1984 by Maranatha Drilling & Pump Service of Bishop, California using the direct mud-rotary drilling method. A copy of the State of California Department of Water Resources (DWR) Water Well Driller's Report (also known as a driller's log; State Well Completion Report No. 231900) is provided in the Appendix. Key construction details for this pumping well include:

1. The casing is 8 5/16 inches outside diameter (OD) and it has a wall thickness of 0.188 inches. The casing was set to a reported total depth of 600 ft below ground surface (bgs).
2. The perforations were placed continuously between the depths of 380 to 580 ft bgs, and consist of 1/8-inch wide by 3-inch long slots. The type of perforations (i.e., louvers, or machine-cut horizontal or vertical slots) was not documented on the driller's log.
3. It is unknown what type of steel was utilized for the well casing, as this was not documented on the driller's log. However, SGS observed that the above ground portion of the casing appeared to be low carbon steel (LCS).
4. The gravel pack is "3/8-inch" gravel and it was placed in the annular space between the well casing and the 12 5/8-inch diameter borehole walls, between the depths of 42 ft and 600 ft bgs.
5. The driller's log reports that a sanitary seal was installed to a depth of 42 ft bgs, and it consisted of a concrete slurry in the annular space around the outside of the upper portion of the well casing.
6. The only information available for the earth materials encountered during drilling of the well is the driller's generalized descriptions of the drill cuttings. The earth materials logged by the driller on the DWR log included layers of tan clay and sand from 0 to 10 ft bgs, a mix of cobbles, boulders, and granite from 10 to 410 feet bgs, and fractured granite, gravel, and boulders from 410 to 630 feet bgs.
7. The pump intake in this well is set at a depth of 598 ft and is a submersible type of pump.

Flow data listed on the driller's log dated July 1984 included the following:

8. A maximum airlift rate of 150 gpm created a maximum "airlift pumping water level" (APWL) of 600 ft after four hours of airlifting. This airlift method of "pumping" does not provide accurate pumping rates and resulting "pumping" water levels cannot be determined.
9. The data for static water level (SWL) was 340 ft at that time.
10. No information is available for the original specific capacity for this well because no actual test pumping or pumping tests were conducted.

Observation Well

The observation well is known as the "Winston" well and, based on field examination of the wellhead by SGS, the above ground portion of the well consists of 6-inch PVC casing. The observation well was constructed in 2005 by Maranatha Drilling & Pump Service of Bishop, California using the direct mud-rotary drilling method and is located approximately 3,600 ft northwest of the pumping well (see Figure 1). A copy of the State of California Department of Water Resources (DWR) Water Well Driller's Report; State Well Completion Report No. 0912020 is provided in the Appendix. Key construction details for this pumping well include:

1. The casing is schedule 200 PVC with an inside diameter (ID) of 6 inches and a wall thickness of 0.305 inches. The casing was set to a reported total depth of 630 ft below ground surface (bgs).
2. The perforations were placed continuously between the depths of 300 to 630 ft bgs, and consist of 0.0625-inch wide slots. The type of perforations was not documented on the driller's log.
3. The gravel pack is "3/8-inch pea gravel", which was placed in the annular space between the well casing and the 9 7/8-inch diameter borehole walls, between the depths of 50 ft and 630 ft bgs.
4. The driller's log reports that a sanitary seal was installed to a depth of 50 ft bgs, and it consisted of a concrete slurry in the 12 ¼-inch annular space around the outside of the upper portion (50 ft.) of the well casing.
5. The only information available for the earth materials encountered during drilling of the well is the driller's generalized descriptions of the drill cuttings. The earth materials logged by the driller on the DWR log included layers of granite boulders and sand from 0 to 85 ft bgs, a mix of small boulders, sand and clay from 85 to 150 feet bgs, brown clay and loose gravel from 150 to 275 ft bgs, "real sticky" brown clay from 275 to 325 ft bgs, sand and a "little bit" of brown clay from 325 to 400 ft bgs, hard granite with little brown clay from 400 to 510 ft bgs and, hard brown clay and small rocks from 510 to 665 ft bgs.
6. There is no pump installed in this well.

Flow data listed on the driller's log dated 3/25/2005 included the following:

1. A maximum airlift rate of 28 gpm created a maximum APWL of 630 ft after eight hours of airlifting. This airlift method of "pumping" does not provide accurate pumping rates and resulting "pumping" water levels cannot be determined.
2. The static water level was 380 ft. at that time.
3. No information is available for the original specific capacity for this well because no actual test pumping or pumping tests were conducted.

Previous Pumping Test Work – TGM Well

An initial extended step drawdown test was performed on the TGM well by Kleinfelder (1992) on June 24 to June 25, 1992. The first two steps were pumped continuously for two hours, while the third step was continuously pumped for nearly 21¾ hours. Average pumping rates of 38, 91 and 132.5 gpm were reported by Kleinfelder for their step test. Pumping data from the 1992 dated step drawdown test included the following data:

1. The initial pre-test SWL was 339 ft bgs.
2. The calculated specific capacities of the well were 11.14 gpm per foot of water level drawdown (gpm/ft ddn), 9.00 gpm/ft ddn, and 7.52 gpm/ft ddn, respectively.
3. The transmissivity (T) of the aquifer was reported to be 15,600 gallons per day per foot of saturated thickness (gpd/ft). Apparently, a boundary effect was encountered during the test, after which the T was reported to be 31,800 gpd/ft.
4. Based on the testing, Kleinfelder recommended a final pumping rate of 400 gpm.

Results of Recent Pumping Test

The subject TGM well test was a constant rate pumping test. For this test, both the TGM well and the offsite water level observation well were equipped with a pressure transducer that was installed by a SGS geologist, in order to continuously record changes in water levels before, during, and after the test. In addition, occasional manual water level measurements were collected by the SGS geologist during the test, using a hand-held water level sounding device. In the pumping well (i.e., the existing domestic-supply well at the Tioga Gas Mart), the reference point (rp) for all water levels was 0.43 ft above ground surface (ags); whereas in the offsite observation well, the rp was 1.3 ft ags. The water level pressure transducers were installed to an approximate depth of 440 feet below the wellhead reference point (brp) in the TGM well, and to an approximate depth of 450 ft brp in the water level observation well. The manual and pressure transducer water level measurements have been corrected to ground surface herein. Pumping of the subject TGM well was performed using the existing pump, the pump intake for which was reportedly set at a depth of 598 ft bgs.

Based on the results of the previous step drawdown test by Kleinfelder (1992) and maximum pumping capacity of the existing pump, a nominal test pumping rate of 100 gpm was selected by SGS for the constant rate pumping test. This test was performed on May 16 and 17, 2017, for a continuous duration of 24 hours (1,440 minutes). Figure 2, “Water Levels During Constant Rate Pumping Test,” illustrates the water level changes in both the pumping well and the observation well during the constant rate testing period. A summary of the key test data is as follows:

1. A pre-test SWL of 351.5 ft brp was measured in the TGM well by SGS prior to the startup of the test.
2. After 24 hours (1,440 minutes) of continuous pumping at an average rate of 102 gpm, a maximum PWL depth of 388.9 ft brp was recorded in the TGM well; this resulted in a maximum water level drawdown of 37.4 ft.
3. The current specific capacity of the well for this 24-hour constant rate test is calculated to be 2.73 gpm/ft ddn. This is significantly lower than the specific capacities calculated during the 3-point step drawdown test in this well by Kleinfelder in 1992 (11.14 gpm/ft ddn, 9.00 gpm/ft ddn, and 7.52 gpm/ft ddn), respectively.
4. The transducer installed in the observation well recorded no changes in water levels, i.e., no drawdown impacts were monitored/recorded by the pressure transducer in the offsite "Winston" well (see Figure 2). SWL was 349.5 ft brp.

No adverse field observations concerning water clarity, entrained air, and/or sand content were noted in the TGM well by the SGS geologist during the constant rate test (i.e. pumped water was clear and no entrained air or sand was observed during the pump test). The owner states that no sand has been found in his water storage tanks from the pumping of this well. This was not investigated by the SGS geologist.

A final water level recovery measurement was recorded by SGS on May 18, 2017, approximately 25 hours following the cessation of the pumping portion of this test. This final water level measurement in the TGM well was reported to be 352.2 ft brp; this water level is 0.2 ft deeper than the pre-test SWL.

Summary and Conclusions

The TGM well is cased to a depth of 600 ft with a nominal 8-inch diameter steel casing. Perforations were reportedly installed from depths of 380 to 580 ft bgs; a 20-foot section of blank cellar casing lies below the perforated casing. A 42-foot deep cement sanitary seal was reportedly emplaced for the existing well.

A constant rate pumping test was performed to determine the amount of water level drawdown that would be induced in the TGM well, which was pumped at an average rate of 102 gpm for a continuous pumping period of 1,440 minutes. Pumping at this rate yielded a PWL of 388.9 ft brp. Based on a pre-test SWL of 351.5 ft bgs, a maximum drawdown of 37.4 ft was created in the TGM well.

The current and long-term specific capacity of the TGM well for this 24-hour constant rate test is calculated to be 2.73 gpm/ft ddn. This current value is significantly lower than the specific capacities calculated during the short-term step drawdown tests by Kleinfelder in 1992.

Water levels were also measured in the offsite “Winston” observation well. During the 24-hour constant rate pumping test of the TGM well, no water level drawdown interference was recorded in Winston well.

The maximum PWL in the TGM well was at a depth of 388.9 ft bgs at the end of the 24-hour pumping test. This maximum is slightly below the depth to the top of the uppermost perforation interval in this well (the perforations begin at a depth of 380 ft bgs). Consequently, cascading water conditions did occur during testing, and such conditions should be anticipated to occur again in the future during normal operation of the well and, especially, during extended periods of pumping. Cascading groundwater can and likely will become aerated (i.e., it will contain entrained air). As a result, and over extended periods of time, cavitation of and damage to the pump could occur, and there will be an increase in the amount of and frequency for well rehabilitation in the future. Aerated water increases the opportunity for buildup of chemical precipitates and/or biological growths/slimes on the perforations and gravel pack. When this buildup occurs, the resultant clogging of the perforations and gravel pack will cause the specific capacity of the well to decline, the pumping levels will decline, pump parts will wear, and pumping costs will increase.

The Tioga Gas Mart well presently has the capacity to pump at a sustained rate of 100 gpm, even with the cascading effect. Over time the rate could diminish somewhat due to deterioration as previously noted.

Recommendations

Based on the foregoing, we recommend the following:

1. Measurement and recording of SWLs, PWLs, pumping rates and pumped volumes should be performed monthly for the first year for baseline determination; quarterly monitoring can be performed thereafter.
2. The pump should be removed and a video survey performed to determine the degree of corrosion and the buildup of organic material and/or precipitates in the perforated intervals. The video survey too, will help determine the current depth of the sediment fill in the bottom of the casing.
3. Monitoring for possible pumping of sand should also be performed on a semi-annual basis.

Thank you for this opportunity to provide this service. If you have any questions regarding this Technical Memorandum, please contact us.

Respectfully,
SIERRA GEOTECHNICAL SERVICES, INC.

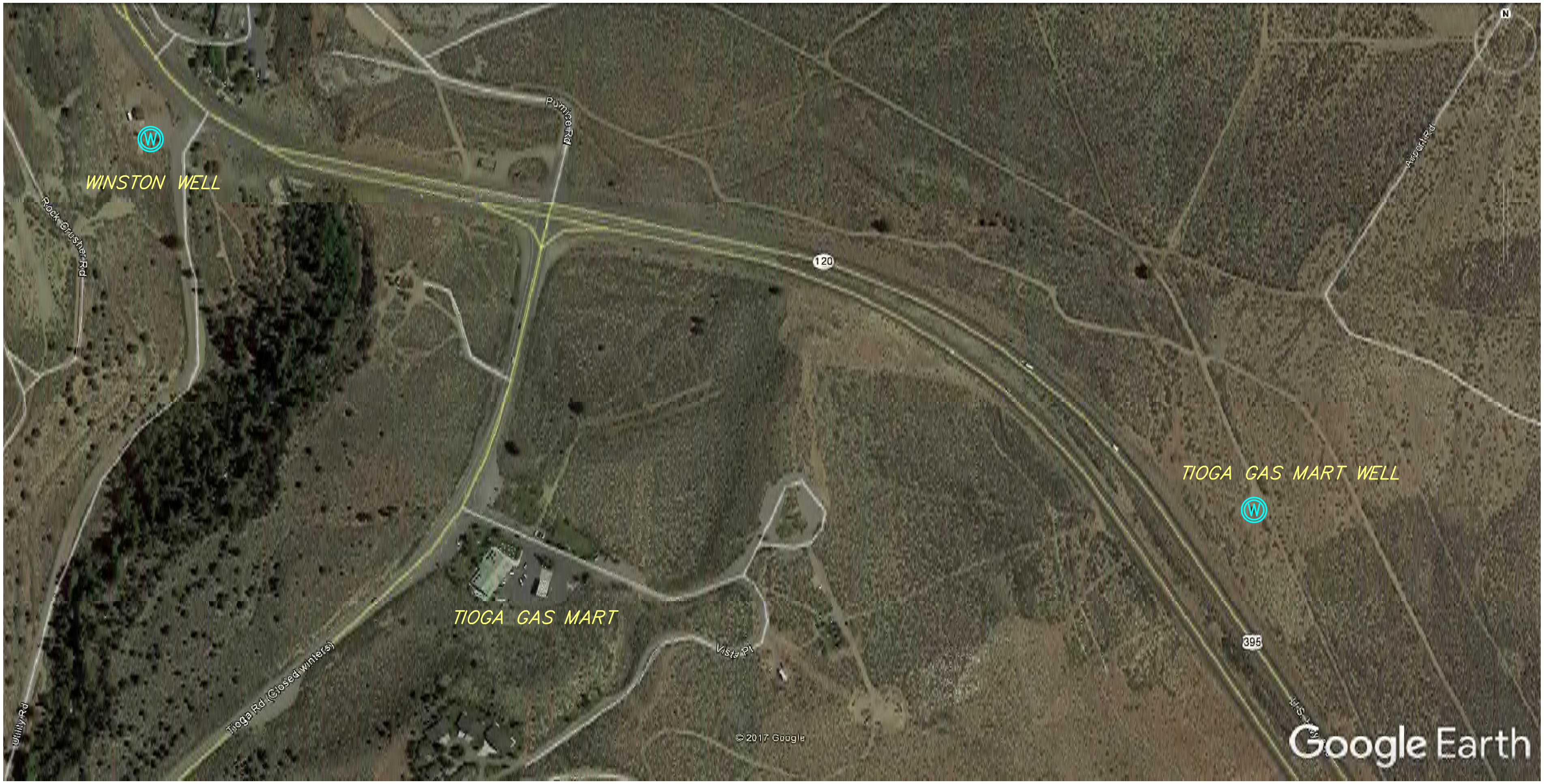
Dean Dougherty,Vice President
Environmental Professional, PG 6497

Roger Smith
Senior Groundwater Geologist

Attachments:

Figures 1 & 2

TO LEE VINING

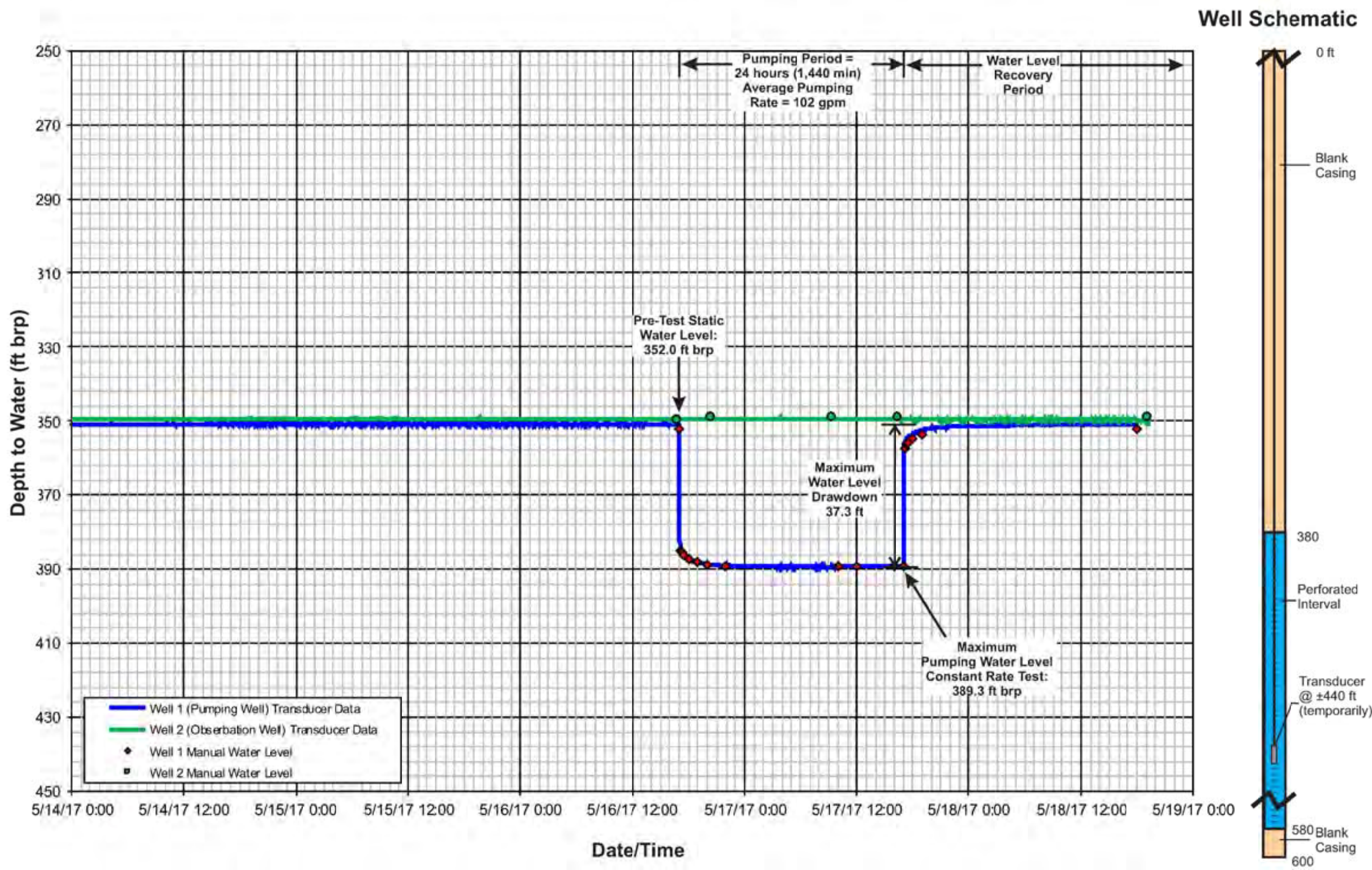


TO YOSEMITE

TO MAMMOTH LAKES

SIERRA GEOTECHNICAL SERVICES, INC.

PROJECT: **LOCATION MAP** TIOGA GAS MART WATER WELL	
SOURCE: GOOGLE EARTH IMAGE 26 JUNE 2016	
SCALE: 1"=1000'	DATE: JULY 18, 2017
DRAWING: FIGURE 1.DWG	DRAWN BY: DD
JOB NO.: 3.31393	TITLE: **FIGURE 1**



SIERRA GEOTECHNICAL SERVICES, INC.

PROJECT: **WATER LEVELS DURING CONSTANT RATE TEST** TIOGA GAS MART WATER WELL	
SOURCE: TIOGA GAS MART WELL NO. 1 LEE VINING, CALIFORNIA	
SCALE: N/A	DATE: JULY 18, 2017
DRAWING: FIGURE 2.DWG	DRAWN BY: DD
JOB NO.: 3.31393	TITLE: **FIGURE 2**

E2

SIERRA GEOTECHNICAL SERVICES, INC.

GEOTECHNICAL • GEOLOGY • HYDROGEOLOGY • MATERIALS TESTING • INSPECTION

Dennis Domaille
Tioga Gas Mart
22 Vista Point Drive
Lee Vining, CA 93541

March 25, 2019

Subject: **VIDEO MONITORING RECOMMENDATIONS OF OLDER WELL**
Tioga Gas Mart Water Well
Lee Vining, California

Reference: **TECHNICAL MEMORANDUM**
Pumping Test Results
Tioga Gas Mart Water-Supply Well
SGSI Project Number 3.31393; Dated July 18, 2017

Within our 2017 memorandum, SGSI as part of a rehabilitation program, recommended that the pump within the existing well be removed and a video survey be performed to determine the degree of corrosion and the buildup of organic material and/or precipitates in the perforated intervals (Page 6, Recommendations Section, Bullet Point #2). At the time, this statement was intended as a mitigation measure. However, since issuance of the memorandum, a new well has been installed which relegates the subject well to a backup/redundancy position. Therefore, the statement may be considered as a recommendation and not a required measure. The owner shall be aware that without a survey, and/or rehabilitation the life span of the subject "older" well could be diminished.

We appreciate the opportunity to be of service to you. Should you have any questions regarding this report, please do not hesitate to contact us.

Respectfully,

SIERRA GEOTECHNICAL SERVICES, INC.

PROFESSIONAL GEOLOGIST
JOSEPH AARON ADLER
NO 2198
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Joseph A. Adler
Principal Geologist
CEG 2198 (exp 3/31/2021)

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. PLATZ
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CIVIL
STATE OF CALIFORNIA

Thomas A. Platz
Principal Engineer
PE C41039 (exp 3/31/2021)

Resource Concepts Inc
Engineering • Surveying • Water Rights
Resource & Environmental Services
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Memorandum

DATE: November 1, 2018
TO: Michael Draper, Mono County Community Development
FROM: Reed A. Cozens, Resource Concepts, Inc.
PROJECT: Mono County Community Development
SUBJECT: Third Party Review- Aquifer Pump Test Technical Memo

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Resource Concepts, Inc. (RCI) has reviewed the technical memorandum prepared by Sierra Geotechnical Services, Inc. (SGS). This memo details an aquifer pump test associated with the Tioga Gas Mart well (TGM well), located in Lee Vining, California. In this review evaluations were made regarding the data and conclusions presented in SGS's memo.

This pumping test was carried out to determine:

1. The hydraulic properties of the aquifer.
2. Water level changes in the aquifer because of groundwater pumpage.

The data evaluated included, but were not limited to: aquifer transmissivity, storage coefficient, confining layers, natural boundary conditions, well efficiency, and pumping rates used during the test.

General Observations

The subject aquifer pump test was performed in May 2017 to evaluate potential impacts of the Tioga Gas Mart's expansion on the town of Lee Vining's water supply wells, and/or the springs that feed Mono Lake. An observation well (also known as the Winston well, located approximately 3,600 feet to the northwest of the TGM well) was used to record the static water level changes as a result of pumping from the TGM well.

Data Evaluation

Subject (Pumped Tioga Gas Mart) Well: The subject well is an 8-inch cased well, drilled to a depth of 600 feet. In the spectrum of western state water wells, this is a small to mid-sized well in diameter but drilled deeper than the average domestic or small-scale commercial well.

Well capacity is governed by aquifer characteristics and pump performance. According to the SGS memo the subject TGM well is capable of a sustained rate of pumping at 100 gallons per minute. Again, in the spectrum of western state water wells this discharge rate is approximately three times greater than the average domestic well, but in-line with the proposed commercial operation. If consistently pumped at 100 gpm the TGM would extract approximately 160 acre-feet over the course of one year.

Observation well (Winston Well): The location of the observation well (Winston well) is located approximately 3,600 feet to the northwest of the subject well. Based upon the well information provided in the SGS memo, this well is similarly screened and reaches the same water bearing formations within the aquifer as the TGM well. It would have been preferable to have utilized an observation well at a closer radial distance to the TGM well. However, there appears to be limited available wells in the area to choose from.

Pumping rates. During the SGS aquifer pump test a steady rate of 102 gallons per minute was used. In our professional experience, this is a reasonable diversion rate for aquifer evaluation at this location.

Length of test: The SGS constant rate test of the TGM well was performed for 24-hours. This is a common duration for aquifer pumping tests, and 24-hours is considered acceptable for a test of this type. As a rule, during a pump test drawdown equilibrium at the pumping well should be sought, with test pumping continued for an equivalent amount of time or greater. Data in the SGS memo indicates that these conditions were met and exceeded.

Aquifer transmissivity. This unit is directly proportional to the aquifer's capacity to transmit water. A practical understanding dictates that the higher the transmissivity value, the farther away the effects of the groundwater pumping will be observed.

Through a report completed in 1992 by Kleinfelder Engineering Company (Kleinfelder). the SGS memo references the aquifer transmissivity of the subject well. The estimated transmissivity value at this location is 15,600 gallons per day per foot of saturated thickness (gpd/ft); and after an unidentified condition change, is calculated at 31,800 gpd/ft. These figures should be considered low on the regional scale, and reasonably correspond with the gravel and coarse sand soil types likely to found in the alluvial fan of the Mono Lake Basin.

Confining layers: Based upon the well information provided in the SGS report there does not appear to be a significant confining layer formation at the TGM well location. However, in the observation well (Winston well), the well log shows strata of clay and granite, which are the primary confining materials in the region. As a result, this portion of the observation aquifer may be partially confined. Additionally, Kleinfelder identified a transmissivity change that further corroborates this assumption. Typically, confining conditions result in greater impacts to nearby wells, if they intercept the same water bearing formation(s).

Storage Coefficient (also known as Storativity): This unitless term was not addressed in the SGS memo. However, as a general rule, this unit is more appropriate to define conditions associated with confined aquifers, as opposed to unconfined aquifers. RCI concurs that the calculation of a storage coefficient is not germane to this aquifer pump test and that its absence does not affect the conclusions of this memo.

Natural Boundary Conditions: Lee Vining Creek is located approximately one-half mile north of the subject well, and one-tenth of a mile south of the observation well. It is likely that Lee Vining Creek interacts with the aquifer(s) underlying its channel. However, the effects of this water feature were not discussed within the SGS memo. A more detailed analysis would be necessary to determine how much, if any, stream depletion occurs from

Lee Vining Creek as a result of pumping the TGM well. Additional boundary conditions include the Sierra to the west and Mono Lake to the east. Both of these features are outside the radius of impact for this pump test.

Well Efficiency: The SGS memo did not report any well efficiency data.

Overall Evaluation

Overall the SGS memorandum was found to be reasonable and technically sound. The Tioga Gas Mart well is not particularly large in either size or capacity; and appears to be situated in a location without obvious conflicts. With this said, the Tioga Gas Mart well is not expected to have a measurably significant impact on Lee Vining's water supply wells or on the springs that feed Mono Lake; however, the location of any specific feature of concern was not identified within the SGS memo.

Of all the options available to evaluate an aquifers characteristic and/or the effects of groundwater pumping, nothing can match the observational insights of a properly performed aquifer pump test. However, if the goal is to manage a limited amount of water, then the findings of these tests should be coupled with effective water use regulations and administrative policies. With over forty years of experience in water rights and environmental services, RCI would be happy to further discuss the solutions they have seen work within the surrounding region. Please do not hesitate to contact us should you have any questions or comments. Thank you.

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SIERRA GEOTECHNICAL SERVICES, INC.

GEOTECHNICAL • GEOLOGY • HYDROGEOLOGY • MATERIALS TESTING • INSPECTION

Dennis Domaille
Tioga Gas Mart
22 Vista Point Drive
Lee Vining, CA 93541

December 7, 2018

Subject: **RESPONSE TO REVIEW COMMENTS**
Tioga Gas Mart Water Well
Lee Vining, California

Reference: **RCI THIRD PARTY REVIEW MEMORANDUM**
Tioga Gas Mart Well
November 1, 2018

Included herein is our response to the third-party review comment regarding the potential loss of water from Lee Vining Creek, from groundwater well pumping at the project site. Comments are listed below, followed by our response.

Comment: *RCI Memo, Page 3 – Natural Boundary Conditions:* Lee Vining Creek is located approximately one-half mile north of the subject well, and one-tenth of a mile south of the observation well. It is likely that Lee Vining Creek interacts with the aquifer(s) underlying its channel. However, the effects of this water feature were not discussed within the SGS memo. A more detailed analysis would be necessary to determine how much, if any, stream depletion occurs from Lee Vining Creek as a result of pumping the TGM well.

Response: Water flows in Lee Vining Creek are controlled mostly by Southern California Edison (SCE) and Los Angeles Department of Water and Power (LADWP) releases from the upstream reservoirs. Minimum water flows are legally required (Decision D1631; SWRCB Order 98-05) to be maintained in the Creek. At present, min-max flows are required between 25 to 35 cfs depending on time of year and snowpack.

The following simple mathematical model expresses the potential effect on Lee Vining Creek from groundwater pumping at the site. Modeling does not consider variables such as distance from the creek, geology, transmissivity, or usage (which will be greatly reduced during winter months and at night) which would further reduce any potential impacts on the creek from pumping.

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Assumed Flow Rates
102 gpm constant rate flow from Tioga Well.
25 cfs daily required minimum flow.

Daily Effect
102 gpm x 60 min x 24 hours = 146,850 gpd.
146,850 gpd = 0.23 cfs
0.23cfs/25cfs = 0.9 percent daily usage

Annual Effect
146,850 gpd X 365 days = 53,600,250 gpy.
25 cfs = 16,154,761 gpd = 5,896,487,765 gpy
53,600,250gpy/589,648,740gpy = 0.9 percent yearly usage

Based on the values calculated, the potential for stream depletion on Lee Vining Creek from pumping of the well, is considered negligible (<1-percent). The values would be further reduced if distance, geology, transmissivity, and usage were considered.

References
https://www.monobasinresearch.org/data/mbrtdframes.htm

We appreciate the opportunity to be of service to you. Should you have any questions regarding this report, please do not hesitate to contact us.

Respectfully,

SIERRA GEOTECHNICAL SERVICES, INC.

PROFESSIONAL GEOLOGIST JOSEPH AARON ADLER NO 2198 CERTIFIED ENGINEERING GEOLOGIST ★ STATE OF CALIFORNIA ★

REGISTERED PROFESSIONAL ENGINEER THOMAS A. PLATZ No. C 41039 CIVIL ★ STATE OF CALIFORNIA ★

Joseph A. Adler
Principal Geologist
CEG 2198 (exp 3/31/2019)

Thomas A. Platz
Principal Engineer
PE C41039 (exp 3/31/2019)

APPENDIX H1

LRWQCB WITHDRAWAL OF NOP REQUEST FOR JURISDICTIONAL DELINEATION

LRWQCB WAIVER OF REQUIREMENT FOR JURISDICTION DELINEATION (25 May 2018)
Tioga Workforce Housing Project

From: Zimmerman, Jan@Waterboards <jan.zimmerman@waterboards.ca.gov>
Sent: Friday, May 25, 2018 11:18 AM
To: Gerry LeFrancois <glefrancois@mono.ca.gov>
Cc: Copeland, Patrice@Waterboards <patrice.copeland@waterboards.ca.gov>; Steinert, Tiffany@Waterboards <Tiffany.Steinert@Waterboards.ca.gov>
Subject: RE: Tioga Inn Project SP amendment in Lee Vining

Gerry, I will leave that up to you. If you are confident that work will not occur in or disturb wetlands or other surface water resources, then that is your call. However, if we inspect and suspect that resources are onsite and being impacted by the project, then we will require a delineation at that time. Hope that helps!

Jan Zimmerman, P.G. #8392
Senior Engineering Geologist
Lahontan Regional Water Quality Control Board
760/241-7376
http://waterboards.ca.gov/lahontan/

From: Gerry LeFrancois [mailto:glefrancois@mono.ca.gov]
Sent: Tuesday, May 22, 2018 10:35 AM
To: Zimmerman, Jan@Waterboards <jan.zimmerman@waterboards.ca.gov>
Cc: Copeland, Patrice@Waterboards <patrice.copeland@waterboards.ca.gov>
Subject: Tioga Inn Project SP amendment in Lee Vining

Hi Jan. I was wondering if there is any way to **not** do a wetlands determination study for this project. There is no surface water or meadow areas on the parcels involved for the Tioga Inn Specific Plan amendment. The CEQA consultant feels time and effort would be better spent on other project issues and/or concerns. Staff agrees.

I am happy to give you a project tour if you or someone from your office is up this way! Please let me know your thoughts. Thank you.

Gerry L.

Gerry Le Francois
Principal Planner Mono County CDD
760.924.1810 (office)

APPENDIX H2

ANTIDEGRADATION ANALYSIS

WILDERMUTH ENVIRONMENTAL, INC.

December 13, 2018

Bauer Planning & Environmental Services, Inc.
Attention: Sandra Bauer
1271 Tropicana Lane
Santa Ana, CA 92705

Subject: ***Development of technical information to support an antidegradation analysis for the Proposed Tioga Inn Project (Proposed Project)***

Dear Ms. Bauer:

This letter report presents the technical information developed to support an antidegradation finding for the Proposed Project. Currently, there is a Tioga Inn Approved Project that has been partially constructed and is in operation. The Proposed Project represents a change from the Approved Project and includes, among other changes, increased water demand and wastewater disposal requirements. Wastewater produced by the Approved Project discharges to groundwater and will continue to do so but at greater rates with the Proposed Project. This investigation established a baseline no-project condition for groundwater (flow, total dissolved solids [TDS], and nitrate expressed as nitrate-nitrogen [nitrate]) in the Lee Vining Creek area. Below, the antidegradation process, wastewater discharges from the Approved and Proposed Projects, the Project location and underlying hydrogeology, the wastewater discharge characterization, and the TDS and nitrate impacts to groundwater from the Approved and Proposed Project wastewater discharges are discussed.

Antidegradation

The Antidegradation Policy defines the State of California's regulatory approach to maintaining the existing high quality of the waters of the state. The requirements of the policy must be applied in the interpretation of the water quality analysis discussed herein. In 1968, the SWRCB adopted the Antidegradation Policy (Resolution No. 68-16) as a policy statement to implement the California Legislature's intent that the waters of the state be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the State of California. Specifically, the antidegradation policy states:

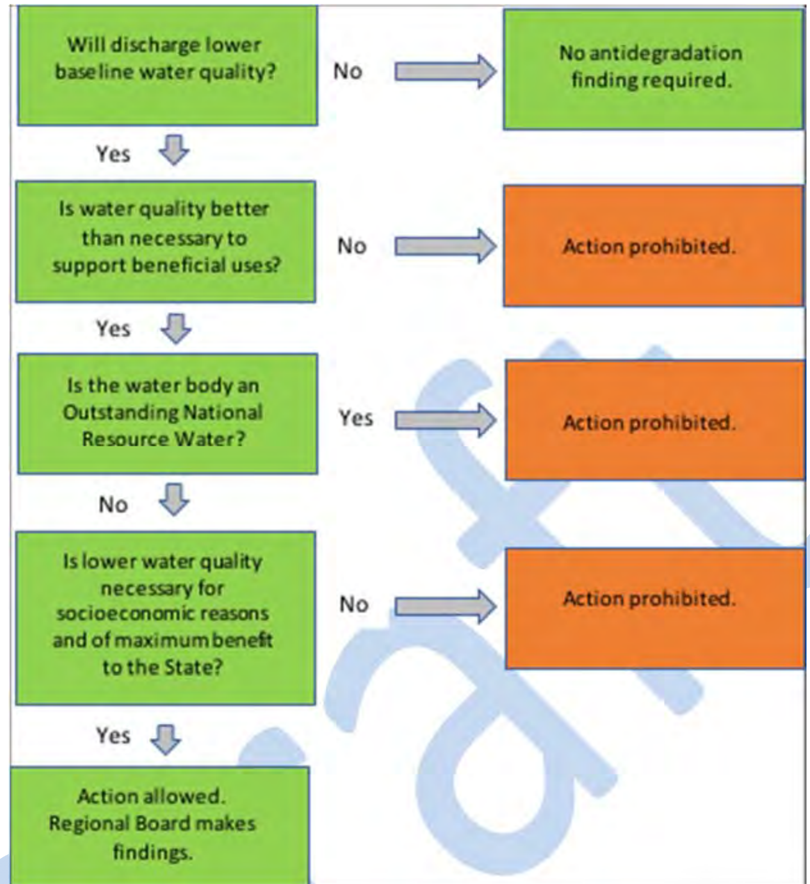
> "Whenever the existing quality of water is better than the quality established in policies…such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies." (Resolution No. 68-16)

In 1990, the SWRCB issued Administrate Procedure Update (APU) 90-004 to provide guidance to the Regional Boards for performing antidegradation analyses. APU 90-004 establishes when an antidegradation analysis is required, how to determine the level of analysis required (*simple* versus *complete*), and what components should be included as part of the antidegradation analysis and subsequent antidegradation findings by the Regional Boards. A *complete* antidegradation analysis is required pursuant to APU 90-004 because the Project will require the issuance of a new discharge permit. The procedure for a complete antidegradation analysis consists of three steps:

1. Compare receiving water quality to the water quality objectives established to protect designated beneficial uses.
2. Balance the proposed action against the public interest.
3. Report the antidegradation analysis.

Figure 1 shows the decision flow chart for a complete antidegradation analysis. The water quality analysis described in the section below entitled *Groundwater Quality Impacts from Wastewater Disposal at the Project Site* contains the information required by the Regional Board to complete Step 1 above, and this analysis should be incorporated directly into the CEQA documentation for the Proposed Project. Steps 2 and 3 will be completed subsequent to completing the CEQA documentation for the project.

Figure 1: Antidegradation Decision Flow Chart



Hydrogeology in the Project Area

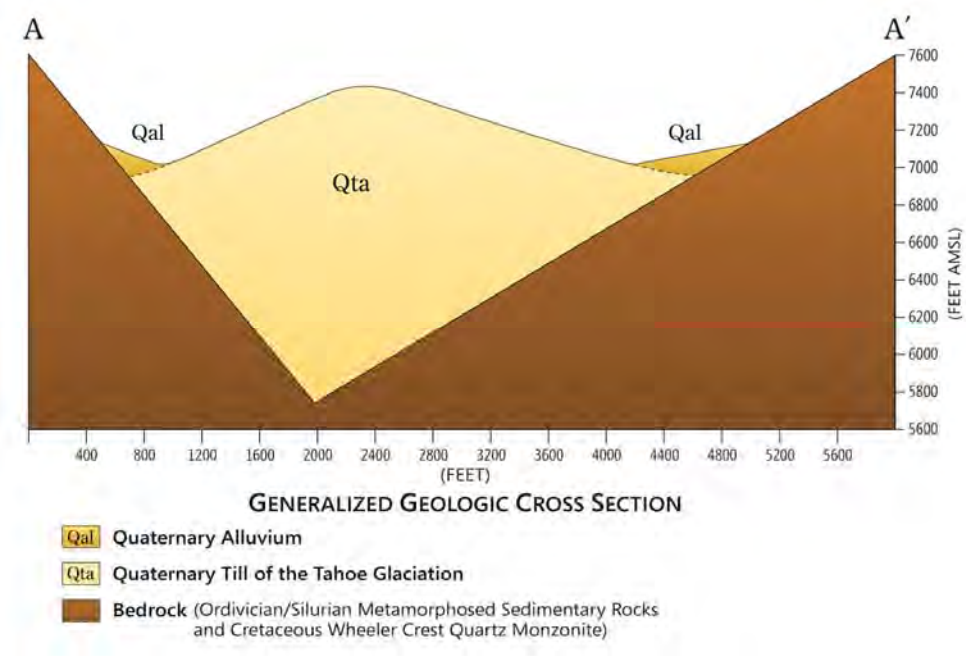
The site of the Approved and Proposed Projects is shown in Plate 1. Specifically, the site is located within Mono Basin in the westernmost portion of the Basin and Range physiographic province and adjacent to the uplifted fault block of the Sierra Nevada. Geologic maps of the area show that the site is immediately underlain by Pleistocene Till of the Tahoe Glaciation (Kistler, 1966). Based on the lithologic logs from Project water supply wells 1 and 2, the glacial till in the site vicinity consists predominantly of interbedded sands, gravel, granitic boulders, and some clay to a depth of at least 630 feet (Appendix A). A thin (~10-15 feet thick) layer of quaternary alluvium, consisting of sand and clay, overlies the glacial till at the well sites but has not been recorded in the Project area west of Highway 395. Several faults have been mapped in the site vicinity. One predominant fault runs adjacent to the western edge of the site in a north-northwest orientation. While this fault has historically resulted in uplift of the metamorphosed sedimentary rocks of the Log Cabin Mine Roof Pendant west of the Proposed Project, the fault has not been active within the Holocene age and is concealed in the site area.

At the time of their installation in July 1984 and December 2017, groundwater stabilized at Project water supply wells 1 and 2 at depths of approximately 340 and 345 feet, respectively. The vadose zone thickness is therefore estimated to be between 340 and 380 feet thick. In June 1992, aquifer pump testing was performed using well 1 (Kleinfelder, 1992). Based on this testing, it was concluded that groundwater occurred under unconfined conditions at a depth of approximately 340 feet. In addition, the aquifer testing indicated the presence of a recharge boundary. The Transmissivity (T) of the aquifer before the boundary was calculated to be approximately 15,600 gpd/ft. The T of the aquifer, after adjusting for the influence of the boundary condition, was calculated to be approximately 31,800 gpd/ft.

Groundwater Flux in the Proposed Project Area

Upgradient of the Project site, groundwater flows in a southwest to northeast direction in a defined bedrock channel. Wastewater from the Project will be discharged into this groundwater flow system. Figure 2 shows an idealized hydrogeologic cross section (A-A' in Plate 1) across Lee Vining Creek and identifies the permeable sediments and surrounding bedrock. The approximate geometry of the valley near its terminal end was estimated by extending the slopes of the exposed bedrock on either side into the subsurface and then using the mapped topography of the valley floor to complete the cross-sectional profile.

Figure 2: Hydrogeologic Cross Section A-A'



Due to the paucity of wells with groundwater level data in the project area, an attempt was made to project the groundwater levels recorded at wells 1 and 2 up the valley, using the assumption that the groundwater gradient would be approximately equal to the slope of the ground surface. This method provided an unacceptable range of possible volumes, which varied according to the exact point where water levels were projected. Therefore, to estimate the flow of water in the site vicinity, the width of the valley opening (~ 4,000 feet) was multiplied by the saturated thickness of the aquifer penetrated by Wells 1 and 2 (~ 250 feet) to determine the cross-sectional area of the aquifer. Hydraulic conductivities for the aquifer were determined by dividing the T values from the 1992 aquifer testing by the saturated aquifer thickness penetrated by wells 1 and 2. The groundwater gradient in the area was calculated using two methods: 1) the gradient was approximately equal to the slope of the ground surface of the valley floor, and 2) the gradient was equal to the difference in groundwater elevation at wells 1 and 2 minus the elevation of the lake surface divided by the distance between the wells and lake edge. Flow was then calculated using the equation:

$$Q = kiA$$

Where:

Q = flow

k = hydraulic conductivity

i = hydraulic gradient

A = saturated cross-sectional area of the aquifer

These groundwater flow calculations are summarized in Table 1. The groundwater flow estimates underlying Lee Vining Creek in this area are likely underestimated because only a portion of the total saturated thickness of the aquifer (i.e. that penetrated by Wells 1 and 2) was used. Actual groundwater flux beneath the Project area could be substantially greater. This underestimation of groundwater flux has the effect of exaggerating the increase in TDS and nitrate concentrations caused by the Approved and Proposed Projects.

Project Water Supply and Wastewater Disposal Plans

Two specific project scenarios were evaluated: 1) project buildout under the Approved Project (Approved Project) and 2) project buildout under the Proposed Project (Proposed Project Scope). The water supply plans for each scenario were provided by Sandra Bauer of Bauer Planning & Environmental Services, Inc., and the wastewater disposal plans were provided by Triad Engineers, Inc. The water supply and wastewater disposal plans for each scenario are summarized in Table 2. The water demand and wastewater discharged under each scenario were assumed to be the same and would vary during the year based on the number of people residing at the Project site. For planning purposes, the following assumptions were used for the Approved and Proposed Project scenarios:

1. Approved Project

   - Water supply will come from groundwater pumped from two wells located on the lake-ward side of US 395 near the Proposed Project site (see Plate 1). Water demands will be about:

     - 12,835 gallons per day (gpd) for the period November through March, totaling about 5.9 acre-feet (af) during this period;

- 23,800 gpd for the period April through October, totaling about 15.6 af during this period; and
- total annual water demand will be about 21.5 afy.

- Consumptive use is assumed negligible. Wastewater is treated onsite via a septic tank system and disposed of by percolation to groundwater through a leach field. The volume of wastewater disposed of is equal to the volume of water served for water supply purposes.

2. Proposed Project

- Water supply will come from groundwater pumped from two wells located on the lake-ward side of US 395 near the Proposed Project site (see Plate 1). Water demands will be about:
  - 22,000 gpd for the period November through March, totaling about 10.2 af during this period;
  - 40,800 gpd for the period April through October, totaling about 26.8 af during this period; and
  - total annual water demand will be about 37 afy.
- Consumptive use is negligible. Wastewater will be treated onsite at a new treatment plant and disposed of by percolation to groundwater through a leach field. The volume of wastewater disposed of is equal to the volume of water served for water supply purposes.

The Basin Plan objectives for TDS and nitrate are 500 milligrams per liter (mgl) and 10 mgl, respectively. The TDS and nitrate concentrations in the water supply are estimated to be about 200 mgl and 0.2 mgl, respectively, based on recent water quality measurements at the water supply wells. Recent water quality analyses at these wells are included in the appendix to this report. The TDS concentration in wastewater produced for the Approved and Proposed Project scenarios was assumed equal to the TDS concentration of the water supply to the Project plus a TDS waste increment. The TDS waste increment in both scenarios is assumed to be 250 mgl.[1] The nitrogen in the septic tank discharge to groundwater is assumed to be fully nitrified prior to reaching groundwater and is assumed to be 30 mgl[2] for the Approved Project and 10 mgl[3] for the Proposed Project. No losses in TDS or nitrate concentrations were assumed as the wastewater

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[1] Based on a comprehensive assessment of recent TDS concentrations in wastewater discharges conducted by the Santa Ana Watershed Project Authority (DBSA, 2016)

[2] Based on an extensive study of septic system discharge effects on groundwater performed for the San Timoteo Watershed Management Authority (WEI, 2006)

[3] Based on documentation for the Orenco® denitrifying Moving Bed Bioreactor, provided by Triad Engineering

percolates through the vadose zone to the saturated zone. This is a conservative assumption and leads to an overestimation of TDS and nitrate impacts to groundwater from the Projects.

Groundwater Quality Impacts from Wastewater Disposal at the Project Site

The TDS and nitrate concentrations of groundwater just downgradient of the point of wastewater discharge to groundwater are equal to the volume-weighted average of TDS and nitrate concentrations of the groundwater approaching the Project site from the southwest and the wastewater discharged from the Project. Table 1 summarizes these computations, and the table below summarizes the results.

Projected Impacts from the Discharge of Wastewater at the Project (mgl)

	TDS	Nitrate Nitrogen
Basin Plan objective established to protect beneficial uses	500	10
Baseline concentration	200	0.20
Assimilative capacity without project	300	9.80
Projected ambient with Approved Project	202 to 208	0.43 to 1.12
Assimilative capacity remaining with Approved Project	298 to 292	9.57 to 8.88
Assimilative capacity used by the Approved Project	0.63 to 2.57 percent	2.30 to 9.37 percent
Projected ambient with Proposed Project	203 to 213	0.33 to 0.72
Assimilative capacity with Proposed Project	297 to 287	9.67 to 9.28
Assimilative Capacity Used by the Proposed Project	1.08 to 4.40 percent	1.30 to 5.28 percent

From Table 1 and the table above, the following conclusions can be made:

- The groundwater discharge approaching the Project site from the southwest is projected to range from about 700 to 2,850 afy with TDS and nitrate concentrations of about 200 mgl and 0.2 mgl, respectively.
- Without the Project, there is about 300 mgl of assimilative capacity for TDS and 9.8 mgl of assimilative capacity for nitrate.

- Under the Approved Project scenario, after receiving about 21.6 afy of wastewater:
  - the TDS concentration in groundwater will increase and range between 202 and 208 mgl, using between approximately 0.63 to 2.57 percent of the pre-Project assimilative capacity for TDS; and
  - the nitrate concentration in groundwater will increase and range between 0.43 and 1.12 mgl, using between approximately 2.30 to 9.37 percent of the pre-Project assimilative capacity for nitrate.
- Under the Proposed Project scenario, after receiving about 37 afy of wastewater:
  - the TDS concentration in groundwater will increase and range between 203 and 213 mgl, using between approximately 1.08 to 4.40 percent of the pre-Project assimilative capacity for TDS; and
  - the nitrate concentration in groundwater will increase and range between 0.33 and 0.72 mgl, using between approximately 1.30 to 5.28 percent of the pre-Project assimilative capacity for nitrate.

Antidegradation Analysis

The projected TDS and nitrate impacts for both scenarios are based on conservative assumptions, meaning that the actual impacts to groundwater will be less than calculated herein. The answers to the first three questions in the antidegradation decision flow chart (Figure 1) are:

1. *Will the discharge lower baseline water quality?* Yes. The baseline TDS concentration is about 200 mgl, and the TDS concentration is projected to increase 2 to 8 mgl under the Approved Project and 3 to 13 mgl under the Proposed Project. The baseline nitrate nitrogen concentration is about 0.2 mgl, and the nitrate nitrogen concentration is projected to increase 0.23 to 0.92 mgl under the Approved Project and 0.13 to 0.52 mgl under the Proposed Project.
2. *Is the water quality better than necessary to support beneficial uses?* Yes. The baseline water quality is better than necessary to support beneficial uses. The water quality impact of the Proposed Project on groundwater, relative to the Approved Project, is a slight increase in TDS concentration (water quality degradation) and a slight decrease in nitrate concentration (water quality improvement), and beneficial uses will remain fully protected.
3. *Is the water body an Outstanding Natural Resource Water*? No. The water body is groundwater underlying Lee Vining Creek and not an ONRW.

The wastewater impact to groundwater for TDS and nitrate for the Approved and Proposed Projects will utilize a small fraction of the available assimilative capacity, the absolute impacts are small, and beneficial uses are fully protected. With the Proposed Project, less than ten percent of the total assimilative capacity for TDS and nitrate will be used by the Project. The nitrate impacts to groundwater with the Proposed Project will be less than the Approved Project because the existing septic tank system will be replaced with a treatment plant that will limit the nitrogen concentration in the discharge to groundwater to 10 mgl.

Please call or email me (949-600-7500, mwildermuth@weiwater.com) or Erik Gaiser (949-600-7507, egaiser@weiwater.com) if you have any questions regarding this analysis.

Very truly yours,

Wildermuth Environmental, Inc.

Mark J. Wildermuth, PE
President and Principal Engineer

Erik Gaiser
Supervising Geologist, PG No. 8879

Enclosures:

- Table 1 – Groundwater Impact Computations
- Table 2 – Wastewater Characterization
- Plate 1 – Site Location Map
- Appendix A – Well logs and water quality data for Wells 1 and 2

References:

Daniel B Stephens & Associates, Inc. (DBSA). (2018). *Study to Evaluate Long-Term Trends and Variations in the Average Total Dissolved Solids Concentration in Wastewater and Recycled Water*. March 30, 2018.

Kistler. (1966). *Geologic Map of the Mono Craters Quadrangle, Mono and Tuolumne Counties.* Scale 1:62,500.

Kleinfelder. (1992). *Modified Phase I Ground Water Resources Assessment and Review of a Fault Investigation Report for the Tioga Inn Specific Plan, Lee Vining, California.* August 1992.

Wildermuth Environmental, Inc. (WEI). (2006). *Water Quality Impacts from On-Site Waste Disposal Systems in the Cherry Valley Community of Interest.* July 2006.

Tables

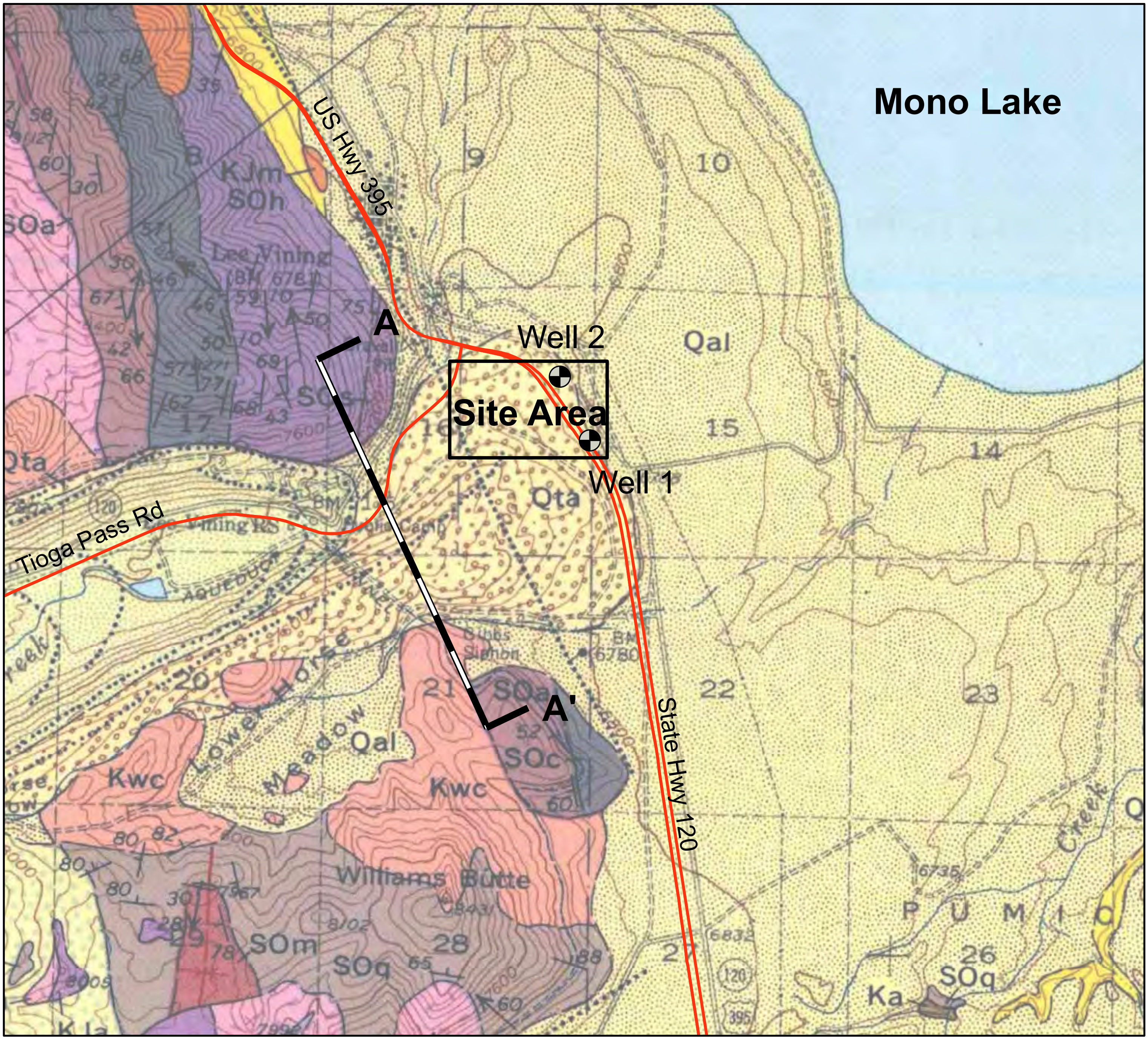
Table 1
Groundwater Impact Computations

Flux Term	Units	Approved Project		Proposed Project	
		High Groundwater Discharge	Low Groundwater Discharge	High Groundwater Discharge	Low Groundwater Discharge
Cross-sectional area of groundwater flow	ft^2	1,000,000	1,000,000	1,000,000	1,000,000
Slope of water table		0.02	0.01	0.02	0.01
Hydraulic conductivity	ft/d	17.01	8.34	17.01	8.34
Groundwater discharge under site	afy	2,850	700	2,850	700
Wastewater percolation	afy	21.6	21.6	37.0	37.0
TDS waste increment	mgl	250.0	250.0	250.0	250.0
Ambient TDS concentration	mgl	200	200	200	200
Ambient nitrate-N concentration	mgl	0.2	0.2	0.2	0.2
TDS in wastewater reaching groundwater	mgl	450.0	450.0	450.0	450.0
Nitrate N in wastewater reaching groundwater'	mgl	30	30	10	10
TDS concentration in groundwater down-gradient from disposal area with Project	mgl	202	208	203	213
Nitrate-N concentration in groundwater downgradient from disposal area with Project	mgl	0.43	1.12	0.33	0.72
Increase in TDS concentration in groundwater with Project	mgl	2	8	3	13
Increase in nitrate-N concentration in groundwater with Project	mgl	0.23	0.92	0.13	0.52
Basin Plan TDS objective	mgl	500	500	500	500
Basin Plan nitrate-N objective	mgl	10.00	10.00	10.00	10.00
Assimilative capacity for TDS without Project	mgl	300	300	300	300
Assimilative capacity for nitrate without Project	mgl	9.80	9.80	9.80	9.80
Assimilative capacity for TDS with Project	mgl	298	292	297	287
Assimilative capacity for nitrate-N with project	mgl	9.57	8.88	9.67	9.28
Amount of TDS assimilative capacity used by Project	mgl	2	8	3	13
Amount of TDS assimilative capacity used by Project	%	0.63%	2.57%	1.08%	4.40%
Amount of nitrate-N assimilative capacity used by Project	mgl	0.23	0.92	0.13	0.52
Amount of nitrate-N assimilative capacity used by Project	%	2.30%	9.37%	1.30%	5.28%

Table 2
Wastewater Characterization

	Units	Approved Project		Proposed Project	
		Winter (November through March)	Summer (April through October)	Winter (November through March)	Summer (April through October)
Groundwater pumping for water supply	gpd	12,835	23,800	22,000	40,800
	af	5.9	15.6	10.2	26.8
Consumptive use	gpd	0	0	0	0
	af	0	0	0	0
Wastewater generated	gpd	12,835	23,800	22,000	40,800
	af	5.9	15.6	10.2	26.8
Wastewater reuse	gpd	0	0	0	0
	af	0	0	0	0
Wastewater percolated to groundwater	gpd	12,835	23,800	22,000	40,800
	af	5.9	15.6	10.2	26.8
TDS concentration in groundwater	mgl	200	200	200	200
Nitrate - N concentration in groundwater	mgl	<0.2	<0.2	<0.2	<0.2
TDS concentration waste increment	mgl	250	250	250	250
TDS concentration in wastewater	mgl	450	450	450	450
	tons	3.6	9.6	6.2	16.4
Nitrate concentration in wastewater	mgl	30.0	30.0	10.0	10.0
	tons	0.2	0.6	0.1	0.4

Plates



KJM - Quartz Monzonite of Mono Lake

Jm - Granodiorite of Mono Dome

KWC - Wheeler Crest Quartz Monzonite

SOh - Quartzofeldspathic hornfels

SOc - Marble, calc-silicate hornfels, and quartzite

SOx - Crossbedded calcareous quartzite

SOa - andalusite hornfels, quartzofeldspathic hornfels with thin carbonaceous marbles

Qti - Till of the Tioga Glaciation

Qta - Till of Tahoe Glaciation

Qal - Alluvium and pumice

Ql - Lake Beds

SOq - Biotite bearing quartzite

Cross Section Line

Well Site

Prepared by:

WEI
WILDERMUTH ENVIRONMENTAL, INC.

Author: APP

Date: 10/1/2018

N

0 0.3 0.6 1.2 Miles

0 0.75 1.5 Kilometers

Site Location Map
Plate 1

Appendix A

Well Logs and Water Quality Data for Wells 1 and 2

5.0.

ORIGINAL

File with DWR 01N26E16

[redacted]f Intent No. I94847

Local Permit No. or Date

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in

No. 231900

State Well No.

Other Well No.

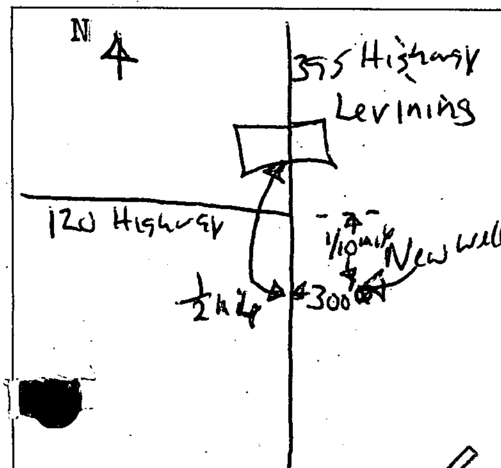
(2) LOCATION OF WELL (See instructions):

County Mono Owner's Well Number

Well address if different from above

Township IN. 26E Range I6 Section 16 /26 E. R

Distance from cities, roads, railroads, fences, etc. I/I0 Mile S. of Highway 395 & Highway 120 E. side Of Highway 395



WELL LOCATION SKETCH

(3) TYPE OF WORK:

New Well ☒ Deepening ☐

Reconstruction ☐

Reconditioning ☐

Horizontal Well ☐

Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:

Domestic ☐

Irrigation ☐

Industrial ☐

Test Well ☐

Stock ☐

Municipal ☐

Other ☐ X

(5) EQUIPMENT:

Rotary ☒ Reverse ☐

Cable ☐ Air ☐

Other ☐ Bucket ☐

(6) GRAVEL PACK:

Yes ☒ No ☐ Size 3/8"

Diameter of bore I2 5/8

Packed from 600 to 42 ft.

(7) CASING INSTALLED:

Steel ☒ Plastic ☐ Concrete ☐

(8) PERFORATIONS:

Type of perforation or size of screen

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	600	8 5/8	.I88	380	580	I/8"X3"

(9) WELL SEAL:

Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 42 ft.

Were strata sealed against pollution? Yes ☐ No ☒ Interval ft.

Method of sealing Cement Grout

(10) WATER LEVELS:

Depth of first water, if known 380 ft.

Standing level after well completion 340 ft.

(11) WELL TESTS:

Was well test made? Yes ☒ No ☐ If yes, by whom? Us

Type of test Pump ☐ Bailer ☐ Air lift ☒

Depth to water at start of test 340 ft. At end of test 550 ft

Di[redacted]rge I50 gal/min after 4 hours Water temperature

C[redacted]l analysis made? Yes ☐ No ☒ If yes, by whom?

Was electric log made? Yes ☐ No ☒ If yes, attach copy to this report

(12) WELL LOG: Total depth 625 ft. Depth of completed well 600 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	10	Tan Clay & Sand
10	15	Gravle
15	30	Cobbles
30	45	Large Gravle
45	60	Cobbles
60	65	Large Gravle
65	90	Cobbles
90	105	Gravle
105	120	Cobbles & Gravle
I20	I24	Bolder, Granite
I24	I35	Cobbles & Gravle
I35	I40	Gravle
I40	I50	Cobbles
I50	I65	Bolder
I65	I80	Fractured Granite
I80	I82	Bolder
I82	I95	Fractured Granite
I95	200	Gravle Loose
200	2I2	Bolder Fractured
2I2	280	Gravle Loose
280	300	Bolders & Gravle
300	3I0	Gravle Loose
3I0	325	Bolders & Gravle
325	350	Gravle
350	410	Bolder
4I0	425	Fractured Granite
425	435	Black & White Granite
435	460	Fractured Granite
460	493	B.W. Granite Hard
493	50I	Gravle
50I	503	Granite Hard
503	535	Gravle Loose
535	552	Gravle & Bolders
552	570	Granite
570	572	Fractured
572	575	Granite
575	580	Fractured
580	595	bolder

Work started 5-22 1984 Completed 7-5- 1984

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED (signature) (Well Driller)

NAME MARANATHA DRILLING& PUMP SERVICE
(Person, firm, or corporation) (Typed or printed)

Address RT. 4BOX I8 C

City Bishop Ca. Zip 935I4

License No. 4I723I Date of this report 7-5-84

DWR 188 (REV. 7-76) **IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM**

ORIGINAL
File with DWR

[redacted] of Intent No.______
L[redacted]ermit No. or Date______

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do not fill in
No. ~~231899~~
~~State Well No.~~ 231900
Other Well No.______

CONFIDENTIAL
NOT FOR PUBLIC USE
WATER CODE SEC. 13752

(2) LOCATION OF WELL (See instructions):
County______ Owner's Well Number______
Well address if different from above______
Township______ Range______ Section______
Distance from cities, roads, railroads, fences, etc.______

[redacted]

WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well ☐ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☐
Irrigation ☐
Industrial ☐
Test Well ☐
Stock ☑
Municipal ☐
Other ☐

(5) EQUIPMENT:
Rotary ☐ Reverse ☐
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☐ No ☑ Size______
Diameter of bore______
Packed from______ to______ ft.

(7) CASING INSTALLED:
Steel ☐ Plastic ☐ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall

(8) PERFORATIONS:
Type of perforation or size of screen______

From ft.	To ft.	Slot size

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☐ No ☐ If yes, to depth______ft.
Were strata sealed against pollution? Yes ☐ No ☐ Interval______ft.
Method of sealing______

(10) WATER LEVELS:
Depth of first water, if known______ft.
Standing level after well completion______ft.

(11) WELL TESTS:
Was well test made? Yes ☐ No ☐ If yes, by whom?______
Type of test Pump ☐ Bailer ☐ Air lift ☐
Depth to water at start of test______ft. At end of test______ft
Discharge______gal/min after______hours Water temperature______
[redacted] analysis made? Yes ☐ No ☐ If yes, by whom?______
Was electric log made? Yes ☐ No ☐ If yes, attach copy to this report

(12) WELL LOG: Total depth______ft. Depth of completed well______ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
595	~~605~~ x 620	Granite
620	630	Fractured

Work started______19______ Completed______19______

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
SIGNED Russell Kil (signature)
(Well Driller)
NAME______
(Person, firm, or corporation) (Typed or printed)
Address______
City______ Zip______
License No.______ Date of this report______

DWR 188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

State of California

Well Completion Report

Form DWR 188 Complete 3/15/2018
WCR2018-002324

Owner's Well Number ______ Date Work Began 11/07/2017 Date Work Ended 12/09/2017

Local Permit Agency Mono County Health Department

Secondary Permit Agency ______ Permit Number 26-16-02 Permit Date 11/06/2017

Well Owner (must remain confidential pursuant to Water Code 13752)

Name Dennis Domaille

Mailing Address P.O. Box 326

City Lee Vining State Ca Zip 93514

Planned Use and Activity

Activity New Well

Planned Use Water Supply Public

Well Location

Address 170 W Airport RD

City Lee Vinning Zip 93514 County Mono

Latitude ___ ___ ___ N Longitude ___ ___ ___ W
Deg. Min. Sec. Deg. Min. Sec.

Dec. Lat. 37.9493583 Dec. Long. -119.1059749

Vertical Datum ______ Horizontal Datum WGS84

Location Accuracy ______ Location Determination Method ______

APN 016

Township 01 N

Range 26 E

Section 16

Baseline Meridian Mount Diablo

Ground Surface Elevation ______

Elevation Accuracy ______

Elevation Determination Method ______

Borehole Information

Orientation Vertical Specify ______

Drilling Method Direct Rotary Drilling Fluid Bentonite

Total Depth of Boring 610 Feet

Total Depth of Completed Well 600 Feet

Water Level and Yield of Completed Well

Depth to first water 360 (Feet below surface)

Depth to Static Water Level 345 (Feet) Date Measured 12/11/2017

Estimated Yield* 150 (GPM) Test Type Air Lift

Test Length 10 (Hours) Total Drawdown 255 (feet)

*May not be representative of a well's long term yield.

Geologic Log - Free Form

Depth from Surface Feet to Feet		**Description**
0	15	brown dirt and sand
15	42	granite boulders and sand
42	75	hard boulders and little bit of clay
75	105	granite boulders and gravel
105	170	hard boulder and clay
170	275	hard big boulders
275	325	boulder and clay
325	335	sand and boulders
335	450	black and white granite boulders
450	510	small boulders and sand
510	610	black rock with some white rock

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specificatons	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	350	Blank	PVC	OD: 8.625 in. | Thickness: 0.500 in.	0.5	8.625			
1	350	600	Screen	PVC	OD: 8.625 in. | Thickness: 0.500 in.	0.5	8.625	Milled Slots	0.035	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	60	Cement	Portland Cement/Neat Cement		
60	610	Filter Pack	Other Gravel Pack	0.375	

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	350	12.25
350	610	12.25

Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name MARANATHA DRILLING AND PUMP SERVICE
Person, Firm or Corporation

Address	City	State	Zip
22893 HWY 6	BISHOP	CA	93514

Signed	C-57 Licensed Water Well Contractor	Date Signed	C-57 License Number
	electronic signature received	03/09/2018	691892

Attachments

001.jpg - Other

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

BABCOCK Laboratories, Inc.
The Standard of Excellence for Over 100 Years

Client Name:	Tioga Gas Mart	Analytical Report:	Page 1 of 6
Contact:	Dennis Domaille	Project Name:	Tioga Gas Mart
Address:	PO Box 326 Lee Vining, CA 93541	Project Number:	[none]
Report Date:	01-Aug-2018	**Work Order Number:**	**B8G2192**

Received on Ice (Y/N): Yes Temp: 4 °C

Attached is the analytical report for the sample(s) received for your project. Below is a list of the individual sample descriptions with the corresponding laboratory number(s). Also, enclosed is a copy of the Chain of Custody document (if received with your sample(s)). Please note any unused portion of the sample(s) may be responsibly discarded after 30 days from the above report date, unless you have requested otherwise.

Thank you for the opportunity to serve your analytical needs. If you have any questions or concerns regarding this report please contact our client service department.

Sample Identification

Lab Sample #	Client Sample ID	Matrix	Date Sampled	By	Date Submitted	By
B8G2192-01	North Well ---ROUTINE---	Water	07/17/18 09:00	Dennis Domaille	07/18/18 09:00	FedEX
B8G2192-02	South Well ---ROUTINE---	Water	07/17/18 09:00	Dennis Domaille	07/18/18 09:00	FedEX

BABCOCK Laboratories, Inc.
The Standard of Excellence for Over 100 Years

Client Name: Tioga Gas Mart
Contact: Dennis Domaille
Address: PO Box 326
Lee Vining, CA 93541

Report Date: 01-Aug-2018

Project Name: Tioga Gas Mart

Project Number: [none]

Work Order Number: B8G2192

Received on Ice (Y/N): Yes Temp: 4 °C

Laboratory Reference Number

B8G2192-01

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
North Well	Water	07/17/18 09:00	07/18/18 9:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Cations							
Total Hardness	62	3.0	mg/L	SM 2340B/EPA 200.7	07/27/18 15:09	KCS	
Calcium	15	1.0	mg/L	EPA 200.7	07/27/18 15:09	KCS	
Magnesium	6.0	1.0	mg/L	EPA 200.7	07/27/18 15:09	KCS	
Sodium	41	1.0	mg/L	EPA 200.7	07/27/18 15:09	KCS	
Potassium	2.3	1.0	mg/L	EPA 200.7	07/27/18 15:09	KCS	
Anions							
Total Alkalinity	120	5.0	mg/L as CaCO3	SM 2320B	07/25/18 02:24	CMR	
Hydroxide	ND	5.0	mg/L as CaCO3	SM 2320B	07/25/18 02:24	CMR	
Carbonate	ND	5.0	mg/L as CaCO3	SM 2320B	07/25/18 02:24	CMR	
Bicarbonate	120	5.0	mg/L as CaCO3	SM 2320B	07/25/18 02:24	CMR	
Chloride	20	1.0	mg/L	EPA 300.0	07/18/18 21:39	KBS	
Sulfate	29	0.50	mg/L	EPA 300.0	07/18/18 21:39	KBS	
Nitrate as N	ND	0.20	mg/L	EPA 300.0	07/18/18 21:39	KBS	
Aggregate Properties							
pH	8.0	1.0	pH Units	SM 4500H+ B	07/25/18 02:24	CMR	
Specific Conductance	320	1.0	umhos/cm	SM 2510 B	07/25/18 02:24	CMR	
Solids							
Total Dissolved Solids	220	10	mg/L	SM 2540C	07/23/18 15:53	BBR	
Surfactants							
MBAS	ND	0.08	mg/L	SM 5540C	07/19/18 08:50	FGU	

mailing
P.O Box 432
Riverside, CA 92502-0432

location
6100 Quail Valley Court
Riverside, CA 92507-0704

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www.babcocklabs.com

CA ELAP No. 2698
EPA No. CA00102
NELAP No. OR4035
LACSD No. 10119

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Client Name:	Tioga Gas Mart	Analytical Report:	Page 3 of 6
Contact:	Dennis Domaille	Project Name:	Tioga Gas Mart
Address:	PO Box 326 Lee Vining, CA 93541	Project Number:	[none]
Report Date:	01-Aug-2018	**Work Order Number:**	**B8G2192**

Received on Ice (Y/N): Yes Temp: 4 °C

Laboratory Reference Number

B8G2192-01

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
North Well	Water	07/17/18 09:00	07/18/18 9:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Nutrients							
Total Phosphorus	0.09	0.05	mg/L	SM 4500P B E	07/27/18 18:24	FGU	
Metals and Metalloids							
Copper	ND	50	ug/L	EPA 200.7	07/27/18 15:10	KCS	
Iron	ND	100	ug/L	EPA 200.7	07/27/18 15:10	KCS	
Manganese	29	20	ug/L	EPA 200.7	07/27/18 15:10	KCS	
Zinc	220	50	ug/L	EPA 200.7	07/27/18 15:10	KCS	

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Client Name: Tioga Gas Mart
Contact: Dennis Domaille
Address: PO Box 326
Lee Vining, CA 93541

Report Date: 01-Aug-2018

Project Name: Tioga Gas Mart

Project Number: [none]

Work Order Number: B8G2192

Received on Ice (Y/N): Yes Temp: 4 °C

Laboratory Reference Number

B8G2192-02

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
South Well	Water	07/17/18 09:00	07/18/18 9:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Cations							
Total Hardness	53	3.0	mg/L	SM 2340B/EPA 200.7	07/27/18 15:11	KCS	
Calcium	14	1.0	mg/L	EPA 200.7	07/27/18 15:11	KCS	
Magnesium	4.7	1.0	mg/L	EPA 200.7	07/27/18 15:11	KCS	
Sodium	42	1.0	mg/L	EPA 200.7	07/27/18 15:11	KCS	
Potassium	2.0	1.0	mg/L	EPA 200.7	07/27/18 15:11	KCS	
Anions							
Total Alkalinity	120	5.0	mg/L as CaCO3	SM 2320B	07/25/18 02:33	CMR	
Hydroxide	ND	5.0	mg/L as CaCO3	SM 2320B	07/25/18 02:33	CMR	
Carbonate	ND	5.0	mg/L as CaCO3	SM 2320B	07/25/18 02:33	CMR	
Bicarbonate	120	5.0	mg/L as CaCO3	SM 2320B	07/25/18 02:33	CMR	
Chloride	15	1.0	mg/L	EPA 300.0	07/18/18 21:53	KBS	
Sulfate	22	0.50	mg/L	EPA 300.0	07/18/18 21:53	KBS	
Nitrate as N	ND	0.20	mg/L	EPA 300.0	07/18/18 21:53	KBS	
Aggregate Properties							
pH	8.1	1.0	pH Units	SM 4500H+ B	07/25/18 02:33	CMR	
Specific Conductance	290	1.0	umhos/cm	SM 2510 B	07/25/18 02:33	CMR	
Solids							
Total Dissolved Solids	190	10	mg/L	SM 2540C	07/23/18 15:53	BBR	
Surfactants							
MBAS	ND	0.08	mg/L	SM 5540C	07/19/18 08:50	FGU	

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P.O Box 432
Riverside, CA 92502-0432

location
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CA ELAP No. 2698
EPA No. CA00102
NELAP No. OR4035
LACSD No. 10119

BABCOCK Laboratories, Inc.
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Client Name: Tioga Gas Mart
Contact: Dennis Domaille
Address: PO Box 326
Lee Vining, CA 93541

Report Date: 01-Aug-2018

Project Name: Tioga Gas Mart

Project Number: [none]

Work Order Number: B8G2192

Received on Ice (Y/N): Yes Temp: 4 °C

Laboratory Reference Number

B8G2192-02

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
South Well	Water	07/17/18 09:00	07/18/18 9:00

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
Nutrients							
Total Phosphorus	0.06	0.05	mg/L	SM 4500P B E	07/27/18 18:24	FGU	
Metals and Metalloids							
Copper	ND	50	ug/L	EPA 200.7	07/27/18 15:12	KCS	
Iron	330	100	ug/L	EPA 200.7	07/27/18 15:12	KCS	
Manganese	95	20	ug/L	EPA 200.7	07/27/18 15:12	KCS	
Zinc	ND	50	ug/L	EPA 200.7	07/27/18 15:12	KCS	

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Client Name:	Tioga Gas Mart	Analytical Report:	Page 6 of 6
Contact:	Dennis Domaille	Project Name:	Tioga Gas Mart
Address:	PO Box 326 Lee Vining, CA 93541	Project Number:	[none]
Report Date:	01-Aug-2018	**Work Order Number:**	**B8G2192**

Received on Ice (Y/N): Yes Temp: 4 °C

Notes and Definitions

pH:	Regulatory 15 minute holding time exceeded	B8G2192-01
pH:	Regulatory 15 minute holding time exceeded	B8G2192-02

ND: Analyte NOT DETECTED at or above the Method Detection Limit **(if MDL is reported)**, otherwise at or above the Reportable Detection Limit (RDL)

NR: Not Reported

RDL: Reportable Detection Limit

MDL: Method Detection Limit

* / "' : NELAP does not offer accreditation for this analyte/method/matrix combination

Approval

Enclosed are the analytical results for the submitted sample(s). Babcock Laboratories certify the data presented as part of this report meet the minimum quality standards in the referenced analytical methods. Any exceptions have been noted.

Amanda C. Porter

cc:

e-Short_No Alias.rpt

mailing
P.O Box 432
Riverside, CA 92502-0432

location
6100 Quail Valley Court
Riverside, CA 92507-0704

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CA ELAP No. 2698
EPA No. CA00102
NELAP No. OR4035
LACSD No. 10119

BABCOCK Laboratories, Inc.

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Client Name: Tioga Gas Mart
Contact: Dennis Domaille
Address: PO Box 326
Lee Vining, CA 93541

Report Date: 01-Aug-2018

Analytical Report: Page 1 of 1
Project Name: Tioga Gas Mart
Project Number: [none]

Work Order Number: B8G2192

Received on Ice (Y/N): Yes Temp: 4 °C

Client: Tioga Gas Mart **Contact:** Dennis Domaille **Phone No.** (760) 914-0492

FAX No. **Email:** dennisdomaille@yahoo.com

Additional Reporting Requests
Include QC Data Package: ☐ Yes ☐ No
FAX Results: ☐ Yes ☐ No
Email Results: ☒ Yes ☐ No
State EDT: ☐ Yes ☐ No
(Include Source Number in Notes)

Project Name: Tioga Gas Mart
Project Location: Lee Vining, CA

Turn Around Time: (Routine) *3-5 Day Rush *48 Hour Rush *24 Hour Rush
*Lab TAT Approval: By: *Additional Charges May Apply

Sampler Information
Name: Dennis Domaille
Employer: Tioga Gas Mart
Signature: [signature]

Matrix: DW = Drinking Water; SW = Source Water; GW = Groundwater; WW = Wastewater; SG = Sludge; L = Liquid; M = Miscellaneous

Sample ID	Date	Time	Unpreserved (Qt (4))	H2SO4 (500 (4))	HCl	HNO3 (500 (4))	Na2S2O3	NaOH	NaOH/ZnAcetate	NH4Cl	MCAA	Total # of Containers	Routine	Resample	Special	pH	EC	TDS	NO3-N	Total Phos	Gen Min	Matrix	Notes
North Well	7-17	9 AM	X	X		X							X			X	X	X	X	X	X		
South Well	7-17	9 AM	X	X		X							X			X	X	X	X	X	X		

sample date 7/17/18 e

Relinquished By (sign)	Print Name / Company	Date / Time	Received By (Sign)	Print Name / Company
Dennis Domaille	[signature]	7-17-18		
	Fedex	7/18/18 0900	[signature]	Jenny G. SSB

(For Lab Use Only) Sample Integrity Upon Receipt/Acceptance Criteria				Lab Notes
Sample(s) Submitted on Ice?	(Yes)	No	Temperature 4 °C	
Custody Seal(s) Intact?	Yes	No	(N/A)	
Sample(s) Intact?	(Yes)	No	☐ Cooler Blank	
Sample Meets Laboratory Acceptance Criteria?	Yes	No		
Permission to continue?	Yes	No	Signature:	
Deviation / Notes:				

Lab No. B8G2192 tb

Page 1 of 1

Logged in By: JUL 18 2018
Date:

mailing
P.O Box 432
Riverside, CA 92502-0432

location
6100 Quail Valley Court
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APPENDIX H3

UPDATED DRAINAGE ANALYSIS

November 12, 2018
Revised: November 15, 2019

DRAINAGE ANALYSIS
for
Tioga Inn Revised Specific Plan

This drainage letter is prepared for the Tioga Inn Revised Specific Plan (project), located in Lee Vining, Mono County, CA. The letter examines (1) the required retention facilities for the project's revision to include workforce housing; and (2) the effects of the project on the capacity of the existing culverts under US 395. The following pages are provided as a summary of the results of the attached calculations.

The analysis was prepared by Triad/Holmes Associates under the direction of:

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. PLATZ
NO. C 41039
CIVIL
STATE OF CALIFORNIA

Thomas A. Platz, PE

Index:

1. **Retention**
   - Retention Requirements
   - Retention Facilities Sizing
   - Treatment Requirements
2. **Culvert Capacity Analysis**
   - Hydrologic Calculations
   - Existing Culvert Capacity

Please find attached to this document the following:

Appendix A - Retention
- Retention Facilities Sizing
- Precipitation Depth (NOAA)

Appendix B – Culverts Capacity
- Figures 1 and 2
- Precipitation Intensity (NOAA)
- Unit Hydrograph
- Supporting Tables and Figures

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triad@thainc.com

1. Retention Analysis

Retention Requirements

Retention facilities are sized for the previously approved but yet to be constructed hotel and restaurant. The retention for the proposed hotel and workforce housing is based on the Town of Mammoth Lakes (TOML) 1984 Stormdrain Design Manual. The TOML requirement is retention of a 20-year 1-hour storm event or 1 inch of precipitation from the impervious surface. Since this site is located in Lee Vining and receives less precipitation than the Town of Mammoth Lakes, the Mono County permitted to use the NOAA precipitation data for the retention calculations. Based on the NOAA Atlas 14, the precipitation depth for the 20-year 1-hour event at the location of the site is 0.84 inches. Refer to attached NOAA precipitation chart.

Even though the hotel and restaurant have been approved under the current specific plan, the required retention volume for the hotel is 9,950 cf. The workforce housing and the restaurant combined required 11,246 cf. If the restaurant is constructed separate from the housing, a separate retention basin will be installed. Restaurant parking was constructed at the time of the existing Gas Mart. Table 1 below summarizes retention volume calculations.

Table 1: Retention Volume Calculations

Volume Required = Tributary Area * Average Runoff Coefficient * Rainfall Quantity

Rainfall Quantity	0.84 in	=	0.070 ft

	Workforce Housing and Restaurant			Hotel		
	Area		C	Area		C
Roof	62,879 sf	36%	0.95	38,277 sf	25%	0.95
AC/Concrete	109,699 sf	64%	0.92	114,936 sf	75%	0.92
Total Area	172,578 sf		**0.93**	153,213 sf		**0.93**

	Volume Required
Workforce Housing and Restaurant	**11,246 cf**
Hotel	**9,947 cf**

Retention Facilities Sizing

The retention facility was preliminary sized based on the storm water volume less storm water infiltration. Infiltration rates in the sandy soil found onsite are less than one minute per inch. A conservative rate of 5 min per inch was used to calculate retention volume.

Perforated storm drain pipes are proposed to retain the required stormwater volume. Based on the attached calculation, the hotel will require 3-48" pipes with the total basin length of 167 feet. Workforce housing site will also require 3-48" pipes with the total basin length of 188 feet. The proposed location for the retention systems are shown on Sheet C3 of the Tioga Inn Revised Specific Plan.

Treatment Requirements

Treatment will be provided by the bioswales located in the landscaped areas of the parking lot. Other means of treatment may include installation of the oil removal inserts into the inlets or a separate oil treatment unit.

2. Culvert Capacity Analysis

Hydrologic Calculations

Three primary categories of the hydrologic data are considered for this analysis including surface water runoff, precipitation, and drainage basin characteristics. Data was collected during the field investigations and using existing topographic maps. Rational method is used for hydrologic analysis. All hydrologic calculations are included in Appendix B.

There are two culverts (labeled Culverts A and B) located under US 395 northeast of the future project. Upon examination of the culverts' stormwater tributary area, future project improvements fall within these tributary areas as shown in Figures 1 and 2, Appendix B. Hydrologic analysis is performed to determine the amount of flow entering the culverts during pre- and post-project conditions.

Culvert A is a 30" corrugated metal pipe located north of the future hotel and restaurant. Culvert B is a 36" corrugated metal pipe located northwest of the future workforce housing. As shown in Figures 1 and 2, approximately 65 acres is tributary to Culvert A and 100 acres is tributary to Culvert B. Future hotel and restaurant are located within Area A and is labeled Area A1, totaling 3.7 ac of impervious area. Future workforce housing is located within Area B and is labeled Area B1. Area B1 encompasses 3.8 ac of impervious surface.

Runoff coefficients for each of the tributary area are determined using Caltrans Highway Design Manual (HDM) Tables 819.2A and 819.2B and shown in tables below:

Undeveloped Surface (based on HDM Figure 819.2A)

	C
Relief	0.20
Soil Infiltration	0.04
Vegetal Cover	0.06
Surface Storage	0.08
Average	**0.38**

Average Runoff Coefficient (Developed Surface based on HDM Table 819.2B)

		Roofs (C=0.95)	AC (C=0.90)	Undeveloped (C=0.38)	**Average C**
Area A	Existing Watershed	23,743 sf	128,503 sf	2,696,937 sf	**0.41**
Area B	Existing Watershed	00 sf	15,833 sf	4,339,410 sf	**0.38**
Area A1	Future Hotel/Rest.	45,123 sf	114,936 sf	00 sf	**0.91**
Area B1	Future Workforce	56,033 sf	109,699 sf	00 sf	**0.92**

Time of concentration is the time required for the storm runoff to travel from the most remote point of the drainage basin to the point of interest. Time of concentration, Tc, is the cumulative sum of sheet flow and shallow concentrated flow. In the areas where the travel time was calculated to be less than 5 minutes, Tc of 5 minutes was assumed.

Sheet Flow

$$T_t = \frac{0.42L^{4/5}n^{4/5}}{P_2^{1/2}s^{2/5}}$$

	Surface	L	n[1]	P_2[2]	S	T_t	$T_{t\ used}$
Area A	Natural	300 ft	0.4	2.17 in	0.2300	23.6 min	24 min
Area B	Natural	300 ft	0.4	2.17 in	0.1400	28.8 min	29 min
Area A1	Paved	100 ft	0.013	2.17 in	0.0200	1.7 min	5 min
Area B1	Paved	100 ft	0.013	2.17 in	0.0200	1.7 min	5 min

Shallow Concentrated Flow

$$T_t = L/60V$$

	Surface	S	V[4]	L	T_t	$T_{t\ used}$
Area A	Natural	0.14	6.0 ft/s	3272 ft	9.1 min	9 min
Area B	Natural	0.13	5.8 ft/s	4152 ft	11.9 min	12 min
Area A1	Paved	0.02	2.8 ft/s	340 ft	2.0 min	5 min
Area B1	Paved	0.02	2.8 ft/s	595 ft	3.5 min	5 min

Total Travel Time

	Sheet Flow	Shallow Flow	Total Tc
Area A	24 min	9 min	33 min
Area B	29 min	12 min	41 min
Area A1	5 min	5 min	10 min
Area B1	5 min	5 min	10 min

Precipitation Frequency Estimates are based upon the NOAA Atlas 14 results from the website, http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html. These results are from Lee Vining, at Latitude 37.9458° Longitude 119.1114° and an approximate elevation of 7013 feet. This location represents the average precipitation estimates for the tributary area under consideration. NOAA data is included in Appendix B. Flow rate calculations have been performed for the storm of 100-year intensities using the calculated Tc.

Rational method, Q=CiA, was used to calculate the quantity of the runoff tributary to each culvert during the 100-year intensity storm. Summary of the runoff rates calculations and input parameters are shown below:

		A	C	i_{100}[3]	**Q_{100}**
Area A	Existing	65.4 ac	0.41	1.76 in/hr	**47 cfs**
Area B	Existing	99.6 ac	0.38	1.60 in/hr	**61 cfs**
Area A1	Future Hotel/Rest.	3.7 ac	0.91	3.34 in/hr	**11 cfs**
Area B1	Future Workforce	3.8 ac	0.92	3.34 in/hr	**12 cfs**

Since retention systems are proposed to attenuate the flow due to the future hotel, restaurant, and workforce housing, a dimensionless hydrograph is used to determine whether the future project will add any additional flows to the culverts. Two retention systems are sized to handle a 20-year, 1 hr storm event, capable to store 11,246 cf and 9,947 cf each. Based on the unit hydrograph, at the Tc of 33 min (time of concentration for the peak 100-year flow), the volume of stormwater is 3,465 cf and 3,765 cf tributary to Culvert A and B, respectively. These volumes are significantly less than the capacity of the future retention system, and therefore, there will be no increase in flow during a design 100-year event from the future development. The 100-year storm event flows at the two culverts will actually be decreased once the site is developed and the retention system is installed. The existing and future project flows at each culvert are:

	Q_{100} (existing)	**Q_{100} (proposed)**
Culvert A	47 cfs	36 cfs
Culvert B	61 cfs	49 cfs

Appendix A – Retention

Hotel

PIPE DIAMETER		PIPE VOLUME	STONE VOID VOLUME	TOTAL RETENTION STORAGE	PERC VOLUME	RETENTION STORAGE W/ PERC	LENGTH OF TYPICAL CROSS SECTION	BASIN DIMENSIONS: TOTAL BASIN LENGTH	BASIN DIMENSIONS: CROSS SECTION WIDTH (TOTAL BASIN WIDTH)	BASIN DIMENSIONS: DEPTH OF STORAGE (NOT INCLUDING EARTH COVER)	LINEAR FEET OF PIPE REQ'D (INC HEADER)
in.	ft.	ft^3/cs-ft	ft^3/cs-ft	ft^3/cs-ft	ft^3/cs-ft	ft^3/cs-ft	ft.	ft^3/cs-ft	ft.	ft.	ft.
12	1.00	2.36	2.71	5.07	3.33	8.40	1157	1161	7.00	1.50	3501
15	1.25	3.68	3.29	6.98	3.72	10.69	910	914	7.75	1.75	2759
18	1.50	5.30	3.90	9.20	4.10	13.30	731	736	8.50	2.00	2224
24	2.00	9.42	5.19	14.62	4.86	19.48	499	504	10.00	2.50	1528
30	2.50	14.73	8.59	23.32	6.46	29.78	327	332	13.50	3.00	1010
36	3.00	21.21	10.43	31.64	7.22	38.86	250	256	15.00	3.50	781
42	3.50	28.86	12.38	41.24	7.99	49.23	198	204	16.50	4.00	623
48	**4.00**	**37.70**	**14.43**	**52.13**	**8.75**	**60.88**	**160**	**167**	**18.00**	**4.50**	**509**
54	4.50	47.71	16.60	64.31	9.51	73.82	132	139	19.50	5.00	425
60	5.00	58.90	18.87	77.77	10.28	88.05	110	118	21.00	5.50	361

INPUT SIZE OF PIPES (ft): **4.00**
INPUT NUMBER OF ROWS OF PIPES: **3** **Header Length (ft) =** **15**
INPUT PERCOLATION RATE (ft/hr): **0.42**
INPUT REQ'D. STORAGE VOLUME (cf): **9947**
Less storage volume of header (cf) 222
Cross-Sect STORAGE VOLUME (cf): 9725 (see table above for amount of pipe required)

Workforce Housing and Restaurant

PIPE DIAMETER		PIPE VOLUME	STONE VOID VOLUME	TOTAL RETENTION STORAGE	PERC VOLUME	RETENTION STORAGE W/ PERC	LENGTH OF TYPICAL CROSS SECTION	BASIN DIMENSIONS: TOTAL BASIN LENGTH	BASIN DIMENSIONS: CROSS SECTION WIDTH (TOTAL BASIN WIDTH)	BASIN DIMENSIONS: DEPTH OF STORAGE (NOT INCLUDING EARTH COVER)	LINEAR FEET OF PIPE REQ'D (INC HEADER)
in.	ft.	ft^3/cs-ft	ft^3/cs-ft	ft^3/cs-ft	ft^3/cs-ft	ft^3/cs-ft	ft.	ft^3/cs-ft	ft.	ft.	ft.
12	1.00	2.36	2.71	5.07	3.33	8.40	1312	1316	7.00	1.50	3965
15	1.25	3.68	3.29	6.98	3.72	10.69	1031	1035	7.75	1.75	3123
18	1.50	5.30	3.90	9.20	4.10	13.30	829	833	8.50	2.00	2517
24	2.00	9.42	5.19	14.62	4.86	19.48	566	571	10.00	2.50	1728
30	2.50	14.73	8.59	23.32	6.46	29.78	370	376	13.50	3.00	1141
36	3.00	21.21	10.43	31.64	7.22	38.86	284	290	15.00	3.50	881
42	3.50	28.86	12.38	41.24	7.99	49.23	224	230	16.50	4.00	702
48	**4.00**	**37.70**	**14.43**	**52.13**	**8.75**	**60.88**	**181**	**188**	**18.00**	**4.50**	**573**
54	4.50	47.71	16.60	64.31	9.51	73.82	149	157	19.50	5.00	478
60	5.00	58.90	18.87	77.77	10.28	88.05	125	133	21.00	5.50	406

INPUT SIZE OF PIPES (ft):	**4.00**		
INPUT NUMBER OF ROWS OF PIPES:	**3**	**Header Length (ft) =**	**15**
INPUT PERCOLATION RATE (ft/hr):	**0.42**		
INPUT REQ'D. STORAGE VOLUME (cf):	**11246**		
Less storage volume of header (cf)	222		
Cross-Sect STORAGE VOLUME (cf):	11024	(see table above for amount of pipe required)	

NOAA Atlas 14, Volume 6, Version 2
Location name: Lee Vining, California, USA*
Latitude: 37.9477°, Longitude: -119.1105°
Elevation: 6935.44 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

20 year 1 hour = 0.84 inches
2-year 24 hour = 2.17 inches

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.109 (0.096-0.125)	0.141 (0.124-0.162)	0.186 (0.163-0.215)	0.226 (0.196-0.263)	0.285 (0.236-0.347)	0.334 (0.270-0.418)	0.388 (0.303-0.500)	0.447 (0.338-0.598)	0.536 (0.384-0.755)	0.611 (0.420-0.899)
10-min	0.156 (0.137-0.179)	0.202 (0.177-0.232)	0.267 (0.234-0.308)	0.324 (0.281-0.378)	0.408 (0.339-0.497)	0.479 (0.387-0.599)	0.556 (0.435-0.717)	0.641 (0.484-0.858)	0.768 (0.551-1.08)	0.876 (0.601-1.29)
15-min	0.188 (0.166-0.216)	0.244 (0.215-0.280)	0.323 (0.283-0.372)	0.392 (0.339-0.457)	0.494 (0.410-0.601)	0.579 (0.467-0.724)	0.672 (0.526-0.867)	0.776 (0.586-1.04)	0.929 (0.666-1.31)	1.06 (0.727-1.56)
30-min	0.254 (0.224-0.292)	0.329 (0.289-0.378)	0.435 (0.381-0.502)	0.528 (0.458-0.616)	0.666 (0.552-0.810)	0.780 (0.630-0.976)	0.906 (0.709-1.17)	1.05 (0.790-1.40)	1.25 (0.898-1.77)	1.43 (0.981-2.10)
60-min	0.344 (0.303-0.395)	0.446 (0.392-0.512)	0.590 (0.517-0.680)	0.716 (0.620-0.834)	0.902 (0.748-1.10)	1.06 (0.854-1.32)	1.23 (0.961-1.59)	1.42 (1.07-1.90)	1.70 (1.22-2.39)	1.94 (1.33-2.85)
2-hr	0.481 (0.423-0.552)	0.616 (0.541-0.708)	0.806 (0.706-0.930)	0.971 (0.842-1.13)	1.21 (1.01-1.48)	1.41 (1.14-1.77)	1.63 (1.27-2.10)	1.87 (1.41-2.49)	2.21 (1.58-3.11)	2.50 (1.71-3.67)
3-hr	0.588 (0.517-0.674)	0.750 (0.659-0.861)	0.976 (0.855-1.13)	1.17 (1.01-1.37)	1.45 (1.21-1.77)	1.69 (1.36-2.11)	1.93 (1.51-2.50)	2.20 (1.66-2.95)	2.59 (1.86-3.65)	2.91 (2.00-4.28)
6-hr	0.837 (0.737-0.960)	1.06 (0.935-1.22)	1.38 (1.21-1.59)	1.64 (1.42-1.91)	2.02 (1.68-2.46)	2.32 (1.88-2.91)	2.65 (2.07-3.42)	2.99 (2.26-4.00)	3.48 (2.49-4.90)	3.87 (2.66-5.70)
12-hr	1.19 (1.05-1.37)	1.53 (1.34-1.76)	1.99 (1.74-2.29)	2.37 (2.05-2.76)	2.90 (2.41-3.53)	3.33 (2.69-4.16)	3.77 (2.95-4.87)	4.24 (3.20-5.67)	4.89 (3.50-6.89)	5.40 (3.71-7.95)
24-hr	1.67 (1.49-1.92)	2.17 (1.93-2.49)	2.84 (2.51-3.27)	3.39 (2.98-3.93)	4.15 (3.52-4.99)	4.75 (3.95-5.83)	5.37 (4.35-6.76)	6.01 (4.74-7.80)	6.91 (5.21-9.34)	7.61 (5.54-10.7)
2-day	2.10 (1.87-2.41)	2.73 (2.42-3.13)	3.57 (3.16-4.11)	4.27 (3.75-4.96)	5.23 (4.44-6.28)	5.97 (4.96-7.34)	6.74 (5.46-8.49)	7.55 (5.94-9.78)	8.65 (6.52-11.7)	9.51 (6.93-13.3)
3-day	2.29 (2.04-2.62)	2.99 (2.65-3.43)	3.92 (3.48-4.52)	4.69 (4.12-5.45)	5.75 (4.88-6.91)	6.57 (5.46-8.07)	7.41 (6.01-9.34)	8.29 (6.53-10.7)	9.49 (7.16-12.8)	10.4 (7.59-14.6)
4-day	2.46 (2.19-2.83)	3.22 (2.86-3.70)	4.24 (3.76-4.88)	5.08 (4.46-5.90)	6.22 (5.28-7.48)	7.11 (5.91-8.73)	8.02 (6.50-10.1)	8.97 (7.06-11.6)	10.3 (7.74-13.9)	11.3 (8.21-15.8)
7-day	2.78 (2.47-3.18)	3.65 (3.24-4.19)	4.81 (4.26-5.54)	5.77 (5.07-6.71)	7.09 (6.02-8.52)	8.11 (6.74-9.96)	9.14 (7.41-11.5)	10.2 (8.04-13.2)	11.7 (8.80-15.8)	12.8 (9.31-17.9)
10-day	2.92 (2.60-3.35)	3.85 (3.42-4.43)	5.11 (4.53-5.89)	6.15 (5.40-7.14)	7.57 (6.42-9.10)	8.66 (7.19-10.6)	9.77 (7.91-12.3)	10.9 (8.58-14.1)	12.4 (9.39-16.8)	13.6 (9.92-19.1)
20-day	3.73 (3.32-4.28)	4.97 (4.42-5.71)	6.64 (5.88-7.64)	7.99 (7.02-9.28)	9.85 (8.37-11.8)	11.3 (9.37-13.9)	12.7 (10.3-16.0)	14.2 (11.2-18.4)	16.1 (12.2-21.8)	17.6 (12.8-24.7)
30-day	4.23 (3.76-4.85)	5.68 (5.04-6.52)	7.61 (6.74-8.76)	9.18 (8.07-10.7)	11.3 (9.63-13.6)	13.0 (10.8-15.9)	14.6 (11.8-18.4)	16.2 (12.8-21.1)	18.4 (13.9-24.9)	20.0 (14.5-28.0)
45-day	5.09 (4.53-5.84)	6.85 (6.09-7.87)	9.18 (8.14-10.6)	11.1 (9.73-12.9)	13.6 (11.6-16.4)	15.6 (13.0-19.2)	17.5 (14.2-22.1)	19.4 (15.3-25.2)	21.9 (16.5-29.6)	23.7 (17.3-33.2)
60-day	5.75 (5.12-6.60)	7.77 (6.90-8.92)	10.4 (9.23-12.0)	12.6 (11.0-14.6)	15.4 (13.1-18.6)	17.6 (14.6-21.6)	19.8 (16.0-24.9)	21.9 (17.2-28.4)	24.6 (18.5-33.2)	26.5 (19.3-37.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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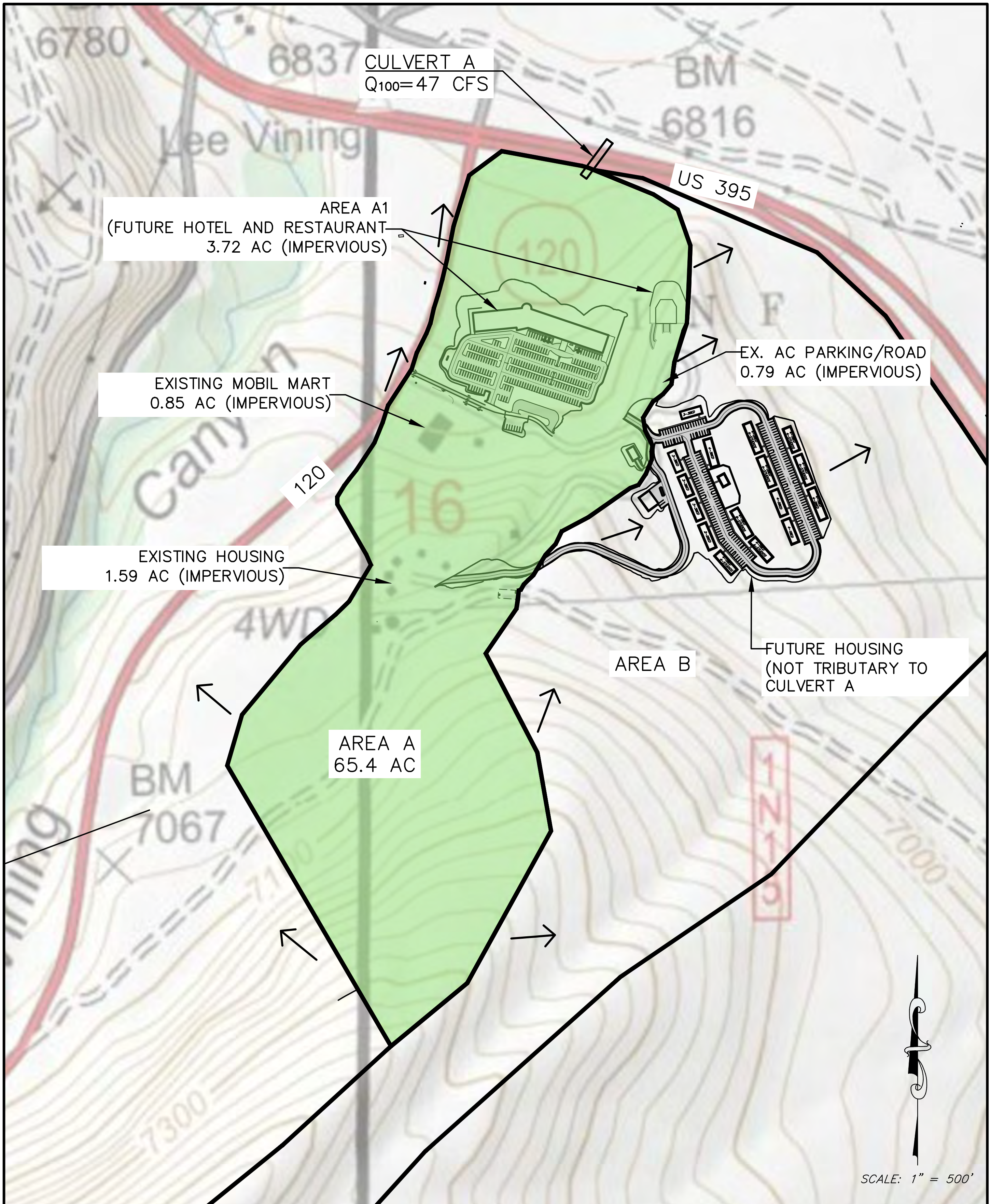
PF graphical

Appendix B – Culverts Capacity



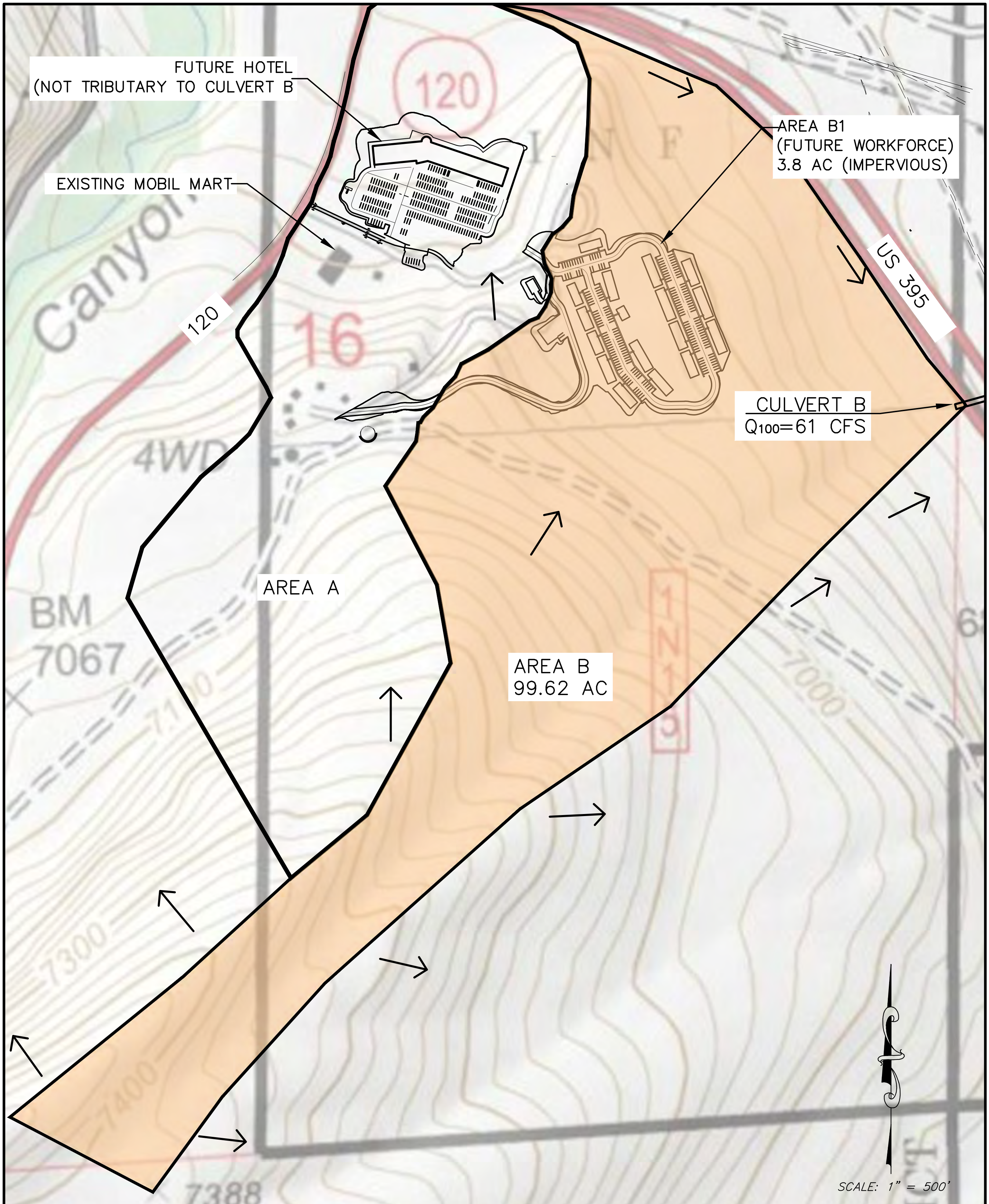
DATE:
11/11/2019

TIOGA INN SPECIFIC PLAN

CULVERT ANALYSIS
FIGURE 1 – CULVERT A TRIBUTARY AREA

triad/holmes assoc
civil engineering
land surveying

C:\Users\mpavlovsky\appdata\local\temp\AcPublish_10744\Tioga Inn Drainage.dwg Nov 15,2019 – 5:08pm, mpavlovsky



DATE:
11/11/2019

TIOGA INN SPECIFIC PLAN

CULVERT ANALYSIS
FIGURE 2 – CULVERT B TRIBUTARY AREA

triad/holmes assoc
civil engineering
land surveying

C:\Users\mpavlovsky\appdata\local\temp\AcPublish_10744\Tioga Inn Drainage.dwg Nov 15,2019 – 5:08pm, mpavlovsky

Dimensionless Hydrograph			Future Hotel and Restaurant				Future Workforce			
			tp =	33	min	Cumulative	tp =	33	min	Cumulative
T/tc	Q/Qp	Qa/Qp	100 yr Q=	11.00	cfs dev	Volume	100 yr Q=	12.00	cfs dev	Volume
0	0	0	0	0.00	0.0		0	0.00	0.0	
0.1	0.03	0.001	3.3	0.33	11.6	12	3.3	0.36	12.5	12
0.2	0.1	0.006	6.6	1.10	47.9	59	6.6	1.20	51.8	64
0.3	0.19	0.017	9.9	2.09	104.0	163	9.9	2.28	112.7	177
0.4	0.31	0.035	13.2	3.41	176.6	340	13.2	3.72	191.6	368
0.5	0.47	0.065	16.5	5.17	272.3	612	16.5	5.64	295.7	664
0.6	0.66	0.107	19.8	7.26	391.1	1003	19.8	7.92	425.0	1089
0.7	0.82	0.163	23.1	9.02	509.9	1513	23.1	9.84	554.3	1643
0.8	0.93	0.228	26.4	10.23	602.3	2115	26.4	11.16	654.8	2298
0.9	0.99	0.3	29.7	10.89	661.7	2777	29.7	11.88	719.3	3017
1	1	0.375	**33**	**11.00**	**688.1**	**3465**	**33**	**12.00**	**747.8**	**3765**
1.1	0.99	0.45	36.3	10.89	691.4	4156	36.3	11.88	751.1	4516
1.2	0.93	0.522	39.6	10.23	671.6	4828	39.6	11.16	729.2	5245
1.3	0.86	0.589	42.9	9.46	632.0	5460	42.9	10.32	685.7	5931
1.4	0.78	0.65	46.2	8.58	585.8	6046	46.2	9.36	635.0	6566
1.5	0.68	0.705	49.5	7.48	529.7	6575	49.5	8.16	573.5	7139
1.6	0.56	0.751	52.8	6.16	460.4	7036	52.8	6.72	497.6	7637
1.7	0.46	0.79	56.1	5.06	391.1	7427	56.1	5.52	421.7	8058
1.8	0.39	0.822	59.4	4.29	338.3	7765	59.4	4.68	363.8	8422
1.9	0.33	0.849	62.7	3.63	298.7	8064	62.7	3.96	320.3	8742
2	0.28	0.871	66	3.08	265.7	8329	66	3.36	284.0	9026
2.2	0.207	0.908	72.6	2.28	230.0	8559	72.6	2.48	244.6	9271
2.4	0.147	0.934	79.2	1.62	192.7	8752	79.2	1.76	203.3	9474
2.6	0.107	0.953	85.8	1.18	166.3	8918	85.8	1.28	173.9	9648
2.8	0.077	0.967	92.4	0.85	149.8	9068	92.4	0.92	155.3	9804
3	0.055	0.977	99	0.61	139.3	9207	99	0.66	143.2	9947
3.2	0.04	0.984	105.6	0.44	133.7	9341	105.6	0.48	136.5	10083
3.4	0.029	0.989	112.2	0.32	131.7	9473	112.2	0.35	133.7	10217
3.6	0.021	0.993	118.8	0.23	132.0	9605	118.8	0.25	133.5	10351
3.8	0.015	0.995	125.4	0.17	134.0	9739	125.4	0.18	135.1	10486
4	0.011	0.997	132	0.12	137.3	9876	132	0.13	138.1	10624
4.5	0.005	0.999	148.5	0.06	145.5	10021	148.5	0.06	146.0	10770
5	0	1	165	0.00	158.4	10180	165	0.00	158.6	10928

NOAA Atlas 14, Volume 6, Version 2
Location name: Lee Vining, California, USA*
Latitude: 37.9458°, Longitude: -119.1114°
Elevation: 7012.8 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.31 (1.15-1.50)	1.69 (1.49-1.94)	2.24 (1.97-2.58)	2.72 (2.36-3.17)	3.43 (2.84-4.18)	4.02 (3.25-5.03)	4.67 (3.65-6.02)	5.38 (4.07-7.19)	6.43 (4.61-9.07)	7.33 (5.03-10.8)
10-min	0.936 (0.822-1.07)	1.21 (1.07-1.39)	1.61 (1.41-1.85)	1.95 (1.69-2.27)	2.46 (2.04-2.99)	2.88 (2.33-3.60)	3.34 (2.62-4.31)	3.86 (2.91-5.15)	4.61 (3.31-6.50)	5.26 (3.61-7.73)
15-min	0.752 (0.664-0.864)	0.980 (0.860-1.12)	1.30 (1.14-1.49)	1.57 (1.36-1.83)	1.98 (1.64-2.41)	2.32 (1.88-2.90)	2.70 (2.11-3.48)	3.11 (2.35-4.16)	3.72 (2.66-5.24)	4.24 (2.91-6.24)
30-min	0.510 (0.448-0.584)	0.662 (0.582-0.760)	0.876 (0.768-1.01)	1.06 (0.922-1.24)	1.34 (1.11-1.63)	1.57 (1.27-1.96)	1.82 (1.43-2.35)	2.10 (1.59-2.81)	2.51 (1.80-3.54)	2.86 (1.96-4.21)
60-min	0.345 (0.304-0.395)	0.448 (0.394-0.514)	0.593 (0.520-0.683)	0.720 (0.624-0.838)	0.907 (0.753-1.10)	1.06 (0.858-1.33)	1.23 (0.965-1.59)	1.42 (1.07-1.90)	1.70 (1.22-2.40)	1.94 (1.33-2.85)
2-hr	0.241 (0.212-0.276)	0.309 (0.272-0.354)	0.404 (0.355-0.466)	0.488 (0.423-0.568)	0.609 (0.506-0.741)	0.709 (0.573-0.886)	0.817 (0.640-1.05)	0.935 (0.706-1.25)	1.11 (0.793-1.56)	1.25 (0.858-1.84)
3-hr	0.196 (0.173-0.225)	0.250 (0.220-0.287)	0.326 (0.286-0.376)	0.392 (0.340-0.456)	0.486 (0.404-0.591)	0.563 (0.455-0.704)	0.646 (0.506-0.833)	0.736 (0.556-0.984)	0.865 (0.620-1.22)	0.971 (0.666-1.43)
6-hr	0.140 (0.123-0.160)	0.178 (0.157-0.205)	0.231 (0.202-0.266)	0.275 (0.239-0.320)	0.339 (0.281-0.412)	0.390 (0.315-0.487)	0.443 (0.347-0.572)	0.501 (0.378-0.670)	0.582 (0.418-0.821)	0.648 (0.445-0.955)
12-hr	0.099 (0.087-0.114)	0.127 (0.112-0.146)	0.165 (0.145-0.191)	0.197 (0.171-0.230)	0.242 (0.201-0.295)	0.278 (0.224-0.347)	0.314 (0.246-0.406)	0.353 (0.267-0.473)	0.407 (0.292-0.574)	0.451 (0.309-0.663)
24-hr	0.070 (0.062-0.080)	0.091 (0.081-0.104)	0.119 (0.105-0.137)	0.142 (0.125-0.165)	0.174 (0.148-0.209)	0.199 (0.165-0.244)	0.225 (0.182-0.283)	0.252 (0.199-0.327)	0.289 (0.218-0.391)	0.319 (0.232-0.447)
2-day	0.044 (0.039-0.050)	0.057 (0.051-0.066)	0.075 (0.066-0.086)	0.089 (0.079-0.104)	0.110 (0.093-0.132)	0.125 (0.104-0.154)	0.141 (0.115-0.178)	0.158 (0.125-0.205)	0.181 (0.137-0.245)	0.199 (0.145-0.279)
3-day	0.032 (0.029-0.037)	0.042 (0.037-0.048)	0.055 (0.049-0.063)	0.066 (0.058-0.076)	0.081 (0.068-0.097)	0.092 (0.077-0.113)	0.104 (0.084-0.131)	0.116 (0.091-0.150)	0.133 (0.100-0.180)	0.146 (0.106-0.205)
4-day	0.026 (0.023-0.030)	0.034 (0.030-0.039)	0.045 (0.040-0.051)	0.053 (0.047-0.062)	0.066 (0.056-0.079)	0.075 (0.062-0.092)	0.084 (0.068-0.106)	0.094 (0.074-0.122)	0.108 (0.081-0.146)	0.119 (0.086-0.166)
7-day	0.017 (0.015-0.019)	0.022 (0.020-0.025)	0.029 (0.026-0.034)	0.035 (0.031-0.041)	0.043 (0.036-0.051)	0.049 (0.041-0.060)	0.055 (0.045-0.070)	0.062 (0.049-0.080)	0.071 (0.053-0.095)	0.077 (0.056-0.108)
10-day	0.012 (0.011-0.014)	0.016 (0.015-0.019)	0.022 (0.019-0.025)	0.026 (0.023-0.030)	0.032 (0.027-0.039)	0.037 (0.031-0.045)	0.041 (0.034-0.052)	0.046 (0.036-0.060)	0.053 (0.040-0.071)	0.058 (0.042-0.081)
20-day	0.008 (0.007-0.009)	0.011 (0.009-0.012)	0.014 (0.013-0.016)	0.017 (0.015-0.020)	0.021 (0.018-0.025)	0.024 (0.020-0.029)	0.027 (0.022-0.034)	0.030 (0.024-0.039)	0.034 (0.026-0.046)	0.037 (0.027-0.052)
30-day	0.006 (0.005-0.007)	0.008 (0.007-0.009)	0.011 (0.010-0.013)	0.013 (0.012-0.015)	0.016 (0.014-0.019)	0.018 (0.015-0.023)	0.021 (0.017-0.026)	0.023 (0.018-0.030)	0.026 (0.020-0.035)	0.028 (0.021-0.040)
45-day	0.005 (0.004-0.006)	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.009-0.012)	0.013 (0.011-0.016)	0.015 (0.012-0.018)	0.017 (0.014-0.021)	0.018 (0.015-0.024)	0.021 (0.016-0.028)	0.022 (0.016-0.032)
60-day	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.011 (0.009-0.013)	0.013 (0.010-0.015)	0.014 (0.011-0.018)	0.016 (0.012-0.020)	0.018 (0.013-0.024)	0.019 (0.014-0.026)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

Figure 819.2A

Runoff Coefficients for Undeveloped Areas

Watershed Types

	Extreme	High	Normal	Low
Relief	.28 -.35 Steep, rugged terrain with average slopes above 30%	.20 -.28 Hilly, with average slopes of 10 to 30%	.14 -.20 Rolling, with average slopes of 5 to 10%	.08 -.14 Relatively flat land, with average slopes of 0 to 5%
Soil Infiltration	.12 -.16 No effective soil cover, either rock or thin soil mantle of negligible infiltration capacity	.08 -.12 Slow to take up water, clay or shallow loam soils of low infiltration capacity, imperfectly or poorly drained	.06 -.08 Normal; well drained light or medium textured soils, sandy loams, silt and silt loams	.04 -.06 High; deep sand or other soil that takes up water readily, very light well drained soils
Vegetal Cover	.12 -.16 No effective plant cover, bare or very sparse cover	.08 -.12 Poor to fair; clean cultivation crops, or poor natural cover, less than 20% of drainage area over good cover	.06 -.08 Fair to good; about 50% of area in good grassland or woodland, not more than 50% of area in cultivated crops	.04 -.06 Good to excellent; about 90% of drainage area in good grassland, woodland or equivalent cover
Surface Storage	.10 -.12 Negligible surface depression few and shallow; drainageways steep and small, no marshes	.08 -.10 Low; well defined system of small drainageways; no ponds or marshes	.06 -.08 Normal; considerable surface depression storage; lakes and pond marshes	.04 -.06 High; surface storage, high; drainage system not sharply defined; large floodplain storage or large number of ponds or marshes
Given	An undeveloped watershed consisting of; 1) rolling terrain with average slopes of 5%, 2) clay type soils, 3) good grassland area, and 4) normal surface depressions.		Solution: Relief 0.14 Soil Infiltration 0.08 Vegetal Cover 0.04 Surface Storage 0.06 C = 0.32	
Find	The runoff coefficient, C, for the above watershed.			

Table 819.2B

Runoff Coefficients for Developed Areas (1)

Type of Drainage Area	Runoff Coefficient
Business:	
Downtown areas	0.70 - 0.95
Neighborhood areas	0.50 - 0.70
Residential:	
Single-family areas	0.30 - 0.50
Multi-units, detached	0.40 - 0.60
Multi-units, attached	0.60 - 0.75
Suburban	0.25 - 0.40
Apartment dwelling areas	0.50 - 0.70
Industrial:	
Light areas	0.50 - 0.80
Heavy areas	0.60 - 0.90
Parks, cemeteries:	0.10 - 0.25
Playgrounds:	0.20 - 0.40
Railroad yard areas:	0.20 - 0.40
Unimproved areas:	0.10 - 0.30
Lawns:	
Sandy soil, flat, 2%	0.05 - 0.10
Sandy soil, average, 2-7%	0.10 - 0.15
Sandy soil, steep, 7%	0.15 - 0.20
Heavy soil, flat, 2%	0.13 - 0.17
Heavy soil, average, 2-7%	0.18 - 0.22
Heavy soil, steep, 7%	0.25 - 0.35
Streets:	
Asphaltic	0.70 - 0.95
Concrete	0.80 - 0.95
Brick	0.70 - 0.85
Drives and walks	0.75 - 0.85
Roofs:	0.75 - 0.95

NOTES:
(1) From HDS No. 2.

regression equations are considered the best estimates of flood frequency and are used to reduce the time-sampling error that may occur in a station flood-frequency estimate.

(d) The flood-frequency flows and the maximum peak discharges at several stations in a region should be used whenever possible for comparison with the peak discharge estimated at an ungaged site using a rainfall-runoff approach or regional regression equation. The watershed characteristics at the ungaged and gaged sites should be similar.

(4) *National Resources Conservation Service (NRCS) Methods.* The Soil Conservation Service's SCS (former title) National Engineering Handbook, 1972, and their 1975, "Urban Hydrology for Small Watersheds", Technical Release 55 (TR-55), present a graphical method for estimating peak discharge. Most NRCS equations and curves provide results in terms of inches of runoff for unit hydrograph development and are not applicable to the estimation of a peak design discharge unless the design hydrograph is first developed in accordance with prescribed NRCS procedures. NRCS methods and procedures are applicable to drainage areas less than 3 square miles (approx. 2,000 acres) and result in a design hydrograph and design discharge that are functionally acceptable to form the basis for the design of highway drainage facilities.

819.3 Statistical Methods

Statistical methods of predicting stream discharge utilize numerical data to describe the process. Statistical methods, in general, do not require as much subjective judgment to apply as the previously described deterministic methods. They are usually well documented mathematical procedures which are applied to measured or observed data. The accuracy of statistical methods can also be measured quantitatively. However, to assure that statistical method results are valid, the method and procedures used should be verified by an experienced engineer with a thorough knowledge of engineering statistics.

The use of flow length alone as a limiting factor for the Kinematic wave equation can lead to circumstances where the underlying assumptions are no longer valid. Over prediction of travel time can occur for conditions with significant amounts of depression storage, where there is a high Manning's n-value or for flat slopes. One study suggests that the upper limit of applicability of the Kinematic wave equation is a function of flow length, slope and Manning's roughness coefficient. This study used both field and laboratory data to propose an upper limit of 100 for the composite parameter of $nL/s^{1/2}$. It is recommended that this criteria be used as a check where the designer has uncertainty on the maximum flow length to which the Kinematic wave equation can be applied to project conditions.

Where sheet flow travel distance cannot be determined, a conservative alternative is to assume shallow concentrated flow conditions without an independent sheet flow travel time conditions. See Index 816.6(2).

Table 816.6A Roughness Coefficients For Sheet Flow

Surface Description	*n*
Hot Mix Asphalt	0.011-0.016
Concrete	0.012-0.014
Brick with cement mortar	0.014
Cement rubble	0.024
Fallow (no residue)	0.05
Grass	
Short grass prairie	0.15
Dense grass	0.24
Bermuda Grass	0.41
Woods⁽¹⁾	
Light underbrush	0.40
Dense underbrush	0.80

(1) Woods cover is considered up to a height of 1 inch, which is the maximum depth obstructing sheet flow.

(2) *Shallow concentrated flow travel time.* After short distances, sheet flow tends to concentrate in rills and gullies, or the depth exceeds the range where use of the Kinematic wave equation applies. At that point the flow becomes defined as shallow concentrated flow. The Upland Method is commonly used when calculating flow velocity for shallow concentrated flow. This method may also be used to calculate the total travel time for both the sheet flow and the shallow concentrated flow segments under certain conditions (e.g., where use of the Kinematic wave equation to predict sheet flow travel time is questionable, or where the designer cannot reasonably identify the point where sheet flow transitions to shallow concentrated flow).

Average velocities for the Upland Method can be taken directly from Figure 816.6 (Source NRCS, National Engineering Handbook part 650) or may be calculated from the following equation:

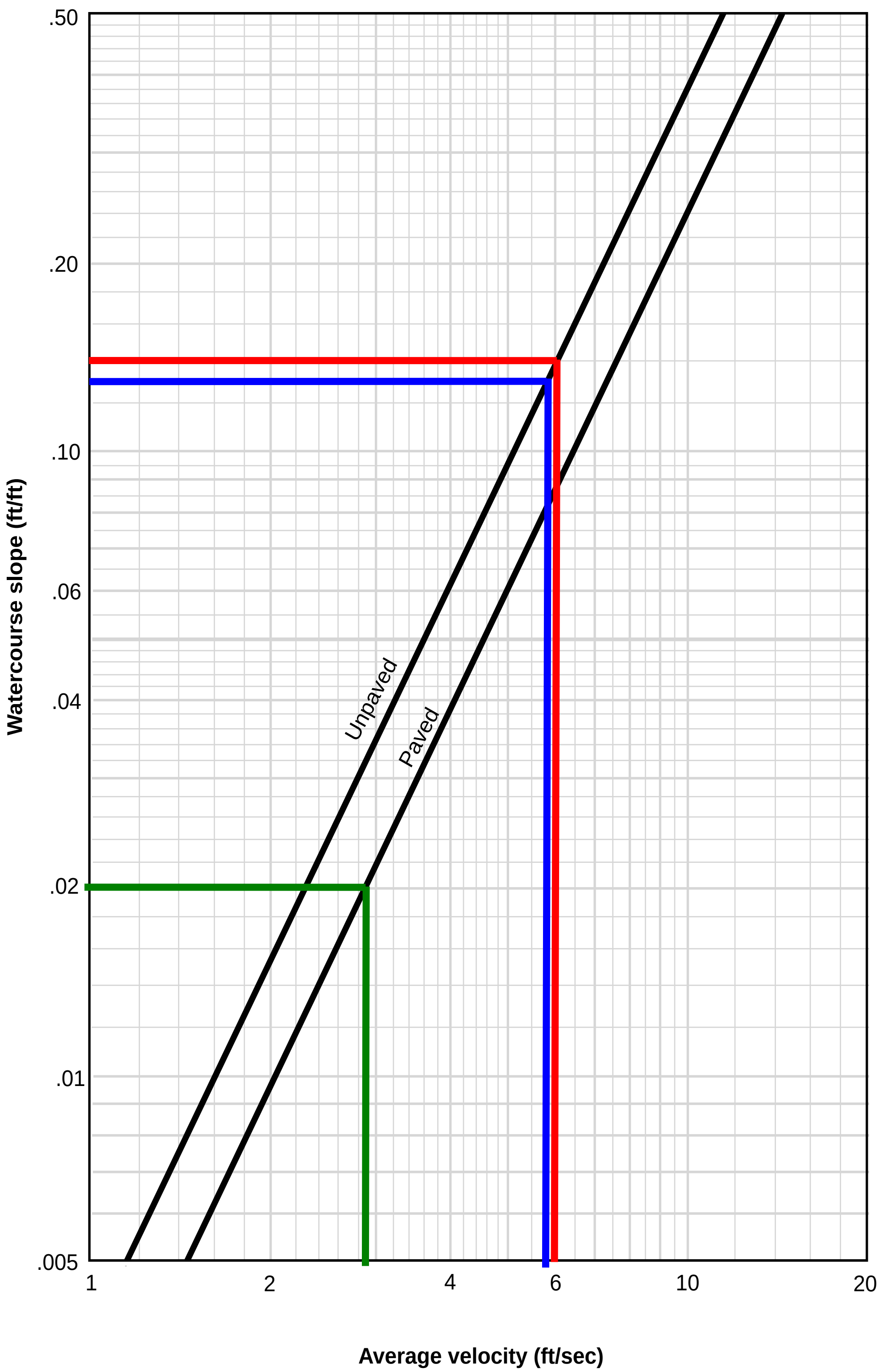
$$V = (3.28)\ kS^{1/2}$$

Where S is the slope in percent and k is an intercept coefficient depending on land cover as shown in Table 816.6B. It is assumed that the depth range is 0.1 to 0.2 feet, except for grassed waterways, where the depth range is 0.1 to 0.4 feet,

Table 816.6B Intercept Coefficients for Shallow Concentrated Flow

Land cover/Flow regime	k
Forest with heavy ground litter; hay meadow	0.076
Trash fallow or minimum tillage cultivation; contour or strip cropped; woodland	0.152
Short grass pasture	0.213
Cultivated straight row	0.274
Nearly bare and untilled alluvial fans	0.305
Grassed waterway	0.457
Pavement and small upland gullies	0.620

Figure 3-1 Average velocities for estimating travel time for shallow concentrated flow



Tioga Inn Project
Assessment of Biological Resources

December 30, 2018 DRAFT

prepared by:
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Oakhurst, CA 93644

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Sandra Bauer, Principal
1271 Tropicana Lane
Santa Ana, CA 92705

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1. Introduction

A review of biological resources including potentially occurring special status species was conducted in April-May 2017 at a proposed location of new work force housing project and ancillary infrastructure near Lee Vining in central Mono County, California. This project would be implemented as part of the private development known as Tioga Inn, which is located at the intersection of U.S. Highway 395 and State Route 120 (Figure 1). Once constructed, the Tioga Inn Workforce Housing Project (hereafter, "project") will adjoin existing improved roadways, a small residential development, and commercial facilities including a gas station that has been operated on the property for the last 2 decades, as well as a hotel and restaurant that previously have been approved subsequent to environmental impact analysis that was completed in 1992-1993 (Mono County Planning Department, 1993).

Project construction will directly affect the remaining habitats for plants and wildlife at an average elevation of 6940 ft (2115 m), within a substantial portion of the four contiguous lots (total 67.8 acres) that comprise the Tioga Inn development. Currently, the existing facilities and other areas lacking cover by native vegetation total 10.6 acres. The approved but as yet unbuilt hotel and restaurant, ancillary buildings, and new parking will convert an additional 4.7 acres and will temporarily disturb (with restoration to native vegetation) an area totaling 1.4 acres. The newly proposed workforce housing, sewage treatment and disposal systems, and road portions of the Tioga Inn project (Figure 2, these elements were not proposed in 1993) will cause another 6.5 acres of new, permanent habitat conversion and 5.0 acres of temporary devegetation and soil disturbance (Table 1). Operation of the new workforce housing facilities could have impacts that will reach beyond the construction footprint, mainly due to expected changes and increases in human activity.

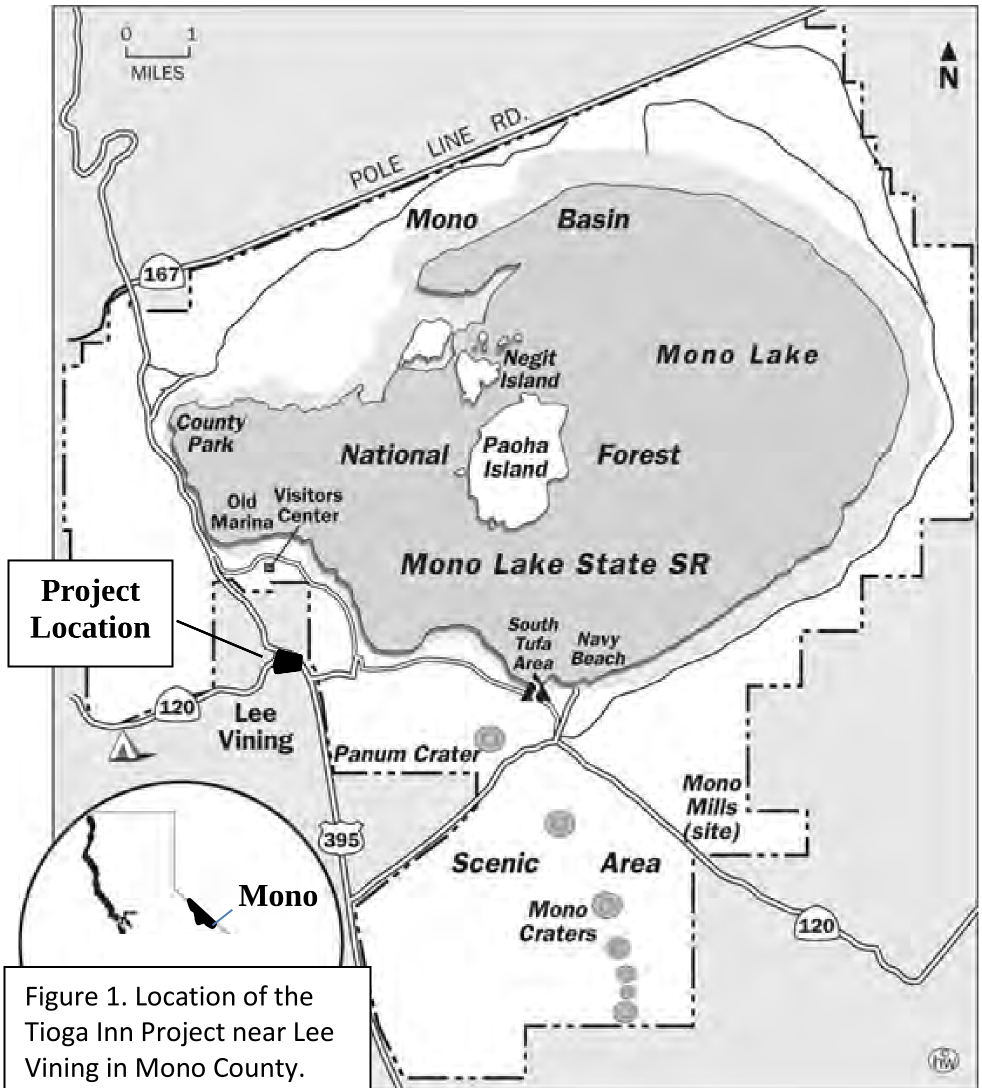

Figure 1. Location of the Tioga Inn Project near Lee Vining in Mono County.

2. Study Area and Setting

The project is located near the southern edge of the town of Lee Vining. Its landscape position is at the base of the steeply sloping Sierra Nevada eastern flank, where the mountainous terrain transitions swiftly to the comparably level Mono Basin. The study area for the analysis of biological resources as reported here falls completely outside (to the east of) the riparian forest corridor that closely follows Lee Vining Creek's perennial flow (Figure 2). No tributaries to Lee Vining Creek occur within the study area; moreover, natural channels that exhibit bed and banks or other evidences that flows are conveyed within the study area, seasonally or otherwise, are not present.

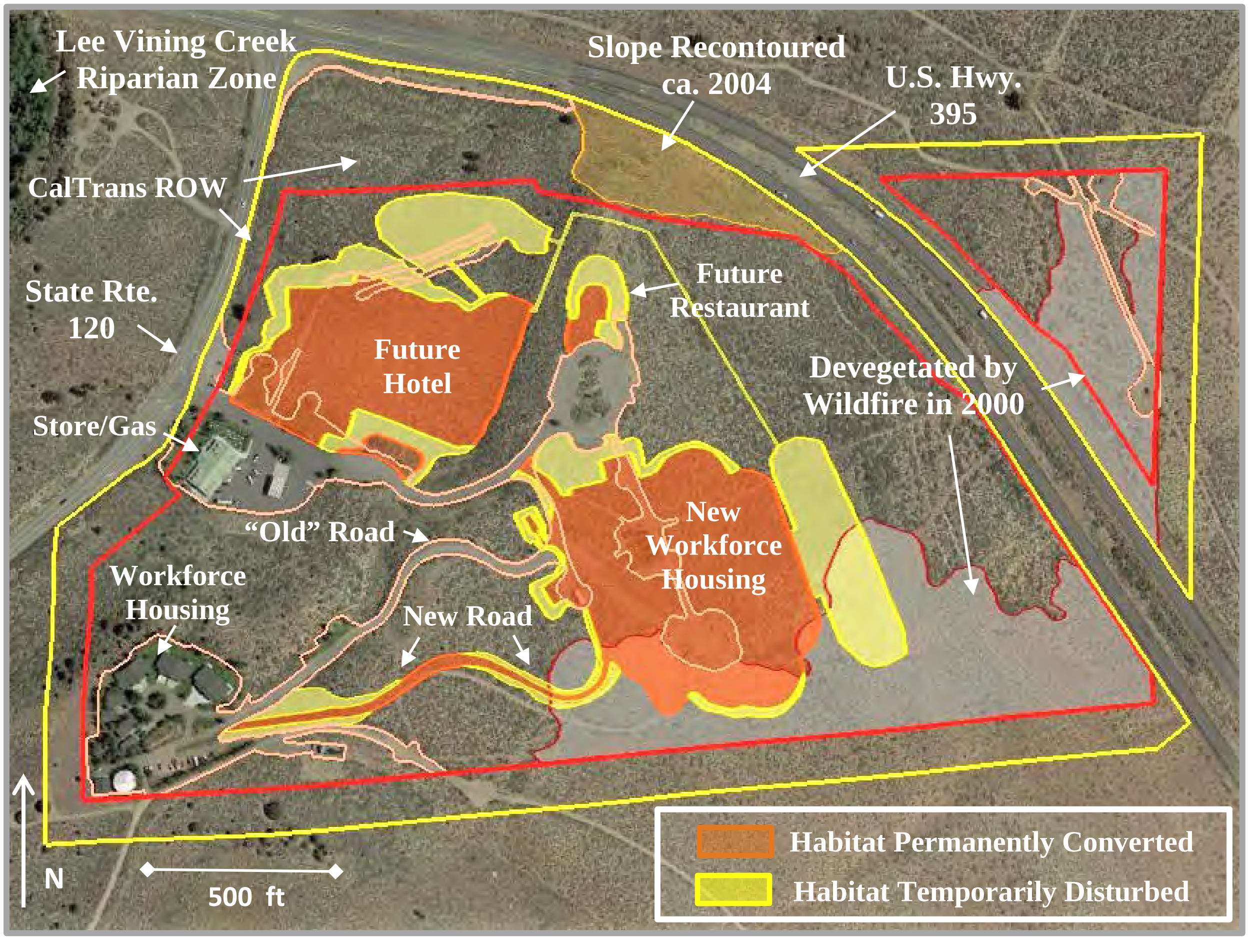

Figure 2. Study area (gold outline, 93.4 acres) for biological resources at the Tioga Inn Project near Lee Vining, California. The privately-owned parcels that will be affected by the project (red outline, 67.8 acres) and Caltrans Right-Of-Way adjacent to U.S. Highway 395 and State Route 120 were surveyed in order to map the site's available habitats in May and June 2017. Surveys that were conducted during this same period to ascertain special status plant and wildlife presence/absence included additional 100 ft buffers (areas between gold and red outlines). The locations of the existing developments, previously approved but as yet unbuilt hotel and restaurant elements, and newly proposed workforce housing, road, and sewage disposal system elements are shown. Base image date is June 26, 2016.

Because the proposed project, in concert with existing Tioga Inn developments (Figure 2) and with hotel and restaurant elements that were granted prior approval (Mono County Planning Dept., 1993), will substantially fill in the parcels lying west and south of U.S. Highway 395, the habitat areas that occur within adjacent highway Caltrans Right-Of-Way corridors (areas will not be directly impacted) will become ecologically isolated. These areas were therefore added to the study area for biological resources that may be impacted by the project.

The boundaries of the study area were readily located in the field using fencelines at the property edges, or the remnants of fencelines that had been burned during a May 2000 wildfire. A GPS was used to map property edges (Figure 2) prior to start of surveys. GPS was also used to align and walk parallel transects during surveys conducted in May through June 2017.

Table 1. Summary of acreages impacted in areas that currently have been converted to paved or otherwise devegetated surfaces (existing store and gas station, workforce housing, roads, parking), in areas where prior development approval has been obtained but the disturbance to native vegetation have not yet occurred (hotel, restaurant), and in areas of current native vegetation cover where project elements have been recently proposed (new workforce housing, new road, and new wastewater treatment/subsurface dripline disposal system). Impacts that are associated with devegetation and soil disturbance have been grouped either as permanent (conversion to buildings and other impermeable surfaces, conversion to non-native landscaping) or as temporary (areas subject to planting and restoration to native habitat).

	Type of Impact		**Total**
	Permanent (Acres)	**Temporary (Acres)**	
Current Converted	10.5	0.1	10.6
Has Prior Approval	4.7	1.4	6.1
Newly Proposed	6.5	5.0	11.5
Total	21.8	6.4	28.2

The soils of the project area are mainly granitic sands and gravels derived from the combined processes of glacial, riverine and lakeshore deposition and reworking where Lee Vining Canyon exits the mountains and enters the Mono Basin. Mono Lake now lies 400 feet lower than the project site, one mile to the north and east. The steepest slopes of the study area, which are located adjacent to the area of the planned restaurant and near existing. “work force” housing at the southwestern edge (Figure 2), are often stony and sometimes are densely armored by relic lakeshore cobbles. Development of the project area’s soil habitat also has been strongly influenced by local volcanic activity, which is now in evidence throughout the site as significant deposits of pumice-based sands and gravels.

The highly traveled State Route 120 (hereafter, SR 120) and the 4-lane, divided U.S. Highway 395 (Hwy 395) dominate the landscape to the immediate the west and north, at the lowest elevations of the study area (Figure 2). SR 120 and Hwy 395 function to some degree as ecological barriers to wildlife use of the study area’s northern and western portions. At present, a relatively unaltered ecological connection to the expansive Mono Basin shrublands appears to be maintained only at the portion of the study area that lies east and north of Hwy 395. Relatively uninterrupted slopes of the southern portion of the study area, away from the highways, also at present retain some sense of open space. Habitat alterations that have occurred there during the past two decades are associated mainly with overlook visitors and by occupation of existing workforce housing. Important changes that likely have taken effect since 1993 at this southern area, and which should be considered when identifying project impacts throughout the entire site west of Hwy 395, include substantial increases in daily human activity, new night lighting and landscape irrigation, increased noise, new food subsidies for wildlife, the presence of domestic animals including dogs, and large-scale removal of native vegetation by a wildfire in Lee Vining Canyon around and within the site.

3. Vegetation and Wildlife Resources

In preparation for field surveys, the available literature was reviewed and local agency personnel were interviewed in order to develop a list of potentially occurring special status plant and animal species, as detailed below. The findings obtained during studies previously conducted at this same location by biologists M. Bagley and T. Taylor (1992) were incorporated into the current review. Lists of the potentially occurring special status plants and animals, and sensitive plant communities of the Lee Vining area, were also provided by Mono County (2015). Field studies were performed in May and June 2017. The review of agency-administered status lists for potentially occurring special status species was performed prior to field work in 2017 and subsequently repeated in November 2018. Potentially occurring special status species that as of November 2018 are known to occur (or have occurred) within 15 miles of the project and in habitats that are similar to those currently provided within the project area were included in the current investigation.

3.1 Study Area Plant Communities and Species

Plants and plant communities that currently exist within the study area are in a relatively undisturbed condition, or are slowly recovering from wildfire that occurred nearly twenty years ago, or in very limited areas exhibit evidence of having been mechanically disturbed/devegetated more recently. The project may benefit native plant cover in some areas due to irrigation using the effluent from the project's new wastewater treatment system, but installation of this type of infrastructure requires temporary vegetation disturbance. Meanwhile, new negative impacts to the site's existing plant communities (Figure 3) due to the construction of new housing and other buildings and roads will include permanent reductions to their extents (Table 1), and potentially may diminish their current ecological functions such as support of occurring special status plant populations.

3.1.1 Literature Review – Special Status Plant Communities and Species

A list of special status plant species that could have some potential to occur within the habitats available at the project site was compiled (Table 2), based upon a review of regional data (Mono County Planning Department, 2015, Halford and Fatooh, 1994, California Native Plant Society (CNPS), 2001, 2018, CalFlora, 2018, California Department of Fish and Wildlife (CDFW), 2018a, 2018b), published regional floras (Baldwin, *et al.*, 2012, Jepson Herbarium, 2018), and botanical surveys that have been performed for the preparation of environmental documents for nearby projects (Bagley, 2002, Chambers Group, 2011, Paulus, 1998, 2012, 2013). The literature review also included a June 2018 search of the California Natural Diversity Database (CNDDB) records for the USGS Lee Vining, Lundy, Negit Island, Sulphur Pond, Mount Dana, Mono Mills, Koip Peak, June Lake, and Crestview quadrangles (CDFW, 2018c). Consortium of California Herbaria (2018) records for the Western Mono Basin (north to Conway Grade) were also included in the literature search results (Appendix A). Potentially occurring plant species were considered to be "special status" if they have state or federal status as rare, threatened or endangered (CDFW, 2018a), or are included in the CNDDB list of special plants (CDFW, 2018b), or are listed by CNPS in their inventory of sensitive California plants (CNPS, 2001, 2018), or are included in the most recent Sensitive plant list prepared by Inyo National Forest (U.S. Forest Service, 2013).

Table 2. Special status plant species that potentially could occur at the proposed project. Flowering period data is from CNPS (2018). None of these species are federally listed. A key to the rank or status symbols follows the table. NL = not listed.

Scientific Name Common Name Life Form	Rank or Status				Typical Habitat	Flowering Period
	USFS	CDFW	CNPS	NDDB		
Allium atrorubens var. *atrorubens* Great Basin onion bulbiferous perennial			2B.3	S2	scrub, woodland, sandy or rocky	May-June
Astragalus monoensis Mono milkvetch herbaceous perennial	S	R	1B.2	S2	open gravel or pumice soils	June-August
Boechera bodiensis Bodie Hills rockcress herbaceous perennial	NL	NL	1B.3	S3	sagebrush scrub	June-July
Boechera cobrensis Masonic rockcress herbaceous perennial	NL	NL	2B.3	S3	sagebrush scrub	June-July
Chaetadelpha wheeleri Wheeler's dune broom herbaceous perennial	NL	NL	2B.2	S2	sandy scrub, often alkaline	May-September
Cusickiella quadricostata Bodie Hills cusickiella herbaceous perennial	NL	NL	1B.2	S2	sagebrush scrub, often clay soil	May-June
Eremothera boothii ssp. *boothii* Booth evening primrose herbaceous annual	NL	NL	2B.3	S2	sagebrush scrub	April-September
Eriastrum sparsiflorum few-flowered woollystar herbaceous annual	NL	NL	4.3	S4	open scrub, sandy	May-July
Lupinus duranii Mono Lake lupine herbaceous perennial	S	NL	1B.2	S2	open scrub, pumice	May-August
Mentzelia torreyi Torrey blazing star herbaceous perennial	NL	NL	2B.2	S2	sagebrush scrub	June-August
Streptanthus oliganthus Masonic Mountain jewelflower herbaceous perennial	S	NL	1B.2	S3	xeric woodland, rocky slopes	June-July

Scientific Name Common Name Life Form	Rank or Status				Typical Habitat	Flowering Period
	USFS	CDFW	CNPS	NDDB		
Tetradymia tetrameres dune horsebrush shrub	NL	NL	2B.2	S2	sagebrush scrub, dunes	May-September
Thelypodium integrifolium ssp. complanatum foxtail thelypodium herbaceous perennial	NL	NL	2B.2	S2	sagebrush scrub, xeric woodland	June-August
Thelypodium milleflorum many-flowered thelypodium herbaceous perennial	NL	NL	2B.2	S3?	sagebrush scrub, rocky	April-August
Viola purpurea ssp. *aurea* golden violet herbaceous perennial	NL	NL	2B.2	S2	sandy sagebrush scrub	April-June

Rank or status, by agency:

USFS = US Forest Service, Inyo National Forest, Bishop Office (2013):

S = Sensitive List.

CDFW = California Department of Fish and Wildlife listings under the California Endangered Species Act and Native Plant Protection Act (CDFW, 2018a):

R = Rare.

CNPS = California Native Plant Society listings (CNPS, 2001, 2018):

1B = rare and endangered in California and elsewhere,
2B = rare, threatened or endangered in California, but more common elsewhere,
4 = plants of limited distribution in California – watchlist species.

Threat Code extensions:

.1 is Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat),
.2 is Fairly endangered in California (20-80% of occurrences threatened),
.3 is Not very endangered in California (< 20% of occ's threatened or no current threats known.

NDDB = California Natural Diversity Data Base rankings (CDFW, 2018b):

S1 is < 6 occurrences or < 1000 individuals or < 1000 acres,
S2 is 6-20 occurrences or 1000-3000 individuals or 2000-10000 acres,
S3 is 21-100 occurrences or 3000-10000 individuals or 10000-50000 acres,
S4 is apparently secure in California.
? indicates CNDDB uncertainty in status.

This review was initially performed in April 2017 immediately prior to field surveys. When repeated in November 2018, two changes in status or known species distribution were identified resulting in the addition of few-flowered woollystar (*Eriastrum sparsiflorum*) and Bodie Hills rockcress (*Boechera bodiensis*) to the search list (Table 2). The 2018 literature review and CNDDB records search results thus indicate that 15 special status plant species and the sensitive plant community Mono Pumice Flats occur within 15 miles of the project and in habitats that bear some resemblance to those available within the project area. Previously documented occurrences of special status plant species or sensitive communities within the study area were not found in CNDDB records or other available literature (Appendix A), including the 1993 review of the Tioga Inn project under CEQA. This does not signify special status species absence; it merely is evidence that none have been reported.

Potentially occurring special status plant species (Table 2) exhibit an herbaceous perennial or shrub growth habit, except the annual herbs Booth's evening primrose (*Eremothera boothii* ssp. *boothii*) and few-flowered woollystar (*Eriastrum sparsiflorum*). The perennials would be expected to be bear leaves and flowers at the time of the May-June 2017 surveys, and some would be expected to be exhibit developing fruits. The expected phenologies of the annuals Booth's evening primrose and few-flowered woollystar would be bearing leaves, flowers, and mature fruits (Table 2). These annuals are the only special status species that have some likelihood to occur in mechanically disturbed habitats. None of the potentially occurring plant species is federally listed or a candidate for listing. Mono milkvetch (*Astragalus monoensis*) is state listed as Rare. Mono milkvetch is endemic to the Mono Lake Basin and a few other nearby depressions where vegetation is sparse and nutrient-poor, pumice gravel soil is present.

3.1.2 Vegetation Inventory and Search for Special Status Plant Species

An inventory of plant species and vegetation community types present within the entire study area was completed using transect-style field surveys conducted on May 17-21 and June 4-5, 2017. Buffer areas (Figure 2) were included in the search for special status populations. All plant species encountered along wandering transects spaced at 50 feet intervals were identified to the level of taxa that was sufficient to determine special-status species presence or absence. Any species that were not at once recognized were keyed by the consulting botanist using The Jepson Manual (Baldwin, *et al.*, 2012). The methods that were employed comply with CDFW guidelines for floristic survey (CDFG, 2009). May and June fall within the potentially occurring species' anthesis periods (Table 2). The documented high diversity of occurring plant species, especially among native annuals (Appendix B) that established high abundances, suggests that the complete flora was represented well at the time of survey, due to favorable climate during the early portion of the growing season in 2017. J. Paulus of Oakhurst, California, performed all botanical survey work, totaling 40 hours.

Species composition including non-native presence was recorded along the transects. Plant communities were separated for mapping by using shifts in the frequencies of dominant species to define associations, which then were grouped within the upland shrublands Alliance types defined by Sawyer, *et al.*, (2009). Boundaries mapped at burn scar edges were abrupt. Boundaries otherwise were clearly discernible in the field, but changes in the relative frequencies of shrub dominants among the occurring associations were typically not abrupt. Each mapping unit was characterized based upon rapid belt transect counts to estimate the relative frequencies of dominants, and ocular estimation (± 10%) of total cover and average height.

3.1.3 Plant communities

Plant community boundaries were identified within the entire 67.8 acres of the four affected parcels, and within 13.5 acres at adjacent Caltrans ROW areas (Figure 3). Vegetation cover in an undisturbed condition remains throughout most the study area where conversion to elements of Tioga Inn has not been already implemented. This cover appears as upland scrub of varying species compositions, yet relatively uniform in appearance and consistently dominated by diverse shrubs.

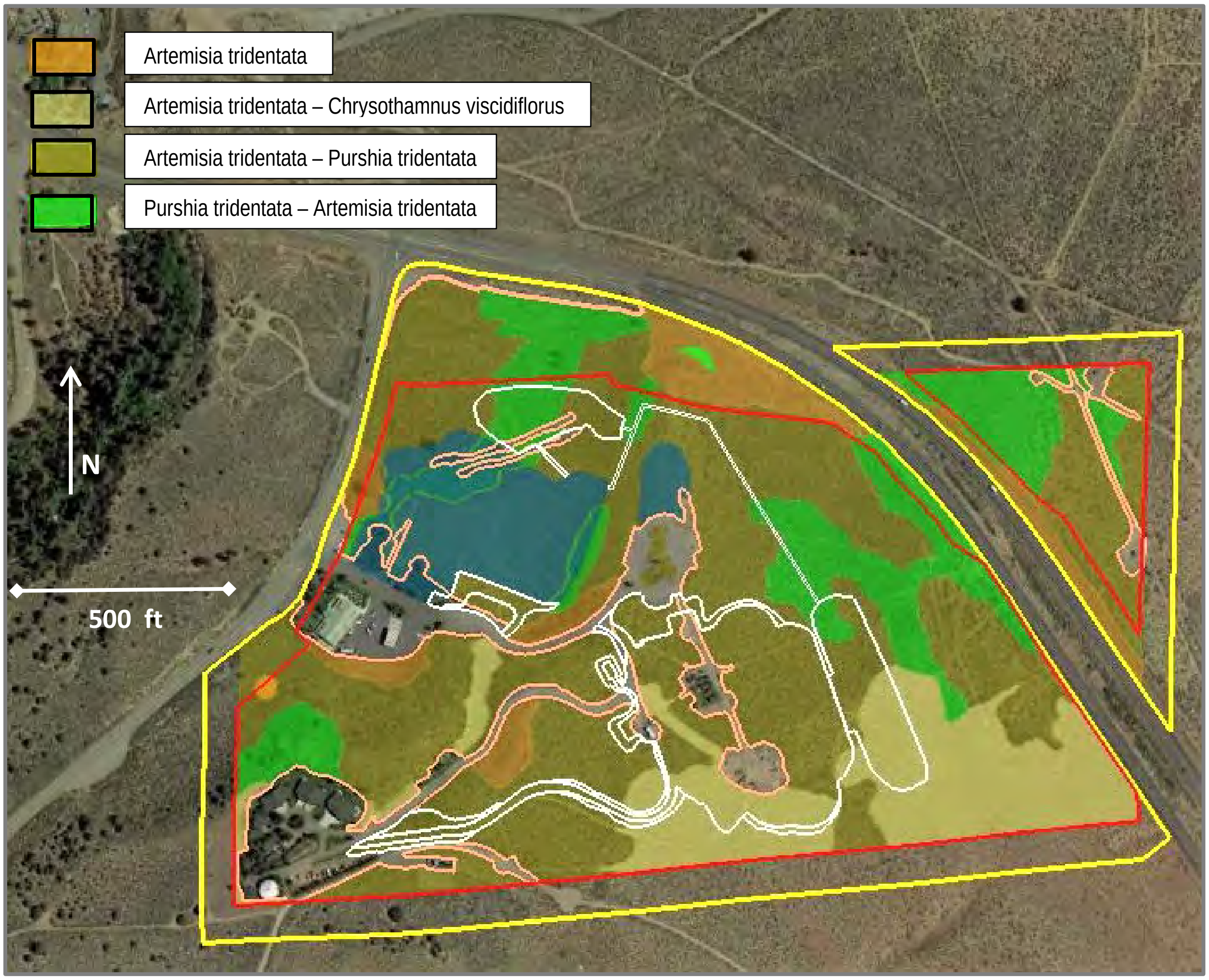

Figure 3. Plant communities that occur within private lands where work force housing and associated infrastructure at the Tioga Inn development have been proposed. The existing site improvements (pink outlines), the locations of previously approved but as yet unbuilt elements of the Tioga Inn development (hotel and restaurant, shaded blue), and the vegetation that will be permanently or temporarily displaced by the proposed project (white outlines) are shown.

In 1992, local cover was described using a larger community level of classification as "uniform scrub", prior to any Tioga Inn-related construction (Bagley, 1992, Taylor, 1992). Since that time, notable changes other than conversion to elements of Tioga Inn (Figure 2, 10.6 acres permanently devegetated) are 1) widening of Hwy 395 to four lanes, which necessitated slope recontouring within the Caltrans ROW (Figure 2, 2.2 acres), and 2) complete vegetation removal and change to weedy, early seral plant cover as mapped within the eastern margin of the site, which occurred when wildfire burned much of lower Lee Vining Canyon in May 2000 (Figure 2, 14.8 acres). These areas currently support some native scrub species, but the recovering canopy is less uniform. As of 2017, most warrant classification as alliances that distinctly differ from those found within undisturbed portions of the site (Figure 3). In the burn zone especially, the slowly recovering vegetation now is of low diversity, and usually is dominated by invasive, non-native grasses. The created scar thus visibly persists. The contiguous fire scar extends 3000-4000 feet southward and eastward, and about two miles westward into Lee Vining Canyon. In comparison to the relatively uniform and undisturbed vegetation that was found in 1992, the scars represent the likely most significant change – nearly two decades of ongoing contrast at the landscape level; the project area now has become isolated within a landscape where the altered vegetation cover's potential to provide resources and other ecological functions has become significantly reduced.

Pumice-dominated soils were encountered frequently along vegetation survey transects. No strictly pumice-associated plant communities occur (these types are considered uncommon). There are no scrub canopy openings that feature flats or internally drained basins, nor are there any species assemblages that are dominated by western needlegrass (*Stipa occidentalis*) or Parry rabbitbrush (*Ericameria parryi*), as would be expected if the Sensitive community Mono Pumice Flat occurs.

3.1.3.1 Big Sagebrush Scrub

Big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) is dominant or co-dominant throughout the majority of the study area. Three Big Sagebrush Scrub alliances were mapped in June 2017 (Table 3), distinguishing stands where big sagebrush was the only dominant shrub in the canopy (CDFW alliance code #35.110.02) from stands that are co-dominated by antelope bitterbrush (*Purshia tridentata*, alliance #35.110.07) or by yellow rabbitbrush (*Chrysothamnus viscidiflorus*, alliance #35.110.12) at somewhat lesser frequencies. Big Sagebrush Scrub canopies on average are 2-3 feet tall and provide 20-30% absolute living cover. Absolute live cover provided where this community has re-established within the wildfire scar is a comparably patchier 1-10%. The community's height also is reduced, averaging 1-2 ft within the wildfire scar mainly due to the increased prevalence of low-statured yellow rabbitbrush. Big Sagebrush Scrub is a common and widespread plant community that occurs throughout Mono County and the Great Basin.

Within the study area, yellow rabbitbrush distribution as a canopy co-dominant is restricted to slopes that were devegetated by wildfire in 2000. Rubber rabbitbrush (*Ericameria nauseosa*) and desert peach (*Prunus andersonii*), which are typically minor shrub canopy components, also have become established at higher relative frequencies in burned areas. However, bitterbrush recruitment subsequent to burning has been consistently low, and this shrub's frequency within the wildfire scar is now consistently less than 1% of the total living shrub canopy.

Trees are a minor component of the native vegetation, occurring in Big Sagebrush Scrub as scattered Jeffrey pines (*Pinus jeffreyi*) or singleleaf pinyon (*P. monophylla*). The only other trees that were noted within the study area are the numerous sapling to mature-sized quaking aspen (*Populus tremuloides*) that have been planted into irrigated landscape areas around existing roads and buildings. Riparian zone dominant trees that are present within the nearby Lee Vining Creek riparian zone are otherwise absent from the habitat occupied by Big Sagebrush Scrub, which is entirely upland in character. Native pines near 10% canopy closure only in one small patch north of the existing workforce housing, in a steeply sloping area where relatively high floral diversity including one special status plant species was observed (see Special Status Plant Species, below). The current project will not directly impact any native trees.

Table 3. Plant communities that were mapped within the Tioga Inn project area in 2017. The four parcels that may be affected by the project include 10.8 acres that have been converted to houses, roads, and other impervious or devegetated surfaces. Community names (after Holland, 1986) are cross-referenced to the CDFG (2010) classification and Sawyer, *et al.* (2009) Alliance classification. * are designated "sensitive" by CDFW (CDFG, 2010).

Holland name and CDFW classification number	**Alliance and primary association names**	**acreage in study area**
Big Sagebrush Scrub 35.110.02	Big Sagebrush Shrubland *Artemisia tridentata*	5.3
Big Sagebrush Scrub 35.110.07	Big Sagebrush Shrubland *Artemisia tridentata- Purshia tridentata*	41.6
Big Sagebrush Scrub 35.110.12	Big Sagebrush Shrubland *Artemisia tridentata-Chrysothamnus viscidiflorus*	11.0
Great Basin Mixed Scrub 35.200.00*	Bitterbrush Shrubland *Purshia tridentata-Artemisia tridentata-Salix exigua*	0.1
Great Basin Mixed Scrub 35.200.02*	Bitterbrush Shrubland *Purshia tridentata-Artemisia tridentata*	12.5

Herbaceous species were present in abundance throughout Big Sagebrush Scrub in 2017. The most conspicuous annuals were cryptanthas (several species, see Appendix B), bicolored phacelia (*Phacelia bicolor*), blazing stars (*Mentzelia* spp.), pussypaws (*Calyptridium* spp.), and summer snowflakes (*Gayophytum diffusum* ssp. *parviflorum*), adding cheatgrass in the wildfire scar. Native perennial herbs include scattered populations of rockcress (*Boechera* spp., including *B. cobrensis* – see Special Status Plant Species, below), and the upland habitat-adapted Douglas' sedge (*Carex douglasii*) in pumice gravel soil. Hard fescue (*Festuca trachyphylla*), a non-native perennial grass, attains up to 70% cover among the shrubs nearest some existing roadways, but only under applied irrigation. It has spread relatively sparsely into nearby native scrub. Perennial grasses otherwise comprised no more than 5%, and most often less than 1% of total vegetative cover.

3.1.3.2 Great Basin Mixed Scrub

Shrublands elsewhere within the study area (Figure 3) were classified as Great Basin Mixed Scrub. This vegetation escaped wildfire in 2000. No examples of seral return to this type were found within the 14.8 acres of mapped fire scar. The presence of bitterbrush (*Purshia tridentata*) as the most important component of the cover distinguishes Great Basin Mixed Scrub from the surrounding Big Sagebrush Scrub. In contrast to Big Sagebrush Scrub, it exhibits denser cover, greater height, and more uniform stand maturity. Great Basin Mixed Scrub and areas that are separated here as Big Sagebrush Scrub alliances were previously classified as Great Basin Sagebrush Scrub using an older system (Taylor, 1992); differences in naming do not indicate a known substantial change in stand characteristics since the 1993 EIR. Great Basin Mixed Scrub is considered Sensitive by CDFW (CDFG, 2010). There has been a regional trend toward loss of this community type due to wildfires within Mono County (Sawyer, *et al.*, 2009, Mono County, 2015).

Total living cover in Great Basin Mixed Scrub, which generally was classifiable as an antelope bitterbrush – big sagebrush alliance (#35.200.02) within the study area, was 30-40% in June 2017. Average height was 3-4 feet. Bitterbrush distribution is uniform, appearing dense, with individuals occasionally reaching a height of 10 feet. Ecotones with Big Sagebrush Scrub are diffuse but visibly evident, becoming abrupt only at fire scar edges. In 2017, native annual and perennial herbs and grasses observed to be abundant in Big Sagebrush Scrub were equally represented in the Great Basin Mixed Scrub understory, but the overall observed diversity was lower (Appendix B).

One isolated occurrence of Great Basin Mixed Scrub located between the site of the restaurant and the southern edge of Hwy 395 (Figure 3) is locally unusual due to the presence of sandbar willow (*Salix exigua*) in the shrub canopy. Sandbar willow and big sagebrush are the co-dominant species with antelope bitterbrush. This alliance (#35.200.00) is not found elsewhere within the study area. The occurrence is mid-slope within a large area (approximately 2.3 acres) that was devegetated and re-contoured to accommodate Hwy 395 widening in the early 2000's. Sandbar willow is considered to be facultatively (*i.e.*, not obligately) adapted to wetlands habitat conditions (U.S. Army Corps of Engineers, 2012). Its presence likely signals that an area of groundwater accumulation was intercepted during recontouring. The willow stems at this occurrence may represent a single, clonally reproducing individual, which in 2017 exhibited poor vigor and some dieback. There were no indications that would suggest this assemblage signals the presence of seasonal or even ephemeral artesian spring flow, as there were no surface moisture changes, ponding depressions, animal trails, or incised discharge and outflow areas indicating spring function, despite local precipitation prior to the survey that during October 2017 through May 2018 neared 200% of the normal annual amount.

3.1.4 Special Status Plant Species

Few-flowered woollystar (*Eriastrum sparsiflorum*) were detected at two locations north of Hwy 395, among extensive annual woollystar populations that included spotted woollystar (*E. signatum*), and also diffuse woollystar (*E. diffusum*). Plants bearing the stalked glands expected of *E. sparsiflorum* were not found among several that were checked south of Hwy 395. There is some possibility that the local population does not extend to the south of Hwy 395 in the study area. Recent separation of *E. signatum* from *E. sparsiflorum* has led to the formerly considered common *E. sparsiflorum* being added to CNPS' watchlist 4.3 (CNPS, 2018), meaning a species that currently is considered limited in distribution at least within California, having no current known threats to its continued existence in the state. Few-flowered woollystar, which apparently is secure from extinction in California (CDFW, 2018b), has no additional legal status under the state or federal Endangered Species Acts (Table 2).

One distinct population of Masonic rockcress (*Boechera cobrensis*) was found near the northern edge of the existing workforce housing, on the steep slope between the housing and the existing gas station (Figure 4). Individuals were found in relatively open Big Sagebrush Scrub as well as in partial shade cast by Jeffrey pines in denser Great Basin Mixed Scrub. It was possible to map the extents of this population with good accuracy, as the plants' rosettes are distinctive and most individuals were blooming at the time of survey. A total of 132 individuals were found in an area of 1.2 acres on May 19, 2018. Masonic rockcress identification and separation from other rockcress species occurring within the study area was based in large part on the plants exhibiting relatively small, white petals (consistently < 8 mm), and spreading-descending fruits borne on glabrous pedicels, a combination of characteristics that is not expected of other locally occurring *Boechera* species.

No other populations of special status plant species were found. Other species observed in 2017 are considered locally and regionally common in uplands habitats. No members of the distinctive genera *Allium*, *Chaetadelpha*, *Cusickiella*, *Eremothera*, *Streptanthus*, *Tetradymia*, or *Viola* were found during the May-June survey. Newberry's milkvetch (*Astragalus newberryi* var. *newberryi*) was separated from the potentially occurring Mono milkvetch (*A. monoensis*) by its densely cespitose growth form and cottonball-hairy fruits. Mono milkvetch would exhibit more open growth and fruits that appear much less hairy, as was observed at the reference population east of June Lake (blooming and setting fruit on June 4, 2017). The occurring silver lupines (*Lupinus argenteus* vars.) were readily separated from potentially occurring Mono Lake lupine (*L. duranii*) by growth form. Occurring lupines were invariably 2 dm or more in height, much taller than would be expected of Mono Lake lupine. Plants of the blazing star genus *Mentzelia* were relatively abundant in 2017, but Torrey blazing star (*M. torreyi*) was not seen. Populations seen within the study area were clearly annuals of relatively diminutive stature, not the relatively coarse perennial plants that would be expected if Torrey blazing star was present. In all, 86 species (Appendix B) including 8 non-native species (Table 4), representing 22 plant families, were encountered in 2017.

3.1.5 Non-Native Plants (Weeds)

Non-native plants (Table 4) are prominent within the study area, especially in areas that have been recently mechanically disturbed and within the wildfire scar. Non-natives that are restricted to roadsides and other highly disturbed areas are in the minority. Hard fescue (*Festuca trachyphylla*) is a perennial landscape grass that historically was applied near developed portions of the study area, likely for slope stabilization. In recent decades, it has spread only slightly out beyond the reach of overhead irrigation, and likely would not persist if irrigation ceased for one or two growing seasons. Hornseed buttercup (*Ranunculus testiculatus*), and common knotweed (*Polygonum aviculare* ssp. *depressum*) populations are currently abundant but their distributions are restricted to roadsides along SR 120 and Hwy 395. Except for hard fescue, these and all other non-native species present in the study area are considered to have become firmly established all along the alignment of Hwy 395 in the Lee Vining area and elsewhere in Mono County (Mono Co. Planning Dept., 2015). Because there is no foreseeable plan or method to control populations associated with the public transportation corridors that abut and cross through the study area, it is very likely that any control efforts applied to seek eradication of the existing weed populations within the study area would be ultimately frustrated by a constant and unmanageable restocking of the weed seedbank.

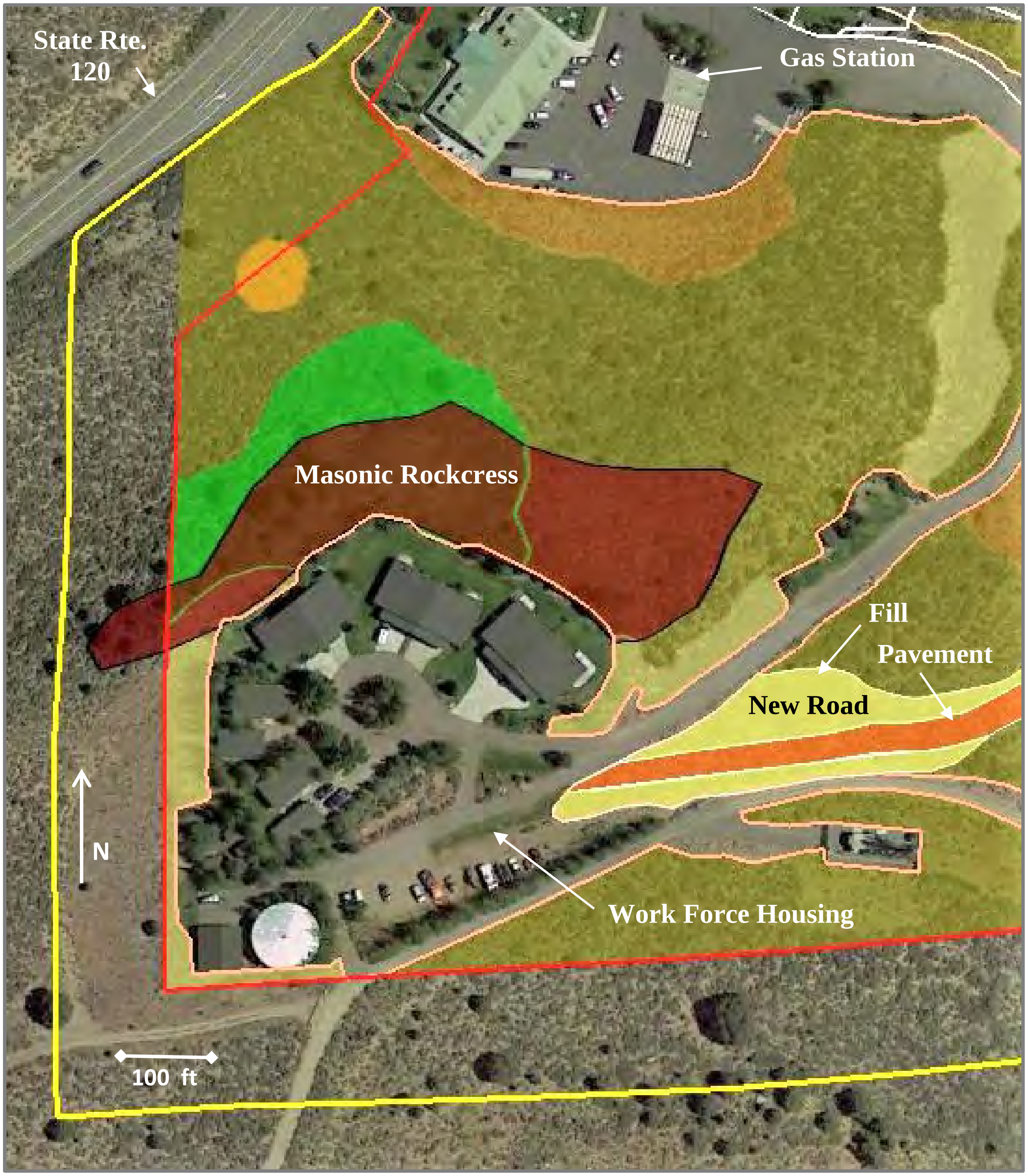

Figure 4. Extent of the single Masonic rockcress (*Boechera cobrensis*) population that was found at the Tioga Inn study area in 2017. The population occurs within the southwestern corner of the study area. 132 plants were counted within an area that totals 1.2 acres (red polygon). The project will approach to within 100 feet of the current population extent.

Five of the eight non-native species that were found in 2017 have already invaded into plant communities of the relatively less disturbed portions of the study area, and so are becoming members of the upland assemblage. The project has some potential to cause the further spread of tansy mustard (*Descurainia sophia*), Russian thistle (*Salsola tragus*), redstem filaree (*Erodium cicutarium*), and tumble mustard (*Sisymbrium altissimum*), which currently are present in sparse numbers generally near existing study area developments and the adjacent public transportation corridors. All are annual species that produce abundant, easily transported seed. Some of these species are considered noxious or invasive by the California Department of Food and Agriculture (USDA, 2010) or California Invasive Plant Council (2018). The naturalized annual cheat grass (*Bromus tectorum*) has invaded American West landscapes totaling millions of acres. This grass is associated with increased fire spread and frequency in native shrublands. Its abundance in the study area in 2017 was far greater than any other species, native or non-native, and it has locally attained a distribution that encompasses the entire study area and the nearby landscape.

Table 4. Non-native species observed within the survey area in 2017. † indicates species present only at roadsides and within other recently disturbed locations. Other species are found throughout the study area in native upland habitats or in irrigated (landscaped) habitats. Weed rating is potential invasiveness as rated by the California Integrated Plant Council (Cal-IPC, 2018), and federally recognized noxious weed rating (USDA, 2010).

	Non-Native Species		**Weed Rating**
	cheat grass	*Bromus tectorum*	Cal-IPC High
	tansy mustard	*Descurainia sophia*	Cal-IPC Limited
	redstem filaree	*Erodium cicutarium*	Cal-IPC Limited
†	hard fescue	*Festuca trachyphylla*	
†	hornseed buttercup	*Ranunculus testiculatus*	
†	common knotweed	*Polygonum aviculare*	
	Russian thistle	*Salsola tragus*	Cal-IPC Limited USDA Noxious list C
	tumble mustard	*Sisymbrium altissimum*	

Vegetative return or succession to the condition of self-sustaining Big Sagebrush Scrub or Great Basin Mixed Scrub appears to be delayed or patchily arrested in areas with the heaviest cheat grass infestation. This condition was observed within much of the study area mapped here (Figure 3) as seral Big Sagebrush Scrub, especially where *Artemisia tridentata-Chrysothamnus viscidiflorus* alliance stands have developed. This species was present in 1992 at relatively low abundance (Taylor, 1992). In the 18th growing season following fire, the cheat grass population now remains far more robust than any other species that has colonized the burned area. The 2017 survey found that cheat grass forms nearly pure stands of up to 2 acres within the wildfire scar, which are assumed to be (slowly) transitioning to native scrub (studies describing long-term response monitoring of this problem in the Mono Basin could not be found). Such patches would be classifiable as Non-Native Annual Grassland in more permanent contexts in central California (Sawyer, *et al.*, 2009). Because upland plant communities are made more susceptible to wildfire by the presence of cheatgrass (Cal-IPC, 2018), post-construction practices designed to minimize its prominence generally should be implemented wherever practical.

3.1.6 Project Impacts to Plant Communities and Species

Native vegetation that is typical of upland shrublands habitat in the Mono Basin will be impacted by the project. No apparently wetlands or riparian habitats occur within or immediately adjacent to the parcels that will be affected. The project will remove Big Sagebrush Scrub, a common and regionally widespread plant community type, and disturb a lesser area of Great Basin Mixed Scrub, a bitterbrush-dominated scrub that is limited in distribution and considered sensitive by the State of California (Table 5). The project in doing so may impact a local diffuse population of the annual plant few-flowered woollystar by removing potentially occupied habitat and disturbing topsoil in which the species' seedbank resides. Meanwhile, the risk of impact to an occurring Masonic rockcress population appears to be minimal, as the entire population extent falls outside the proposed project footprint (Figure 4). Because the project will create 5.0 acres of new, temporarily disturbed habitat, there is some potential that it will promote the spread of non-native weeds that currently are abundant within an adjacent fire scar and highway corridors.

Table 5. Acreage impacts to native plant communities that occur within the Tioga Inn study area are summarized. Percentages indicate the total available habitat that will be cumulatively removed or temporarily disturbed when the project is implemented, assuming that the already approved hotel and restaurant elements are also constructed.

	Big Sagebrush Scrub[1]		**Great Basin Mixed Scrub**[2]	
	Permanent (acres)	**Temporary** (acres)	**Permanent** (acres)	**Temporary** (acres)
Elements That Already Have Been Approved	4.0	1.2	0.8	0.2
Current Project	6.5 (18.0%)	3.9 (8.9%)	0 (6.0%)	1.1 (10.2%)
Total Currently Available (acres)	57.9		12.6	

1. Alliances are *Artemisia tridentata*, *A. tridentata – Purshia tridentata*, *A. tridentata – Chrysothamnus viscidiflorus*.
2. Alliances are *Purshia tridentata – Artemisia tridentata*, and *P. tridentata – A. tridentata – Salix exigua*

Permanent, direct removal of upland scrub vegetation and provided habitat values will total 6.5 acres for the footprints of buildings, landscaped areas, parking lots, and the new road. This will remove 11% of the remaining Big Sagebrush Scrub. Great Basin Mixed Scrub will not be impacted by permanent conversion related to the current project (Table 5). A total of 5.0 acres of current native vegetation will be disturbed for slope recontouring or wastewater treatment and subsurface irrigation field and pipeline installation, mainly in Big Sagebrush Scrub. The project includes restoration of all temporarily disturbed areas to approximate pre-project native shrublands conditions. When implementations of the currently approved and the new Tioga Inn elements have been completed, the shrublands communities of the property (including those areas recovering from wildfire in 2000) will be permanently reduced to about 75% of their current distribution within the affected parcels. In addition, 20% of areas now dominated by native shrubs will have been temporarily devegetated. Overall, the already fragmented shrublands stands south of U.S. Highway 395 will be further divided, as all of the remaining vegetation will be situated in clearly isolated positions, either between the project and the highways or amid busy housing and road elements to the south of the gas station (Figure 3).

3.2 Study Area Wildlife

3.2.1 Literature Review – Special Status Animal Species

Based upon the available uplands scrub vegetation types identified within the Tioga Inn study area habitats, there are nine special status animal species that have some potential to den, nest or otherwise have a presence in the area and possibly be affected by the project (Table 6). Long-eared owl, although not listed in CNDDB records for the region, was added due to recent reporting of an individual near the western shore of Mono Lake, about two miles north, where a young individual was seen perching in a mesic willow stand adjacent to Hwy 395 in June 2012 (Caltrans, 2012).

The Parker Meadows population of the greater sage grouse Bi-State DPS is known to use riparian meadow habitat within five miles of the study area for breeding and chick-rearing. Nest sites are chosen in scrub vegetation having isolation from human activity and predators, and sufficient density to provide concealing cover (Bi-State Technical Advisory Committee, 2012), a setting that currently is absent from the study area. Movement from Parker Meadows into on-site and nearby habitats in support of early chick-rearing (conservatively, mid-March through late August) is unlikely, as there are no moist, insect-filled meadows that chicks could utilize. No meadows that would be suitable for young chick maintenance occur between the project site and the nearest moist Parker Meadows habitat, a distance of 2.2 miles. Adult use of sagebrush that is exposed within the project area for foraging during winter months is possible.

Brewer's sparrows forage and nest in open sagebrush habitat, which is present within much of the undeveloped portion of the study area. While somewhat difficult to distinguish visually from other potentially occurring sparrows of the genus *Spizella*, their calls while establishing breeding territories in early spring are distinctive. Nests are constructed within larger, relatively densely foliated shrubs. The local nesting season for all bird species has been conservatively defined as the period February 15 – September 15 (Mono County Planning Department, 2015).

Pygmy rabbit, a CDFW Species of Special Concern due to limited distribution and loss of sagebrush habitat, are locally widespread and have been called "abundant" in the Mono Basin (Beauvais, *et al.*, 2008). Study area scrub vegetation averages 20-40% total cover, attaining the 50% or greater cover that is most likely to support pygmy rabbit in Mono County (Larrucea and Brussard, 2008) only in larger Great Basin Mixed Scrub stands near Hwy 395. Pygmy rabbits are distinguished from locally occurring mountain cottontail (*Sylvilagus nuttallii*) and black-tailed jackrabbit (*Lepus californicus*) by clear size differences both for individuals and for the fecal pellets they produce. While their colonial burrow systems are typically found within "islands" of suitably dense cover, pygmy rabbits are known to be adaptable to a wide variation in sagebrush cover and height, and can even occur in dense growth of willow, bitterbrush, or rabbitbrush-dominated scrub in the Mono Lake area, as long as the soil is deep and loamy enough for burrowing (Collins, 1998, Paulus, 2016).

Table 6. Special status wildlife species that could potentially occur within the area of the proposed project at Tioga Inn. Species status is defined below, NL = not listed.

Species	**Status** State	**Status** Federal	**Habitat**
Birds			
Asio otus long-eared owl (nesting)	SSC	NL	sagebrush scrub
Centrocercus urophasianus greater sage grouse (nesting, leks)	SSC	BLM = S USFS = S	sagebrush scrub
Spizella breweri Brewer's sparrow (nesting)	NL	BCC	sagebrush scrub
Mammals			
Brachylagus idahoensis pygmy rabbit	SSC	BLM = S USFS = S	dense sagebrush scrub, loamy soil
Eumops perotis californicus western mastiff bat	SSC	BLM = S	roosts in crevices, buildings
Lepus townsendii townsendii white-tailed jackrabbit	SSC	NL	sagebrush scrub
Myotis yumaensis Yuma myotis	NL	BLM = S	roosts in crevices, buildings near water
Taxidea taxus American badger	SSC	NL	sagebrush scrub
Vulpes vulpes necator Sierra Nevada red fox	Thr	USFS = S	all habitats

Rank or status, by agency:

State = Calif. Dept. of Fish and Wildlife listings under the state Endangered Species Act (CDFW, 2018a, 2018d).
Thr = Threatened
SSC = Species of Special Concern

Federal = U.S. Fish and Wildlife Service under the federal Endangered Species Act (CDFW, 2018d).
BCC = Birds of Conservation Concern,
BLM = S Species is considered Sensitive by Bureau of Land Management,
USFS = S Species is considered Sensitive by U.S. Forest Service.

Western mastiff bats forage over a wide variety of habitats. Yuma myotis bats are comparably restricted to habitats over and very near surface waters. Western mastiff bats have been detected over riparian habitat along Lee Vining Creek, less than four miles upstream from where it passes near the study area. Yuma myotis have been detected at the Mono Lake shore. These colonial bats may use structures with suitable crevices, especially buildings that are not regularly used by humans, for day roosting or natal colony establishment. It is possible that these bats pass over the project area while foraging. There are no caves or culverts within the study area that could harbor roosting or breeding bats, but there are existing structures that would be removed within the area where new work force housing is proposed. There is some possibility that bats may use suitable habitats within one or more of these structures for day-roosting or for colonial breeding.

Western white-tailed jackrabbit, American badger, and Sierra Nevada red fox are highly mobile animals. Western white-tailed jackrabbit populations are in serious decline throughout their distribution in North America (Duke and Hoeffler, 1988). Adult western white-tailed jackrabbits are generally solitary and, unlike pygmy rabbits, do not spend time underground in burrows and so are less vulnerable to construction-related soil disturbance. American badger are predators that characteristically excavate the burrows of small mammalian prey. Typical prey species include Beechey ground squirrel (*Otospermophilus beecheyi*), which were found to be widely present within the study area in 2017. While considered active all year, American badgers may also spend long periods in resting torpor underground, and also raise litters in underground dens (Helgen and Reid, 2016). Sierra Nevada red fox, which are state listed as Threatened, are often considered to be very rare animals restricted to high elevations, generally much higher than the 6940 feet average elevation of the study area (U.S. Fish and Wildlife Service, 2015). However, a relatively recent (20 year-old) occurrence documented within sight of the study area – an individual killed while trying to cross Hwy 395 near Lee Vining Creek (CDFW, 2018c) – is evidence that lower elevation habitats may be used in the local environment. Denning has been documented in rock fall settings (CDFW, 2018c), but it is possible that the poorly understood Sierra Nevada red fox sometimes uses enlarged earthen burrows.

The study area provides no aquatic habitat for regionally occurring special status fish, amphibians, or mollusks. Nesting riparian birds including willow flycatcher (*Empidonax traillii* ssp., state and federally listed as Endangered) and yellow warbler (*Setophaga petechia*, CDFW Species of Special Concern and USFWS Bird of Conservation Concern) would not be present. At its closest, riparian vegetation at Lee Vining Creek is located 900 ft from the area that will be disturbed by project construction. Bald eagles (*Haliaeetus leucocephalus*) have been known to winter in small numbers along the western shore of Mono Lake (Mono County Planning Dept., 2001) and have been observed perching at the mouth of Lee Vining Creek (USFS, 1988). While they may forage along Lee Vining Creek and over the study area's scrub vegetation, it is very unlikely that eagles or other large raptors would nest within the study area because the forested habitat and large trees where nests are typically built are absent. The nearest large trees occur in the overstory of the narrow Lee Vining Creek riparian forest corridor. Peregrine falcons (*Falco peregrinus*) were re-introduced to upper Lee Vining Creek Canyon in 1988 (USFS, 1988); however, none have subsequently appeared in CNDDB records for the Mono Basin region, and there are no cliff habitats within the study area that could be used by this species or by prairie falcons (*Falco mexicanus*) for nesting.

3.2.2 Methods Used to Survey for Special Status Animal Species

Upland scrub throughout the survey area was surveyed for the presence of enlarged or networked (warren) burrows that potentially could be occupied by special status mammals. On May 17-21 and June 4-5, 2017, the GPS coordinates (± 1 meter) of all such burrows, apparently occupied or not, were recorded while walking widely wandering survey transects. Transects were spaced at intervals of 50 feet across the entire study area (Figure 2). Areas of dense vegetation were inspected closely for warrens and other sign of pygmy rabbit presence. Identifying signs and indications recent wildlife use were recorded at each burrow, wherever they were found. All species that were identified through sightings or by studying sign while walking transects were recorded.

Occurring birds were inventoried during plant and wildlife transect surveys. Directed surveys were also performed in order to determine which populations were using project area habitats for nesting. Beginning at dawn on the successive mornings of May 21- 24, 2017, on-site breeding populations were identified and mapped where possible, based upon observations of territorial display and calling, and repeated flight to a likely suitable nest site. All large trees, as well as the existing wireless telecommunications tower and power transmission poles in the area, were checked during the 2017 field surveys for large stick nest structures attributable to raptors. Existing buildings (some with bird feeding stations) that are located within and near the project area were checked for bird nests or exhibitions of nesting behavior.

During the evening hours of May 21, the aerial habitat where new work force housing has been proposed was surveyed for bat presence. Existing buildings in this area were subsequently checked for crevice habitat that could be occupied by day-roosting bats or used as natal sites, and guano accumulations that could signal current use.

3.2.3 Occurring Wildlife

A diverse assemblage of wildlife species was indicated by direct observation or inferred from sign found in native scrub habitats remaining within the study area (Appendix C). Highest native diversity was found among the birds, with 25 species total and four identified as breeding including the special status taxon Brewer's sparrow (*Spizella breweri*, see Special Status Species, below). Occurring lizards, which were consistently identified as the common species sagebrush lizard (*Sceloporus graciosus*), were abundant throughout the study area in 2017. Mammals were identified mainly through characteristic sign, and in the case of burrowing mammals by burrow size and configuration. Tracks indicated that mule deer continue to frequent the area, as reported by Taylor (1992) Mule deer have been regularly observed among the existing housing in spring and summer months, foraging at irrigated lawns (D. Dormaille, pers. comm. May 19, 2017).

Birds in particular have become adapted to the current availability of foraging "habitat" and nesting opportunities provided by the existing Tioga Inn food vending and housing facilities. Common ravens (*Corvus corax*) and California gulls (*Larus californicus*) spend much time on-site, especially within the western portion of the study area. Potential nesting sites for ravens occur within the study area in the form of scattered trees, a telecommunications tower with no deterrents installed, and power transmission poles, but no raven or raptor nests were found in 2017. House sparrow (*Passer domesticus*), a non-native species, was found only in the human-built environment, nesting there also in 2017 at both the store and the work force housing. One kestrel (*Falco sparverius*) pair was observed foraging within the study area, later using a nest box attached to a work force housing unit that overlooks the gas station.

3.2.4 Special Status Animal Species

The locally extensive destruction of sagebrush by wildfire, with only sparse re-growth of sagebrush scrub during the last two decades, has altered much of the terrain abutting the study area with regard to utility for nesting birds in general, and for greater sage grouse in particular. Scattered pine trees, as well as relatively lofty buildings, light poles, and overhead power poles, are present in the western and northwestern portions of the affected parcels. They currently function to provide potential perch positions for birds (ravens, hawks and other raptors) that are predators of small mammals, Brewer's sparrows, and sage grouse. Brewer's sparrows were the only special status birds that were observed during biological resources surveys conducted in May and June 2017. No owls were seen during evening surveys and no owl packets were seen upon searching structures and trees. Sage grouse were absent on all survey dates.

Brewer's sparrows exhibited territorial behavior throughout the eastern and northeastern portions of the property, including the areas where new housing and a road have been proposed. Aggressively calling birds responded to recorded call playbacks by approaching or calling, and the boundaries of individual territories could be roughly mapped (Figure 5) after observation of

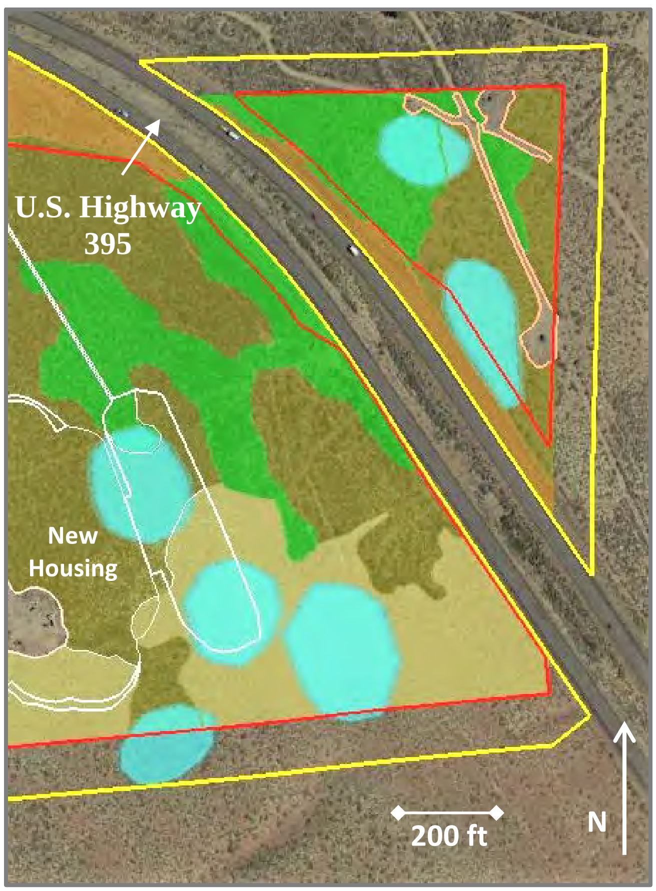

Figure 5. Approximate arrangement of dense Brewer's sparrow breeding territories detected within the Tioga Inn study area on May 21-24, 2017. Green-tailed towhee were also observed exhibiting territorial breeding behaviors within this same general area, where the vegetation is dominated by sparse to dense sagebrush and other upland shrubs. Seven separate potential Brewer's sparrow nesting locations were mapped (blue polygons).

site fidelity and patterned posting. On May 21-24, the observed breeding behaviors did not include definite patterns of return flights that would suggest nest construction or brooding had begun. It appeared that breeding territories were being established within or overlapping into every scrub vegetation type (Table 3) that was identified within the study area. Some included areas of wildfire scar where native shrubs remain sparse. Green-tailed towhee (*Pipilo chlorurus*) were the only other birds that exhibited typical breeding territorial behaviors during surveys of native scrub habitats in the study area.

The density and abundance of potential nesting sites identified in 2017 within and near where the native vegetation will be removed indicates that a population of nesting Brewer's sparrows may be negatively affected by the project. Other nesting birds including green-tailed towhee may be negatively affected as well. Construction could cause nest abandonment or failure prior to fledging due to mechanical nest destruction. There may be substantial increases in parent harassment and nest predation if construction occurs during the breeding season. There could be substantially increased breeding adult and nest predation rate through the lifetime of the project if domestic pets are introduced to the habitat remaining near the project, or if the project attracts or subsidizes locally occurring native predators such as coyotes, ravens and raptors.

American badger were the only special status mammals that were evidenced as recently or currently using project area habitats. Burrowing activity was observed in Big Sagebrush Scrub and Great Basin Mixed Scrub habitats within and very near where the project will cause soil and vegetation disturbance (Figure 6).

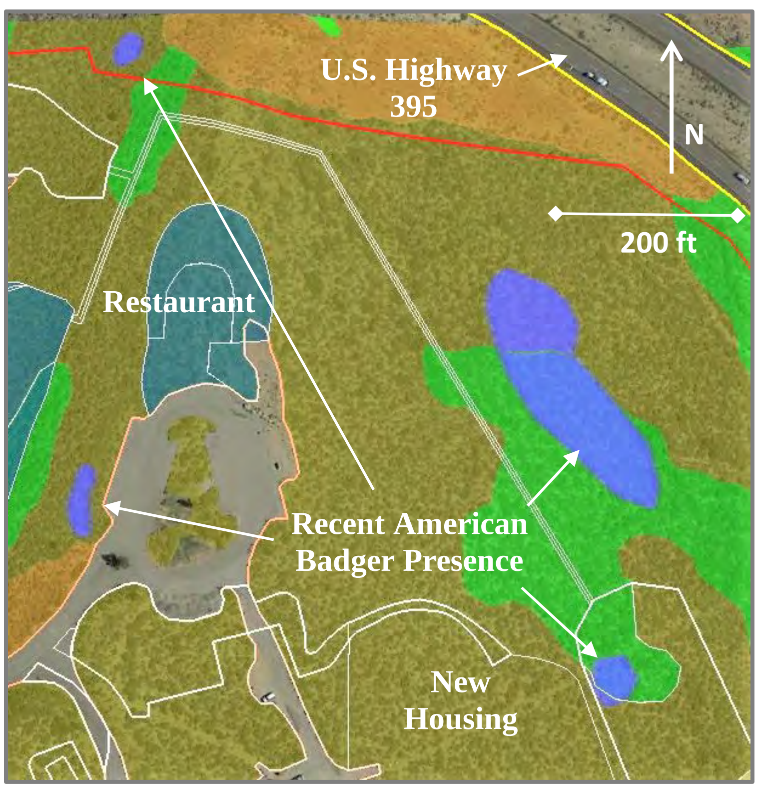

Figure 6. Four locations where recent widening of Beechey ground squirrel burrows was attributed to foraging activity by American badger. The activity is thought to have occurred during the period 2016 to as recently as early 2017.

Burrows found on the property with larger diameter openings were invariably ascribed to Beechey ground squirrel digging. A few had subsequently been widened by predatory digging, which likely had occurred during both 2016 and 2017. Due to the presence of large, parallel claw marks made while widening squirrel burrow openings, the predatory activity was assigned to American badger. Sign at these burrows did not include tracks, neonatal scat, or other indications of recent occupation for denning by larger mammalian predators such as badger or Sierra Nevada red fox. Rockfall habitat that may be more typical for special status fox denning does not occur within the study area or nearby.

Bats were commonly observed foraging over the project area during early morning and evening surveys. However, no evidence of bat colony roosting or the establishment of satellite roosts was found when the existing structures within the project area were searched for habitable crevices and guano accumulations. Very limited potential roosting habitat (currently unoccupied) was found at structures that the project will directly impact in order to construct new housing.

No rabbit warren areas that would indicate pygmy rabbit presence, or subcanopy forms that would indicate larger lagomorph presence were detected during transect surveys. Friable, loamy soils that are generally present where warrens have been found locally (Larrucea and Brussard, 2008) are not present except the lowest elevations of the study area near Hwy 395. Large stands with greater than 50% cover are not present, and patch-sized areas of such density are very uncommon, so searching each dense area thoroughly was possible. Rabbit pellets that were observed at accumulations in the study area were consistent with the presence of mountain cottontail rabbit (*Sylvilagus nuttallii*), a common species. The sizes of these pellets, measured as ranging from 9 to 10 mm diameter on average at each of more than 20 sample sites, was not consistent with the 4-6 mm diameter that would be expected if pygmy rabbit were present, or with the 10-11 mm diameter that would be expected of western white-tailed jackrabbit (Ulmschneider, 2004).

American badger are highly mobile and adaptive animals. It is unlikely that the removal of a small area of potential foraging habitat will significantly affect the local population. Direct impact to a new residence burrows and to badgers that may be day-denning in enlarged rodent burrows can be avoided if the project footprint and corridors for construction equipment access are checked for newer rodent burrows excavation or other signs of predatory digging. The holes and excavated dirt piles created by badgers are large and conspicuous, so impact to individuals due to ground disturbance can be readily avoidable if the pre-survey is conducted immediately prior to the start of soil disturbance.

3.2.5 Mule Deer

Mule deer (*Odocoileus hemionus*) are considered important harvest species by the CDFW. Mule deer herds in Mono County are defined by their pattern of movement between summer and winter ranges. Lee Vining Canyon in the vicinity of the Tioga Inn project site is used for migration by a significant fraction of the Casa Diablo Herd (Taylor, 1988). Detailed, repeated-measures study of the magnitude and spatial patterns of deer movement both within and near the project area has identified a traditional migration corridor that passes within one-half mile to the south (Taylor, 1992). The project area and nearby slopes are not within an identified migrational holding area, but it is known that summer residency is normal in lower Lee Vining Canyon. It is possible that some deer use the remaining habitat at Tioga Inn for spring and fall migration during the periods April to June and October to November, and for foraging during summer residency. Studies in support of the original environmental impacts analysis for Tioga Inn found that the project area, in contrast to the identified migration corridor, is not highly used and itself "is of little importance" as a migration corridor (Taylor, 1992). At that time, the perception of a diminished pattern of deer use within the project area was speculatively attributed to disturbance caused by on-site tourist visits and the site's lack of required concealing cover.

It is reasonable to assume that deer use of the project area has not increased either for migratory passage or for summer residency in the interval since the prior on-site study. As in 1992, deer trails were not found during thorough survey of the entire property in 2017. Deer sign was scattered, and only one individual was seen within the project area. More generally, negative impacts to the available habitat have brought about changes that do not favor deer use. Uniform scrub dominated by bitterbrush, as described on-site in 1992 (Bagley, 1992), has been displaced and has become highly fragmented due to prior phases of Tioga Inn development. Habitat that has become degraded due to wildfire extends well off-site, and concealing cover provided by the pinyon woodland of upper slopes adjacent to the project has not recovered. The grouping of occupied residences located near Hwy 395 at a distance of 2500 ft outside of the study area has expanded, potentially creating new restrictions for wildlife access to the project site from the south. Hwy 395 has been expanded and widened, now presenting a divided, four-lane barrier to wildlife movement to and from the study area. The disturbed and increasingly isolated habitat within and immediately adjacent to the project site appears now to only marginally provide for the requirements of mule deer that reside in the area or that pass through during migration.

It is possible that the mortality of deer that enter the property could be increased as a result of project effects that increase crossings of the highways, especially the 4-lane Hwy 395, where collisions can occur. Collision, especially along Hwy 395, is considered one of the main causes of deer mortality in Mono County (Mono County Planning Dept., 2001). CDFW has developed specific plans for management of deer herds that emphasize the importance of designing projects so that a minimum of new barriers to migration are emplaced. The proposed project will create a significant new physical barrier to deer movement. Housing and tourism-based facility operations will increase daily human activity, and generate noise and new night lighting. Domestic dogs off-leash will tend to harass wildlife and drive deer onto roadways.

4 Recommended Mitigations

4.1 Special Status Plant Communities and Species

The project will temporarily disturb 1.1 acres of Great Basin Mixed Scrub shrublands dominated by bitterbrush with a lesser presence by co-dominant big sagebrush, a plant community type that is considered sensitive by the State of California. This disturbance will be required in order to install a leach field for the proposed new housing. Permanent conversion of native vegetation (6.5 acres) will occur only where the regionally common community type Big Sagebrush Scrub is dominant. In addition, 3.9 acres temporary disturbance will occur in Big Sagebrush Scrub.

Recommendation 1: Direct impacts to the project area plant communities can be minimized if proponent prepares a revegetation plan for all areas that are temporarily disturbed by the project. Mono County would review the plan for approval within 60 days of the start of construction. The revegetation plan will, at a minimum, include a planting palette that emulates remaining Great Basin Mixed Scrub on-site, methods and timing for planting and supplemental inputs including plant protection and irrigation using treated sewage effluent, success criteria that include a return to at least 50% of pre-project native vegetation cover within five years, and a monitoring and reporting program that includes annually collected revegetation progress data, demonstrates and summarizes trends, and presents photographic evidence of such, for transmittal to Mono County prior to December 1 of each of the first five years following project construction (or until all success criteria have been attained.)

Construction-related direct impacts to the occurring Masonic rockcress population are very unlikely, but the emplacement of the new road will approach to within 100 feet. The annual few-flowered woollystar population is very unlikely to be affected by the removal of a small area of potential habitat (in 2017, plants were found near but not within the area where vegetation will be displaced by the project).

Recommendation 2: Direct impact to Masonic rockcress during project construction if the construction contractor installs temporary fencing along the western edge of the existing roadway where it approaches the Masonic rockcress population, in order to prevent accidental damage due to incursion by equipment.

4.2 Special Status Wildlife Species

The project area currently supports nesting birds, very likely including a portion of a locally dense nesting population of Brewer's sparrows. Nesting birds are protected under CDFW code and by Migratory Bird Treaty provisions, and construction can be routinely halted in order to avoid nest destruction or abandonment if it is scheduled to occur during the locally recognized nesting period. Surveys that would be intended to minimize or avoid the potential for impacts to nesting birds would be effective only if they are performed immediately prior to the start of the disturbance, by a biologist who is qualified and knowledgeable of local avifauna.

Recommendation 3: Negative impacts upon nesting success can be minimized if occurring nests are discovered and avoided during project construction. A pre-disturbance nesting bird survey would be scheduled and performed within seven days prior to the start of vegetation and ground-disturbing project activities, by a qualified biologist, if construction is scheduled to begin during the period March 15 – August 15. All potential nesting habitat within 200 feet (passerine birds) or 600 ft (raptors) from the project-related disturbance limits would need to be included in the survey. Positive indications of nesting will be reported to CDFW, Bishop Office, and to the construction foreperson within 24 hours of survey completion, in order to formulate and implement avoidance measures. Appropriate measures (at a minimum including nest buffering and monitoring) will be decided in consultation with CDFW on a nest-by-nest basis.

Domestic pets, especially dogs and cats, are expected with the new housing tenancy. It is unrealistic to expect that these animals will be restrained, and wandering pets potentially will be an important new predatory limitation that is imposed on the environment reaching for some distance beyond the project footprint. Domestic cats, for example, could extirpate the breeding Brewer's sparrow population that currently utilizes scrub just outside the project area to the north and east. Pet dogs could harass terrestrial wildlife including American badger and mule deer, and thereby cause increased crossings and potential for collision at U.S. Highway 395.

Recommendation 4: It will be possible to minimize negative impacts including avoiding possible extirpation of the local breeding population of Brewer's sparrow, and similar impacts to other birds breeding near the project area, only if domestic pet predators are diligently prevented from entering their habitat. To meet this intent, tenants wishing to have pets must prepare a design kennel or other fenced enclosure that excludes pets from entering undeveloped portions of the property and (unfenced) adjacent lands, and pay for professional enclosure installation as approved by property management. The tenancy agreement for all units must include a common rule requiring leashing of pets whenever they exit the housing units or fenced enclosure.

Surveys conducted in 2017 found recent sign of burrowing by American badger, which is a CDFW Species of Concern. It is possible that individuals will den temporarily or while raising young within the project area, occupying enlarged squirrel burrows such as those found in 2017. Badgers are highly mobile animals as adults, and can escape construction-related direct impacts. Burial of dens occupied by individuals in a state of torpor, as well as burial of natal dens, would be fatal to badgers, especially young badgers, and should be avoided.

Recommendation 5: Direct mortality to American badger due to project construction can be avoided if occurring badgers are located prior to the start of construction. The pre-disturbance survey to locate denning mammals including badger would be scheduled within three days prior to the start of vegetation and ground-disturbing project activities, and must be performed by a qualified biologist. The survey will include the entire area where disturbance will occur, as well as buffers of 100 feet in all directions. Indications of denning will be reported to CDFW, Bishop Office, and to the construction foreperson within 24 hours of survey completion, in order to formulate and implement avoidance measures. Unless modified in consultation with CDFW, active dens will be buffered by a minimum distance of 100 feet, until the biologist finds that the occupation has ended.

4.3 Mule Deer

Mule deer were observed on-site, and their tracks or droppings were seen in all habitat types. The project incrementally narrows one possible route that deer of the Casa Diablo Herd could use to move into and out of Lee Vining Canyon during migration. Effective closure will be somewhat more extensive, given that the new housing and increased tourist visits will add noise, necessitate night lighting, and introduce free-roaming pet dogs to habitat that has been available for relatively unobstructed deer use. Meanwhile, forage and concealing cover availabilities have declined since 1992, when detailed study concluded that on-site deer use is generally low and ancillary to a major movement corridor that is located well off-site to the south and east.

Recommendation 6: Mule deer crossings of the highways adjacent to the project and resultant mortality due to collisions can be minimized if the project as built and operated does not cause deer to be driven into traffic. Specifically, deer that cross roads in a southward direction towards the built environment of the project (*e.g.*, spring migrants) should not be directed or chased back in the opposite direction, rather they should find safe passage through the remaining shrublands habitat to open lands east and south of the project (Figure 7). To this end, night lighting should be shielded to maintain the corridor of undeveloped vegetation between Tioga Inn developments and U.S. Highway 395 in the darkest state possible. Deer movements away from the highways will be facilitated by keeping this corridor open (no linear barriers, no brightly lit signs, no future devegetation or project development). With incorporation of this recommended mitigation and also recommended mitigation 4, above, movements will be deflected/directed to the east and south of the new housing area rather than back across highways.

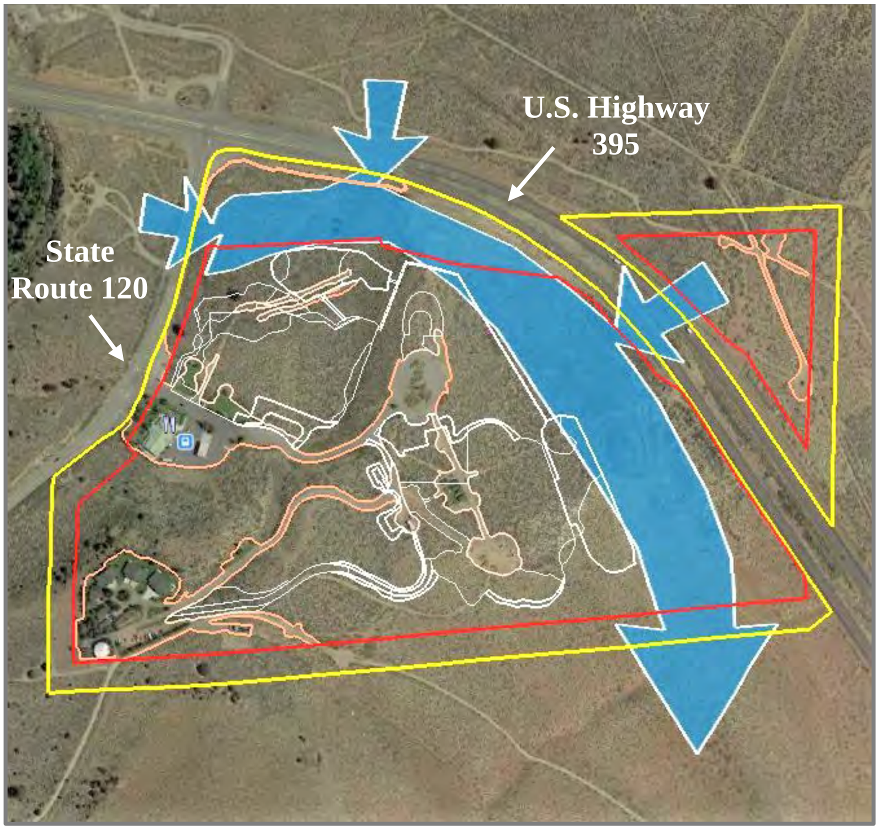

Figure 7. Corridor that should be maintained so that deer moving southward into Lee Vining Canyon are not directed onto the highways that are adjacent to the project.

The project will permanently remove 6.5 acres of shrublands habitat that may otherwise be used by migrating, holding, and resident mule deer to meet forage and cover requirements. Much of this area, and extensive off-site lands to the east and south, have failed to recover dense native vegetation following wildfire in 2000. Habitat of good utility for mule deer hence is now relatively scarce, at least to the south of U.S. Highway 395.

Recommendation 7: Impacts to mule deer habitat can be mitigated by restoring suitable habitat to areas that were damaged by wildfire. All areas burned in 2000 within the property (14.8 acres, minus 1.5 acres that will be permanently converted to new housing and road facilities) should be added to the revegetation plan as prepared by the proponent (see Recommendation 1, above). Treatment will specify seeding using locally collected bitterbrush across the entire area, at a rate of 4 pounds/acre pure live seed. In addition, diverse shrubs and grasses with available locally collected seed will be spread, bringing the total application rate to 10 pounds/acre. Seeding will be performed just prior to the onset of winter snows in the same year that project construction is initiated. In addition, at least 350 container-raised bitterbrush will be purchased, introduced into areas near the new housing, and provided with irrigation using treated sewage system effluent. Success criteria for this measure will include, at a minimum, an increase in total live cover provided by native shrub and grasses to 20% above that measured at adjacent (unseeded) burn scar areas.

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Appendix A. CNDDB search results for the USGS Lee Vining, Negit Island, Lundy, Mount Dana, Koip Peak, June Lake, Crestview, Mono Mills, and Sulphur Pond quadrangles conducted in November 2018. The Tioga Inn study area supports upland montane scrub habitats. The average elevation of the project area is 2115 m (6940 ft). The elevation range is 2070-2160 m (6800-7080 feet). Status codes are defined following the table.

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Federal Listed or State Listed**							
Astragalus monoensis Mono milkvetch	BLM sensitive USFS sensitive	Rare	1B.2	2100-3400	sagebrush scrub, roadsides, open flats, always with gravelly pumice soils	open sagebrush scrub and roadside, pumice soils near June Lake Junction 7680 ft (2340 m), 9.9 miles south	pumice flat openings in the scrub canopy are not present, but **some likelihood** exists due to broad soil and vegetation similarity

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed**							
Agrostis humilis mountain bent grass			2B.3	2600-3200	alpine slopes, subalpine coniferous forest, meadows	meadow-like on outcrops, near Upper Sardine Lake at Mono Pass, 10,350 ft (3140 m), 6.5 miles southwest	**very unlikely** due to lack of suitable habitat

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Allium atrorubens var. *atrorubens* Great Basin onion			2B.3	1200-2150	sandy or rocky upland fans, washes, granitic or volcanic soils, scrub or woodland	juniper woodland and sagebrush scrub near Conway Summit, 7600 ft (2320 m), 9.1 miles north	**some likelihood** exists due to soil and scrub vegetation similarity
Boechera bodiensis Bodie Hills rockcress	BLM sensitive USFS sensitive		1B.3	2400-2900	Great Basin scrub or pinyon-juniper woodland, rocky, crevices, often igneous	rocky near-stream riparian in Lower Lee Vining Canyon, 7085 ft (2160 m), less than 0.5 miles southwest	**some likelihood** exists due to close proximity of known population and soil and scrub vegetation similarity
Boechera cobrensis Masonic Mtn rockcress			2B.3	1370-3100	Great Basin scrub or pinyon-juniper woodland, often sandy	sagebrush scrub near West Portal, gravelly pumice soil, 6980 ft (2130 m), 5.0 miles south (Paulus, 2013)	**some likelihood** exists due to soil and scrub vegetation similarity
Boechera tiehmii Tiehm's rockcress	USFS sensitive		1B.3	2970-3590	alpine rocky slopes	rock crevices on open slope above Ellery Lake near Tioga Pass, 9950 ft (3020 m), 6.4 miles west	**very unlikely** due to lack of suitable habitat

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Boechera tularensis Tulare rockcress	USFS sensitive		1B.3	1825-3350	open subalpine to alpine coniferous forest, often rocky slopes	granitic sand at Lundy Lake, 7870 ft (2400 m), 8.9 miles northwest	**very unlikely** due to lack of suitable habitat
Botrychium crenulatum scalloped moonwort	USFS sensitive		2B.2	1250-3300	seeps, bogs, moist and shaded subalpine forest and meadows	mossy talus at Nunatak Nature Trail near Tioga Pass, 9800 ft (2970 m), 7.5 miles west, occurs also at lower elevations in Mono Co.	**very unlikely** due to lack of suitable habitat
Botrychium lunaria common moonwort	USFS sensitive		2B.3	1980-3400	seeps, bogs, moist and shaded subalpine forest and meadows	shaded riparian woodland at Lee Vining Creek, 6500 ft (1980 m), 1.3 miles north	**very unlikely** due to lack of suitable habitat
Carex davyi Davy's sedge			1B.3	1500-3200	subalpine and upper montane coniferous forest, west of Sierra Nevada crest (no Mono County occurrences)	alpine zone near Summit Lake at Mono Pass (1944), 10,600 ft (3200 m), 8.6 miles southwest, possibly extirpated	**very unlikely** due to lack of suitable habitat and large ecological distance to nearest known population

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Carex praticola northern meadow sedge			2B.2	500-3200	mesic forest, meadow edges, streambanks	moist forest above Tioga Lake, 9,950 ft (3030 m), 7.4 miles west	**very unlikely** due to lack of suitable habitat
Carex scirpoidea ssp. *pseudoscirpoidea* western single-spiked sedge			2B.2	2900-3700	alpine meadows and seeps, mesic forest	meadow among outcrops, west slope of Mount Dana, 10,650 ft (3250 m), 8.0 miles west	**very unlikely** due to lack of suitable habitat
Carex tiogana Tioga Pass sedge	USFS sensitive		1B.3	3100-3530	meadows and seeps, lake margins	meadow-like among rocks, Upper Sardine Lake near Mono Pass, 10,350 ft (3140 m), 7.8 miles southwest	**very unlikely** due to lack of suitable habitat and large elevation difference between study area and all known populations
Carex vallicola western valley sedge			2B.3	1520-2950	meadows and seeps, scrub at margins of meadows	moist streamside meadow margin, Lee Vining Creek above Ellery Lake, 9600 ft (2930 m), 7.0 miles west	**very unlikely** due to lack of suitable habitat

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Chaetadelpha wheeleri Wheeler's dune-broom			2B.2	800-1800	sandy scrub and dunes, often alkaline, playas, greasewood scrub	sandy, saline dunes with sparse scrub vegetation, northern Mono Basin, 6400 ft (1950 m), 11 miles northeast	**some likelihood** exists due to broad soil and scrub vegetation type similarity
Cusickiella quadricostata Bodie Hills cusickiella	BLM sensitive		1B.2	2000-2800	sagebrush scrub, pinyon-juniper woodland, clay soils, often rocky	open slopes with clay soil and sparse scrub vegetation, northern Mono Basin, 7280 ft (2220 m), 8.5 miles north	**some likelihood** exists due to broad soil and scrub vegetation type similarity
Draba asterophora Tahoe draba	USFS sensitive		1B.2	2500-3500	alpine rocks and scree	alpine zone at Mount Gibbs (in 1916), 11500 ft (3490 m), 6.6 miles southwest	**very unlikely** due to lack of suitable habitat
Draba cana canescent draba			2B.3	3000-4100	alpine meadows, crevices and scree, usually granite	crevices in granite near Tioga Peak, 9980 ft (3040 m), 6.0 miles west	**very unlikely** due to lack of suitable habitat and large elevation difference between study area and all known populations

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Draba praealta tall draba			2B.3	2500-4100	subalpine and alpine meadows and seeps	moist alpine meadow, west slope of Mount Gibbs, 11,500 ft (3490 m), 6.8 miles southwest	**very unlikely** due to lack of suitable habitat
Eremothera boothii ssp. *boothii* Booth's evening primrose			2B.3	900-2400	Joshua tree woodland, fire scars, pinyon-juniper woodland, scrub, often sandy	sagebrush scrub near Rush Creek confluence with Mono Lake, 6450 ft (1970 m), 2.8 miles east	**some likelihood** exists due soil and scrub vegetation similarity
Erythranthe utahensis Utah monkeyflower			2B.1	610-1950	moist lakeshore, meadow margins, riparian, sandy	moist meadow near shore of Mono Lake, 6400 ft (1950 m), 2.4 miles north	**very unlikely** due to lack of suitable habitat
Festuca minutiflora small-flowered fescue			2B.3	3200-4150	alpine rocks and scree	alpine moist, open slope near Mount Dana summit, 11,500 ft (3510 m), 6.6 miles west	**very unlikely** due to lack of suitable habitat and large elevation difference between study area and all known populations

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Ladeania lanceolata lance-leaved scurf pea			2B.3	1220-2070	open sandy scrub, dunes, often saline	dry meadow near Kirkwood Spring, northern Mono Basin, 6650 ft (2030 m), 13 miles northeast	**very unlikely** due to lack of suitable habitat
Lupinus duranii Mono Lake lupine	BLM sensitive USFS sensitive		1B.2	2000-3000	montane sagebrush scrub, coniferous forest, gravelly pumice soil	Mono Pumice Flats habitat, pumice soil, base of Mono Craters, 6800 ft (2070 m), 3.3 miles east	pumice flat openings in the scrub canopy are not present, but **some likelihood** exists due to soil and vegetation similarity
Lupinus pusillus var. *intermontanus* intermontane lupine			2B.3	1220-2060	sagebrush scrub, greasewood scrub, dunes, usually sandy	greasewood scrub, usually on active dunes, northeastern Mono Basin, 6400 ft (1940 m), 11 miles northeast	**very unlikely** due to lack of suitable habitat
Mentzelia torreyi Torrey's blazing star			2B.2	900-2100	sandy or alkaline scrub, pinyon-juniper woodland	pumice soil, sagebrush scrub near Black Point, northern Mono Basin, 6400 ft (1940 m), 5.5 miles north	**some likelihood** exists due to broad similarity of scrub vegetation

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Minuartia stricta[1] bog sandwort			2B.3	2450-3950	alpine, rocky or very coarse soils, meadows	wet rock crevices at seep zone near Ellery Lake, 10,380 ft (3160 m), 6.0 miles west	**very unlikely** due to lack of suitable habitat
Potamogeton robbinsii Robbins' pondweed			2B.3	1530-3300	aquatic habitats, marshes, lake margins	shallow submerged margin of Walker Lake, 7930 ft (2400 m), 5.8 miles southwest	**very unlikely** due to lack of suitable habitat
Ranunculus hydrocharoides frog's-bit buttercup			2B.1	1200-2800	wet meadows and streambed margins, emergent at pond edges, lakes	perennial streambed of Mill Creek, 7440 ft (2270 m), 7.1 miles northwest	**very unlikely** due to lack of suitable habitat
Salix brachycarpa var. *brachycarpa* short-fruited willow			2B.3	3200-3500	meadows, seeps, alpine scrub, subalpine mesic coniferous forest	moist meadow habitat near Gardisky Lake, 10,500 ft (3200 m), 7.2 miles west	**very unlikely** due to lack of suitable habitat and large elevation difference between study area and all known populations

1. syn. *Sabulina stricta*

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Salix nivalis snow willow			2B.3	3100-3500	alpine scrub, seeps	moist habitat near Mount Gibbs summit (in 1949), 11,500 ft (3510 m), 6.7 miles southwest	**very unlikely** due to lack of suitable habitat and large elevation difference between study area and all known populations
Silene oregana Oregon campion			2B.2	2250-2820	subalpine coniferous forest and scrub	subalpine forest with scrub understory, Warren Canyon, 9300 ft (2820 m), 6.8 miles west	**very unlikely** due to lack of suitable habitat
Streptanthus oliganthus Masonic Mtn. jewelflower	BLM sensitive USFS sensitive		1B.2	1980-3050	pinyon-juniper woodland, steep, rocky slopes	scrub on open, rocky slope near Lundy Canyon mouth, 7400 ft (2260 m), 7.1 miles north	**some likelihood** exists due to broad soil and vegetation type similarity
Stuckenia filiformis ssp. *alpina* slender-leaved pondweed			2B.2	300-2150	shallow freshwater, lake margins	shallow lake margin at June Lake Marina (in 1972), 7630 ft (2310 m), 11 miles south	**very unlikely** due to lack of suitable habitat

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Plants **Not Federal or State Listed (cont.)**							
Tetradymia tetrameres dune horsebrush			2B.2	1200-2140	sagebrush scrub, greasewood scrub, dunes, sandy, often saline	sandy sagebrush scrub, northern Mono Basin, 6600 ft (2010 m), 5.1 miles north	**some likelihood** exists due to broad soil and vegetation type similarity
Thelypodium integrifolium ssp. *complanatum* foxtail thelypodium			2B.2	1100-2500	sagebrush scrub, pinyon-juniper woodland, often alkaline	roadside at Conway Ranch, northern Mono Basin (in 1937), 6750 ft (2060 m), 5.6 miles north	**some likelihood** exists due to broad soil and vegetation type similarity
Thelypodium milleflorum many-flowered thelypodium			2B.2	1300-2500	sagebrush scrub, often sandy	sagebrush scrub, rocky volcanic soil in Cottonwood Canyon, 7000 ft (2130 m), 12 miles north	**some likelihood** exists due to broad vegetation type similarity
Viola purpurea ssp. *aurea* golden violet			2B.2	1000-2300	pinyon-juniper woodland, sagebrush scrub, often sandy	sandy sagebrush scrub in Lee Vining Creek Canyon, 6700 ft (2040 m), 1.1 miles north	**some likelihood** exists due to soil and vegetation similarity and proximity of known population

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Lichens **Not Federal or State Listed**							
Peltigera gowardii aquatic felt lichen	USFS sensitive		4.2	1310-2380	submerged rocks or streamside, possibly open sunny meadows	atypical meadow habitat near Mount Dana summit, 12,800 ft (3900 m), 6.6 miles west	**very unlikely** due to lack of suitable habitat

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Federal Listed or State Listed**							
Amphibians							
Anaxyrus canorus Yosemite toad	Thr USFS sensitive	SSC		1220-3410	ponds, streams, and adjacent meadows, usually subalpine to alpine	Tioga Lake, upper Lee Vining Creek watershed, 9680 ft (2950 m), 7.5 miles west	**very unlikely** due to lack of suitable habitat
Rana sierrae Sierra Nevada yellow-legged frog	Endang USFS sensitive	Thr WL		620-3720	ponds, streams, and adjacent meadows, usually subalpine to alpine	possibly isolated tarns near Dana Meadow, Yosemite National Park, 10,000 ft (3050 m), 7.9 miles west, CDFW finds no extant populations in Lee Vining Creek watershed (in 2013)	**very unlikely** due to lack of suitable habitat and large ecological distance to nearest known population
Birds							
Buteo swainsoni (nesting) Swainson's hawk	BLM sensitive USFWS BCC	Thr		0 - 2500	nesting in grasslands with scattered trees, riparian forest	nesting (in 1985) at riparian scrub with wet meadow at Parker Creek, 7100 ft (2150 m), 4.7 miles south	**very unlikely** due to lack of suitable habitat

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Federal or State Listed (cont.)**							
Birds (cont.)							
Empidonax traillii (nesting) willow flycatcher	Endang (ssp. *extimus*)	Endang (all ssp.)		600-2400	nesting in extensive willow riparian scrub stands, often near wet meadow habitat	may be nesting at Lee Vining Creek riparian zone between Lee Vining and Mono Lake (possibly extirpated 2000), 6430 ft (1960 m), < 1 mile north, also Lee Vining Creek upstream from Lee Vining	**very unlikely** due to lack of suitable habitat
Riparia riparia (nesting) bank swallow	BLM sensitive	Thr		0-2170	colonies nest in cavities in cliffs, river banks, road cuts	active colony nesting along shore of DeChambeau Ranch pond, 6430 ft (1960 m), 6.9 miles north	**very unlikely** due to lack of suitable habitat
Mammals							
Gulo gulo wolverine	Proposed Thr USFS sensitive	Thr FP		2040-4300	many habitats, high elevation Sierra Nevada and northern Coast Ranges	subalpine coniferous forest near Ellery Lake (in 1974), 10,200 ft (3110 m), 6.6 miles west	**very unlikely** due to lack of suitable habitat and large elevation difference between study area and all regional known occurrences

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Federal or State Listed (cont.)**							
Mammals (cont.)							
Pekania pennanti West Coast DPS fisher	BLM sensitive USFS sensitive	Thr SSC		1500-3660	expansive mature and dense forest with snags or downed logs and adjacent riparian area	subalpine coniferous forest and lakeshore near Ellery Lake, 9800 ft (2990 m), 6.5 miles west	**very unlikely** due to lack of suitable habitat
Vulpes vulpes necator Sierra Nevada red fox	Candidate (Thr or Endang) USFS sensitive	Thr		1800-3170	forest and forest gaps, high elevation central Sierra Nevada, recent sightings indicate may use lower elevations in Eastern Sierra Nevada	Lee Vining Creek Canyon at U.S. Hwy 395 (in 1989), 6830 ft (2080 m), 0.3 miles northwest	**some likelihood** exists due to proximity of historical known occurrence

Wildlife **Not Federal Listed or State Listed**							
Mollusks							
Pyrgulopsis wongi Wong's springsnail	USFS sensitive			450-2900	freshwater perennial springs and along outflow streams	spring outflow near Conway Summit, 8130 ft (2480 m), 10 miles north	**very unlikely** due to no records from Lee Vining Creek drainage

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Not Federal or State Listed (cont.)**							
Fish							
Catostomus fumeiventris Owens sucker		SSC		1200-2780	Owens River drainage in Mono and Inyo Counties	Marsh and pond at East Portal, Long Valley, 7000 ft (2120 m), 18 miles southeast	**very unlikely** due to lack of suitable habitat (no records of occurrence in Lee Vining Creek drainage)
Amphibians							
Hydromantes platycephalus Mount Lyell salamander		WL		1200-3500	rocky soil or talus in moist to wet habitat very near surface water	Upper Rush Creek near Marie Lakes (in 1973), 9650 ft (2940 m), 15 miles southwest	**very unlikely** due to lack of suitable habitat.
Birds							
Accipiter gentilis (nesting) northern goshawk	BLM sensitive USFS sensitive	SSC		300-3290	nesting in expansive stands of relatively closed coniferous forest	eyries (in 1981) in montane coniferous forest near Lee Vining Creek, 8400 ft (2560 m), 4.3 miles west	**very unlikely** due to lack of suitable habitat. May forage transiently in study area.

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Not Federal or State Listed (cont.)**							
Birds (cont.)							
Centrocercus urophasianus Bi-State DPS (nesting, leks) greater sage grouse	BLM sensitive USFS sensitive	SSC		2100-3200	foraging, nesting in sagebrush scrub, leks at openings in scrub, brood raising at fields and meadows with adjacent sagebrush scrub	active lek area at Parker Meadows, 6900 ft (2100 m), 4.8 miles south, year-long use of sagebrush scrub west of Grant Lake, 7150 ft (2170 m), 5.5 miles south	**Some likelihood** due to proximity of known population and broad similarity of sagebrush habitat
Circus hudsonius (nesting) northern harrier		SSC		<0 - 3050	nesting on ground in expansive meadows, marshes, marshland scrub, foraging same habitats	nesting at lakeside meadows near riparian forest at lower Lee Vining Creek, 6400 ft (1940 m), 1.9 miles north	nesting and foraging **very unlikely** due to lack of suitable habitat
Coturnicops noveboracensis (nesting) yellow rail	USFWS BCC	SSC		0 - 2600	nesting on ground in marshes, meadows, foraging same habitats	nesting at lakeside meadow near shoreline of Mono Lake, 6400 ft (1950 m), 4.8 miles north	nesting and foraging **very unlikely** due to lack of suitable habitat
Falco mexicanus (nesting) prairie falcon	USFWS BCC	WL		120-2870	nesting on vertical cliffs, foraging over open grasslands, open scrublands	nesting 9-10 miles south of study area (exact locations are sensitive), 8000-8160 ft (2440-2490 m)	**very unlikely** due to lack of suitable habitat

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Not Federal or State Listed (cont.)**							
Birds (cont.)							
Larus californicus (nesting) California gull		WL		0-1980	nesting on small islands, freshwater lakes	nesting colonies on islands in Mono Lake, 6400 ft (1950 m), 4.3 miles northeast	**very unlikely** due to lack of suitable habitat.
Pandion haliaetus (nesting) osprey		WL		0 - 2460	nests in large trees, forages at aquatic and riverine habitats	nesting on tufa towers at Mono Lake, 6400 ft (1950 m), 1.6 miles northeast	**very unlikely** due to lack of suitable habitat
Setophaga petechia (nesting) yellow warbler	USFWS BCC	SSC		0 - 2600	nesting and foraging in riparian scrub/forest, may nest in shrubby montane forest gaps	nesting population in riparian zone at lower Lee Vining Creek, 6400 ft (1940 m), 1.1 miles north	**very unlikely** due to lack of suitable habitat
Spizella breweri (nesting) Brewer's sparrow	USFWS BCC			1900-2000	nesting and foraging in sagebrush scrub	nesting in brushy riparian zone at Lee Vining Creek, 6400 ft 1950 m), 1.2 miles north	**some likelihood** exists due to habitat similarity and local connectivity, and proximity of known population

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Not Federal or State Listed (cont.)**							
Birds (cont.)							
Xanthocephalus xanthocephalus (nesting) yellow-headed blackbird		SSC		0 - 2100	nests in freshwater emergent marsh, may nest in riparian forest	nesting in marsh at Lee Vining Creek confluence with Mono Lk., 6400 ft (1950 m), 1.9 miles north	**very unlikely** due to lack of suitable habitat
Mammals							
Aplodontia rufa californica Sierra Nevada mountain beaver		SSC		1950-2300	coniferous and riparian forest, areas of dense understory, near water	wet meadow and lakeshore near Mono Lake, 6500 ft (1980 m), 4.1 miles north	**very unlikely** due to lack of suitable habitat
Brachylagus idahoensis pygmy rabbit	BLM sensitive USFS sensitive	SSC		1830-2560	sagebrush, pinyon-juniper woodland with sagebrush understory, dense sagebrush “island” patches	tall, dense sagebrush scrub on both sides of U.S. 395 near Walker Creek, 6800 ft (2060 m), 2.3 miles south[2]	**some likelihood** exists due to vegetation and elevation similarity
Euderma maculatum spotted bat	BLM sensitive	SSC		<0 - 3230	roost and natal colonies in crevices, caves, forages at aquatic and riverine habitats	detected foraging over shoreline meadow habitat at Mono Lake, 6450 ft (1970 m), 4.8 miles north	roosting is **very unlikely** due to lack of suitable habitat, but may forage over the study area

2. Two active warrens recently confirmed in willow scrub near Mono Lk. shoreline, 6420 ft (1960) m, 3.4 miles north, possibly extirpated 2016 (Paulus, 2016).

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Not Federal or State Listed (cont.)**							
Mammals (cont.)							
Eumops perotis californicus western mastiff bat	BLM sensitive	SSC		0 - 2600	nests in crevices, trees, buildings, forages at a wide variety of habitats, western U.S.	detected foraging over aquatic habitat at Poole Power Plant, Lee Vining Cr., 7850 ft (2380 m), 3.6 miles west	**some likelihood** of roosting or nesting and foraging due to broad habitat similarity
Lepus townsendii townsendii western white-tailed jackrabbit		SSC		1950-3350	sagebrush scrub, open coniferous forest	likely sagebrush scrub near Wilson Butte (in 1916), 6900 ft (2090 m), 2.8 miles south	documented local occurrence is old, but **some likelihood** due to similar habitat and elevation
Martes caurina sierrae Sierra marten	USFS sensitive			550 – 3660	closed-canopy forest with snags and downed tree boles, usually old growth coniferous, Cascades and Sierra Nevada ranges	subalpine coniferous forest near Ellery Lake (in 1929), 10,200 ft (3110 m), 6.6 miles west	**very unlikely** due to lack of suitable habitat
Myotis evotis long-eared myotis	BLM sensitive			10-2930	roost in rock outcrops, dead trees, sometimes mines, forages over dense vegetation or water	detected foraging over aquatic habitat at Poole Power Plant, Lee Vining Cr., 7850 ft (2380 m), 3.6 miles west	roosting is **very unlikely** due to lack of suitable habitat, but may forage over the study area

Species	Federal	State	CNPS	elevation range (m)	habitat range	nearest occurrence	likelihood of occurrence at project
Wildlife **Not Federal or State Listed (cont.)**							
Mammals (cont.)							
Myotis yumanensis Yuma myotis	BLM sensitive			0-2930	roosting colonies in caves, mines, buildings, under bridges, always near water, forages over open water	detected foraging over shoreline meadow habitat at Mono Lake, 6450 ft (1970 m), 4.8 miles north	**some likelihood** of roosting or nesting and foraging due to proximity of aquatic habitat
Sorex lyelli Mount Lyell shrew		SSC		2000-3260	moist, grassy meadows with riparian willows, central Sierra Nevada	likely meadow habitat near Wilson Butte (in 1915), 6900 ft (2090 m), 2.8 miles south	**very unlikely** due to lack of suitable habitat
Taxidea taxus American badger		SSC		< 0 - 3600	variety of relatively dry and open scrub, forest and grassland habitats	sagebrush scrub near U.S. Highway 395 at West Portal, 6980 ft (2120 m), 5.1 miles south	**some likelihood** due to similar habitat and elevation

Federal = U.S. Fish and Wildlife Service under the Endangered Species Act (CDFW, 2018a, 2018d). Candidate (Cand.) = designated Candidate for Listing
Endang = Endangered
Thr = Threatened
BCC = Birds of Conservation Concern

State = California Department of Fish and Wildlife listings under the California Endangered Species Act (CDFW, 2018a, 2018d).
Endang = Endangered
Thr = Threatened
SSC = Species of Concern, FP = Fully Protected, WL = Watchlist

CNPS = California Native Plant Society listings (CNPS, 2001, 2018)
1B = rare and endangered in California and elsewhere
2B = rare, threatened or endangered in California, but more common elsewhere
4 = watchlist species of limited distribution Threat Code extensions:
.1 is Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 is Fairly endangered in California (20-80% of occurrences threatened)
.3 is Not very endangered in California (< 20% of occ's threatened or no current threats known.

Appendix B. List of plant species that were observed to occur at the Tioga Inn project in April-May 2017. The study area totals 93.4 acres and ranges in elevation between 6800 feet (2070 meters) and 7080 feet (2160 meters). Presence noted within each occurring available habitat type (Big Sagebrush Scrub/Great Basin Mixed Scrub/disturbed) is indicated. Growth form (Habit) codes are defined below.

Plant Families and Species		**Habit**	**Habitat Type**		
			BSS[1]	**GBMS**	**Dist.**
Gnetophyta					
Pinaceae					
Pinus jeffreyi	Jeffrey pine	NT	x	x	
Pinus monophylla	singleleaf pinyon	NT	x		
Anthophyta (Dicotyledones)					
Apiaceae					
Lomatium nevadense	Nevada desert parsley	NPH		x	
Asteraceae					
Ambrosia acanthicarpa	annual bur-sage	NAH	x	x	x
Artemisia tridentata	big sagebrush	NS	x	x	
Chaenactis stevioides	desert pincushion	NAH	x	x	
Chaenactis xantiana	fleshy pincushion	NAH	x		
Chrysothamnus viscidiflorus	yellow rabbitbrush	NS	x	x	
Dieteria canescens	hoary aster	NPH	x	x	x
Ericameria nauseosa	rubber rabbitbrush	NS	x	x	x
Ericameria parryi	Parry rabbitbrush	NS	x		
Erigeron aphanactis	rayless fleabane	NPH	x		
Pleicanthus spinosus	spiny wire lettuce	NPH	x		
Tetradymia canescens	spineless horsebrush	NS	x	x	
Boraginaceae					
Cryptantha circumscissa var. *circumscissa*	cushion cryptantha	NAH	x	x	x
Cryptantha echinella	prickly cryptantha	NAH	x	x	x
Cryptantha muricata var. denticulata	prickly-nut cryptantha	NAH	x		
Cryptantha torreyana var. *torreyana*	Torrey's cryptantha	NAH	x	x	
Cryptantha watsonii	Watson's cryptantha	NAH	x		

Plant Families and Species		Habit	Habitat Type		
			BSS[1]	GBMS	Dist.
Boraginaceae (cont.)					
Nama densa var. densa	dense purple mat	NAH	x		x
Phacelia ramosissima	branching phacelia	NPH	x		
Phacelia vallis-mortae	Death Valley phacelia	NAH	x		x
Plagiobothrys kingii var. *harknessii*	Northern Great Basin popcorn flower	NAH	x		x
Tiquilia nuttallii	Nuttall's tiquilia	NAH	x	x	x
Brassicaceae					
Boechera cobrensis	Masonic rockcress	NPH	x		
Boechera inyoensis	Inyo rockcress	NPH	x		
Boechera pulchra	beautiful rockcress	NPH	x		
Boechera retrofracta	reflexed rockcress	NPH	x		
Boechera sparsiflora	sicklepod rockcress	NPH	x		
Caulanthus pilosus	chocolate drops	NBH	x		
Descurainia pinnata ssp. *brachycarpa*	western tansy mustard	NAH	x	x	
Descurainia sophia	flix-weed	IAH	x	x	x
Erysimum capitatum var. *capitatum*	Douglas' wallflower	NPH	x	x	
Phacelia bicolor	bicolored phacelia	NAH	x	x	x
Phacelia vallis-mortae	Death Valley phacelia	NAH		x	
Phacelia sp.	phacelia	NAH	x		
Sisymbrium altissimum	tumble mustard	IBH	x	x	x
Chenopodiaceae					
Chenopodium atrovirens	dark goosefoot	NAH	x	x	x
Chenopodium sp.	goosefoot	NAH	x	x	
Grayia spinosa	spiny hopsage	NS	x	x	
Salsola tragus	Russian thistle	IAH			x
Fabaceae					
Astragalus newberryi var. *newberryi*	Newberry's milkvetch	NPH	x		
Lupinus argenteus var. argenteus	silver lupine	NPH	x	x	
Lupinus argenteus var. montigenus	silver lupine	NPH	x		

Plant Families and Species		Habit	Habitat Type		
			BSS[1]	GBMS	Dist.
Geraniaceae					
Erodium cicutarium	redstem filaree	IAH	x		x
Grossulariaceae					
Ribes velutinum	desert currant	NS	x		
Loasaceae					
Mentzelia albicaulis	white-stem blazing star	NAH	x		x
Mentzelia congesta	clustered blazing star	NAH	x	x	
Mentzelia montana	mountain blazing star	NAH	x		
Montiaceae					
Calyptridium monandrum	common pussypaws	NAH	x		x
Calyptridium roseum	rosy pussypaws	NAH	x		
Onagraceae					
Camissonia pusilla	little wiry suncup	NAH	x	x	
Gayophytum diffusum ssp. *parviflorum*	summer snowflakes	NAH	x	x	x
Orobanchaceae					
Castilleja applegatei ssp. *pallida*	Applegate’s paintbrush	NPH		x	
Papaveraceae					
Argemone munita	chicalote	NPH	x		
Phrymaceae					
Mimulus nanus var. *nanus*	dwarf purple monkeyflower	NAH	x	x	
Polemoniaceae					
Aliciella leptomeria	sand aliciella	NAH	x		
Collomia tinctoria	staining collomia	NAH	x	x	x
Gilia brecciarum ssp. *brecciarum*	Nevada gilia	NAH	x		
Eriastrum diffusum	diffuse woollystar	NAH			x
Eriastrum signatum	spotted woollystar	NAH	x	x	
Eriastrum sparsiflorum	few-flowered woollystar	NAH	x	x	

Plant Families and Species		Habit	Habitat Type		
			BSS[1]	GBMS	Dist.
Polemoniaceae (cont.)					
Linanthus pungens	granite gilia	NPH	x	x	
Phlox stansburyi var. *brevifolia*	Stansbury phlox	NPH	x		
Polygonaceae					
Chorizanthe brevicornu var. *spathulata*	Great Basin brittle spineflower	NAH	x	x	
Chorizanthe watsonii	Watson's spineflower	NAH	x		
Eriogonum microtheca var. *laxiflorum*	Great Basin wild buckwheat	NS	x		
Eriogonum spergulinum var. *reddingianum*	Redding's wild buckwheat	NAH	x		
Eriogonum umbellatum var. *nevadense*	Nevada sulphur flower	NS	x		
Eriogonum sp.	wild buckwheat	NAH	x		
Oxytheca dendroidea var. *dendroidea*	puncture bract	NAH	x	x	
Polygonum aviculare ssp. *depressum*	common knotweed	IPH			x
Ranunculaceae					
Delphinium andersonii	Anderson's larkspur	NPH	x		
Ranunculus testiculatus	hornseed buttercup	IAH			x
Rosaceae					
Cercocarpus ledifolius var. *intermontanus*	curl-leaf mountain mahogany	NS	x	x	
Prunus andersonii	desert peach	NS	x	x	x
Purshia tridentata var. *tridentata*	antelope bitterbrush	NS	x	x	
Salicaceae					
Salix exigua	sandbar willow	NS	x		
Anthophyta (Monocotyledones)					
Cyperaceae					
Carex douglasii	Douglas' sedge	NPGL	x		
Poaceae					
Bromus tectorum	cheat grass	IAG	x	x	x
Elymus cinereus	basin wildrye	NPG	x		

Plant Families and Species		Habit	Habitat Type		
			BSS[1]	GBMS	Dist.
Poaceae (cont.)					
Elymus elymoides	squirreltail grass	NPG	x	x	
Festuca trachyphylla	hard fescue	IPG	x[2]		x[2]
Stipa comata var. *comata*	needle-and-thread grass	NPG	x	x	
Stipa hymenoides	sand rice grass	NPG	x	x	
Stipa occidentalis	western needle grass	NPG	x		

1. Includes recovering burn areas classified here as Curl-leaf Rabbitbrush Scrub.
2. Occurs only with irrigation for slope stabilization near roads.

Habit:

A = annual	I = introduced
B = biennial	N = native
G = grass	P = perennial
GL = grass-like	T = tree
H = herb	

Appendix C. List of wildlife species that were observed to occur or inferred to occur due to distinctive sign at the Tioga Inn project in April-May 2017. The study area totals 93.4 acres and ranges in elevation between 6800 feet (2070 meters) and 7080 feet (2160 meters). Presence was observed at native habitat types (generally, sagebrush scrub, including areas recovering from wildfire) and disturbed areas (devegetated or converted to developed facilities) of the study area.

Families and Species		**Habitat Type**	
		Native Scrub	**Disturbed**
Birds			
Galliformes - **Odontophoridae**			
Callipepla californica	California quail	x	
Columbiformes - **Columbidae**			
Zenaida macroura	mourning dove	x	x
Streptopelia decaocto	Eurasian collared dove		x
Columba livia	rock pigeon		x
Charadriiformes - **Laridae**			
Larus californica	California gull	x[f]	x
Accipitriformes - **Cathartidae**			
Cathartes aura	turkey vulture	x[f]	
Accipitriformes - **Accipritridae**			
Buteo jamaicensis	red-tailed hawk	x[f]	
Falconiformes - **Falconidae**			
Falco sparverius	American kestrel	x	x[n1]
Passeriformes - **Tyrannidae**			
Tyrannus verticalis	western kingbird	x	
Passeriformes - **Corvidae**			
Cyanocitta stelleri	Steller's jay	x	x
Nucifraga columbiana	Clark's nutcracker	x	
Corvus corax	common raven	x	x
Passeriformes - **Alaudidae**			
Eremophila alpestris	horned lark	x	
Passeriformes - **Hirundinidae**			
Tachycineta bicolor	tree swallow	x[f]	x[f]
Tachycineta thalassina	violet-green swallow	x[f]	x[f]

Families and Species		Habitat Type	
		Native Scrub	Disturbed
Birds **(cont.)**			
Passeriformes - **Turdidae**			
Turdus migratorius	American robin	x	x
Passeriformes - **Fringillidae**			
Haemorhous cassinii	Cassin's finch		x
Passeriformes - **Passerelidae**			
Spizella breweri	Brewer's sparrow	x[n]	
Zonotrichia atricapilla	golden-crowned sparrow	x	x
Zonotrichia leucophrys	white-crowned sparrow	x	x
Pipilo chlorurus	green-tailed towhee	x[n]	
Junco hyemalis	dark-eyed junco (Oregon)	x	
Passeriformes - **Icteridae**			
Euphagus cyanocephalus	Brewer's blackbird	x	x
Passeriformes - **Cardinalidae**			
Pheucticus melanocephalus	black-headed grosbeak	x	x
Passeriformes - **Passeridae**			
Passer domesticus	house sparrow	x	x[n]
Reptiles			
Iguanidae			
Sceloporus graciosus	sagebrush lizard	x	
Mammals			
Rodentia - **Geomyidae**			
Thomomys bottae	pocket gopher	x[s]	
Rodentia - **Heteromyidae**			
Perognathus parvus	Great Basin pocket mouse	x[s]	
Dipodomys sp.	kangaroo rat	x	
Rodentia - **Cricetidae**			
Peromyscus maniculatus	deer mouse	x[s]	x[2]
Neotoma sp.	woodrat	x	
Rodentia - **Sciuridae**			
Otospermophilus beecheyi	Beechey ground squirrel	x	x

Families and Species		**Habitat Type**	
		Native Scrub	**Disturbed**
***Mammals* (cont.)**			
Lagomorpha - **Leporidae**			
Sylvilagus nuttallii	Nuttall's cottontail rabbit	x	x
Artiodactyla - **Cervidae**			
Odocoileus hemionus	mule deer	x	
Carnivora - **Mephitidae**			
Mephitis mephitis	striped skunk	x	
Carnivora - **Canidae**			
Canis latrans	coyote	x	
Carnivora - **Mustelidae**			
Taxidea taxus	American badger	x^{s2}	

1. pair nesting in nest box provided at existing housing.
2. presence noted by Dennis Dormaille, personal communication, May 19, 2017.

x^s = presence identified through observation of sign,
x^f = present only during site flyover,
x^n = presence includes observation of nesting or breeding territory establishment behaviors.

J1

An Archaeological Survey of the Tioga Workforce Housing Project Area, Lee Vining, California

Prepared by Mary Farrell
Trans-Sierran Archaeological Research, with
Bauer Planning and Environmental Services, Inc., for
Mono County Community Development Department

June 4, 2019

Management Summary

In cooperation with Bauer Planning and Environmental Services, Inc., Trans-Sierran Archaeological Research (TSAR) has conducted a records review and archaeological survey to determine whether the proposed Tioga Workforce Housing Project, located south of Lee Vining in Mono County, California, would have significant effects on cultural resources, per the California Environmental Quality Act. The project, originally approved and permitted in 1993, included construction of a convenience store and gas station, employee housing, a hotel, and a full-service restaurant, as well as associated roads, parking areas, and utilities. The gas station, the convenience store (which also houses the Whoa Nellie Deli), employee housing, and much of the infrastructure have been constructed, but some project components were not completed. Although Mono County requires no further analysis or review of the project components already approved, some new elements have been proposed to respond to evolving trends in tourism and tourist-centered activities and to support the 2012 Mono Basin Community Plan. The changes will require an updated Specific Plan and a supplement to the 1993 Environmental Impact Report (EIR).

This report describes the results of a records search, a review of the previous findings, and archaeological survey conducted for the Tioga Workforce Housing Project. Over 30 years ago, TSAR had surveyed the entire project area for the original proposal; one historic site and several isolates were recorded. Since that time, several additional archaeological investigations have included parts of the project area, most for the environmental analysis prepared for the widening of US Highway 395, which goes through the project area. The historic site initially recorded by TSAR, a ditch system and associated trash scatters, was investigated further and assigned site number CA-MNO-2764H. The site was determined not eligible for the California Register of Historical Resources, and was partially obliterated by the highway widening project. The new survey verified the previous results: no archaeological sites eligible for the California Register of Historical Resources have been found in the project area, and no archaeological mitigation will be needed for the project.

Mono County also consulted with tribes who have traditional and cultural ties with the Mono Basin to assess potential impacts of the project on tribal cultural resources, under California's Assembly Bill 52. The Tribal Historic Preservation Officer of the Bridgeport Indian Colony indicated that ancestral burials are considered tribal cultural resources, and that there is a possibility that one or more, no longer marked, could be located in the project area. In further consultation, the Kuzadika'a Indian Community also requested a paid tribal monitor be present during ground disturbance associated with the project. Upon careful consideration, the County has developed a mitigation measure to address the tribes' concern, which will be included in the Draft Environmental Impact Report.

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Figures

Introduction

This report describes archaeological survey conducted as part of environmental studies to determine potential effects of the proposed Tioga Workforce Housing project, about ½ mile south of Lee Vining, California. The project area is located at 22 Vista Point Road, close to the intersection of SR 120 and US395. The project is in roughly the geographic center of Mono County, which covers an area of 3,132 square miles on the eastern slopes of the Sierra Nevada mountain range in east central California. The project parcel comprises the southeast quarter of the northwest quarter and the southwest quarter of the northeast quarter of Section 14, Township 1 North, Range 26 East (MDBM).

The Tioga Workforce Housing project proposal encompasses multiple elements, many of which were analyzed in a Final EIR and Specific Plan that was certified by the Mono County Board of Supervisors in 1993. The original concept, as reflected in the 1993 documents, was to provide a full range of services and facilities for tourists (visiting Yosemite National Park, the Mono National Scenic Recreation Area, the Lee Vining area, and the eastern Sierra Nevada generally), as well as meeting facilities, jobs and employee housing opportunities for area residents.

The current proposal retains the goals and concepts developed in 1993, with several newly added elements. Most significantly, the current proposal would provide up to 150 new workforce housing bedrooms. The current proposal also provides for a third gas pump island and overhead canopy, adds additional parking (to accommodate onsite guest vehicles as well as a general-use park-and-ride facility and bus parking for Yosemite transit vehicles), expands the existing onsite septic system to increase capacity and incorporate a subsurface irrigation system, replaces an existing water storage tank with a new tank on a nearby site, adds a new 30,000-gallon onsite propane tank (the new tank would eventually replace the existing five onsite tanks with a combined 2,500-gallon capacity), modifies the boundaries and acreage of designated open space, and modifies parcel boundaries.

Several of the uses approved in 1993 were constructed and placed into operation during the late 1990s. Construction of the hotel and restaurant elements was postponed due to a general economic downturn and other factors. The purpose of the current project proposal is to complement earlier-approved components with modifications and new elements that respond to evolving trends in tourism, resource conservation and employment.

Although Mono County requires no further analysis or review of the originally proposed project components, implementing the proposed changes to the previously approved project will require an updated Specific Plan and a supplement to the 1993 Environmental Impact Report (EIR). The Mono County Community Development Department has contracted with Bauer Planning and Environmental Services, Inc., to help prepare the Specific Plan and EIR supplement. This report describes the results of a cultural resources records search, a review of the previous findings, and archaeological survey to determine if there are historical resources that would be affected by the proposed project. The work was conducted for the EIR supplement by Trans-Sierran Archaeological Research, as part of the Bauer team.

Mono County also consulted with tribes who have traditional and cultural ties with the Mono Basin to assess potential impacts of the project on tribal cultural resources, under California's Assembly Bill 52. AB 52 requires that tribal cultural resources be considered under the California Environmental Quality Act: tribal cultural resources often include archaeological sites, but they can also include places, objects, sites, or landscapes that are not discernible to, or adequately evaluated by, archaeologists. Indian communities may have additional information and concerns that should be considered in the environmental analyses.

Under the provisions of AB 52, the Washoe Tribe of Nevada and California requested to be consulted about any projects that might affect Washoe cultural resources. The Bridgeport Indian Colony also requested to be consulted about the Tioga Workforce Housing project. Because of their proximity to the project area and their historical ties to Mono Basin, the Kutzedika'a Indian Community of Lee Vining and the Utu Utu Gwaitu Tribe of the Benton Paiute Reservation were also contacted. A previous draft of this report was shared with those four Tribes to provide them with information about the results of the archaeological investigations.

Figure 1. Overview of project area. View from approved hotel site looking toward Whoa Nellie Deli and Mobil Gas Station.

Figure 2. Regional location map.

Project Location and Environmental Setting

The proposed project is located on the site of the existing Tioga Gas Mart and Whoa Nellie Deli near the town of Lee Vining in Mono County. The 74-acre parcel is located in the Mono Basin, just south of the intersection of State Route 120 and US Highway 395 (Figures 1-3). About 64 acres of the parcel lie west of US Highway 395, and 10 acres to the east. An archaeological survey was conducted of the entire project area (Burton 1984) as part of environmental studies undertaken to evaluate the potential effects of the original proposal, but a new survey was considered necessary for the current project for three reasons. First, archaeological site visibility can vary over the decades, due to erosion and sedimentation, changes in vegetative cover, or exposure from ground disturbance. Second, the original survey may have ignored cultural resources too young to be considered historic in 1984, but which now meet the age requirement for the California Register of Historical Resources. Third, changes to the California Environmental Quality Act that went into effect in 2016 require consultation with Tribes to determine if a proposed project could affect Tribal Cultural Resources, and consultation can benefit from a more-current archaeological survey.

Setting and background information is adapted from the previous survey report (Burton 1984), updated where there have been changes in the decades since that report was written. The project area is located just south of the small town of Lee Vining, California, and a little over a mile west of the present shore of saline Mono Lake, on the western margin of the Basin and Range province. The Sierra Nevada range rises steeply to the west, and the topography of the project area consists of a lateral glacial moraine and adjacent hillsides and flats. Elevations range from approximately 6800 to 6960 feet above sea level; soils are eroded glacial, lacustrine, and volcanic deposits.

In the rain shadow of the Sierra Nevada, the Lee Vining area receives an average of 15 inches of precipitation annually, with most of it falling as snow. Fresh water is available year-round in Lee Vining Creek just west of the project area, and a now-dry spring once flowed intermittently on the project's east-facing slope, along a geological fault (Jim Palus, personal communication 2016). Vegetation within the project area includes bitterbrush (*Purshia tridentata*), sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus nauseosus*), desert peach (*Prunus andersonii*), aster (*Aster* sp.), and various grasses, including Indian rice grass (*Oryzopsis hymenoides*). In addition, there are several isolated pinyon pine trees (*Pinus monophyla*), Jeffrey pine (*P. jeffreyii*), lodgepole pine (*P. murrayana*), wild rose (*Rosa* sp.), and willow (*Salix* sp.). Lawns, ornamental shrubs, and aspen have been planted as landscaping around the residences and parking lots.

Fauna of the area include mule deer (*Odocoileus hemionus*), bear (*Ursus americanus*), numerous small rodents and migratory waterfowl, and other birds. Antelope (*Antilocapra americana*) and possibly mountain sheep (*Ovis canadensis*) may have been present in earlier times. More details of the environmental setting will be available in other reports prepared for the EIR supplement.

Historical Background

The historical background of the area is discussed in several previous reports (for example, Gilreath 1995); the following brief summary is adapted from the original survey report (Burton 1984). When Euro-Americans first entered Mono Basin in the mid-nineteenth century, the area was occupied by the Kuzedika'a, also known as the Mono Lake Paiute. The Paiute and their ancestors and other Native American groups have lived in the area for thousands of years; archaeological evidence documents occupation at least 6,000 years ago. During the protohistoric and historic periods, the Kuzedika'a's economy was based on hunting, gathering, and trade; they moved seasonally through various environmental settings to collect a wide variety of resources (Davis 1965). Earlier economies may have depended more on specialized hunting and trade (Bettinger 1979:53). The project area is located near or adjacent to dryland seed sources, pinyon groves, a deer migration route, and Native American trade and travel routes (Burton 1984).

Lt. Tredwell Moore "discovered" Mono Basin in 1852 when he led a punitive expedition against the Yosemite Miwok who had fled over the crest (Fletcher 1982:22). Following Moore's entry into the basin, gold was discovered and three towns (Dogtown, Monoville, and Aurora) were built and abandoned as gold deposits were developed and depleted. By 1861 Leroy Vining had erected a sawmill along the creek that now bears his name to supply lumber to mining camps (Fletcher 1987:79).

In 1855-1857, A.W. Von Schmidt was commissioned to survey lands east of the Sierra, including Mono Basin and later Owens Valley to the south, in part to assess the region's agricultural potential (Fletcher 1987:24). In the 1860s Euro-American settlers began establishing farms and ranches along the lower stretches of eastern Sierran streams, growing hay, alfalfa, wheat, barley, and oats, and raising cattle, sheep, and horses (Fletcher 1987:38). The Kuzedika'a were forced out of favorite spring and summer camps, and the newcomers cut pinyon trees, a principle Paiute food source, for fuelwood. To survive, the Kuzedika'a adapted to the white farmers' and miners' economy, first trading traditional items like game and baskets, and eventually labor (Fletcher 1987:41,73). Nevertheless, the Kuzedika'a continued many of their food-gathering and other traditions well into the twentieth century (Hess 2014; LaBraque 2015).

A major gold strike at Bodie in 1877 brought new waves of miners to the basin. Numerous new mining districts were formed, including the Lundy/Homer (1879), Tioga (1878), Jordan (1879), Vernon (1882), and Lee Vining Creek (1882). By 1880 the Mono/Mammoth Toll Road, which probably followed an earlier Paiute route, was completed (Fletcher 1982:122). The alignment mapped by Fletcher may be the same as the dirt road that enters the northeast corner of the project area. Four thousand acres were being farmed in the Mono Basin by the 1890s, and Fletcher maps two farms, dating to ca. 1880 to 1930, to the east of the project area (Fletcher 1982:118-130). The 1901 Mt Lyell USGS topographic map depicts a ditch running through the project parcel; this ditch was part of the Lee Vining ditch system, recorded as historic site CA-MNO-2764H (Marvin and Costello 1993); its history is described below in the "Previous Investigations/Records Review" section. By the mid-1930s most of the farms of Mono Basin were bought up by the City of Los Angeles for water rights (Fletcher 1987:93-94).

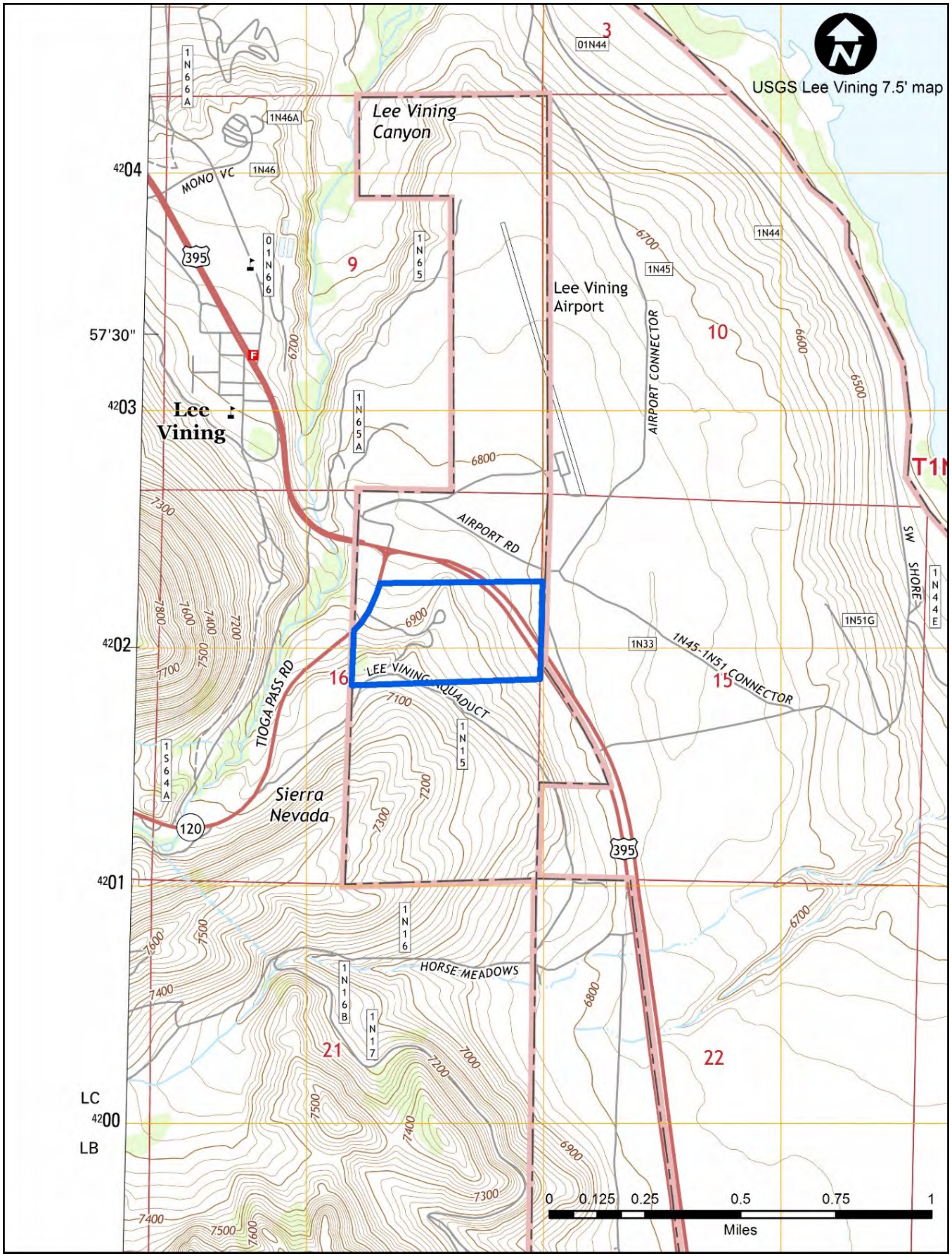

Figure 1. Tioga Workforce Housing Project Area location, adapted from 2012 USGS Lee Vining 7.5 minute topographic map. Project area outlined in blue.

The town of Lee Vining was founded in the 1920s by Chris Mattly, who subdivided his ranch (Hess 2014:25-30), and the first lots were sold in 1926 (LaBraque 2015:26). Town businesses served travelers using the recently completed road over Tioga Pass from Yosemite (Hess 2014:26). In the 1920s the alignment of the Tioga Pass road passed to the north of the project area, near the current Utility Road. Another historic route in the area is the "Old County Road," recorded as CA-MNO-2761H; it ran from Bridgeport to Casa Diablo Hot Springs. In the project area, its alignment was east of the current US Highway 395, approximately following the earlier Mono Lake and Lake District Toll Road (Marvin and Costello 1993:24-25; see also Figure 4, a portion of the 1901 Mt Lyell USGS topographic map). US Highway 395 was built through what is now the Tioga Workforce Housing project area in 1936, and the Tioga Pass road was realigned to its current location, just west of the parcel, in 1970 (Marvin and Costello 1993).

Previous Investigations / Records Review

Trans-Sierran Archaeological Research had surveyed the entire project area for the original proposal (Burton 1984); one historic site and ten isolated artifacts were recorded. The site consisted of irrigation ditches and historic trash dumps. Historic information suggested the ditches could be late-nineteenth century or early-twentieth century, but the dumps were likely post-1900, based on the temporally diagnostic artifacts present. The isolates included other segments of the irrigation ditches, a cone-top beer can, two sun-colored amethyst glass fragments, two small trash deposits, two prospect pits, a pumice block, and an obsidian flake.

A records search conducted by the Eastern Information Center of the California Historical Resources Information System in December 2016 indicated that fifteen other cultural resources studies have been conducted within a half-mile radius of the project area. Although some of the cultural resources studies related to utility and hydroelectric projects proposed by Southern California Edison (e.g., Delu and Braco 2010), most of the studies were conducted for the US Highway 395 widening project, and included surveys, site recording, historic research, site testing, and evaluation (Grantham 1991; Laylander 1996; Leach-Palm et al. 2010; Marvin and Costello 1993; Wickstrom 1992; Wickstrom and Jackson 1993). Ten of these studies included portions of the project area; the ditch system first noted by Burton was recorded in more detail and given site number CA-MNO-2764H (Costello and Marvin 1993).

Thirteen cultural resources properties have been recorded within a half-mile radius of the project area. The properties include Native American and Euro-American artifact scatters and features, with temporally diagnostic artifacts indicating use from as early as ca. A.D. 600 into the twentieth century. Only one of these properties, the ditches first recorded by Burton in the original survey for the Tioga Workforce Housing project, extends into the project area. The ditches are part of a system that took water from Lee Vining Creek to irrigate agricultural fields

Figure 2. Portion of the USGS 1901 Mt Lyell topo map. Note that a ditch runs through project area, but the main road (indicated by solid lines) runs north-south a quarter-mile east. A secondary road (dotted lines) connecting the north-south route to the Tioga Road skirts the northeastern corner of the parcel.

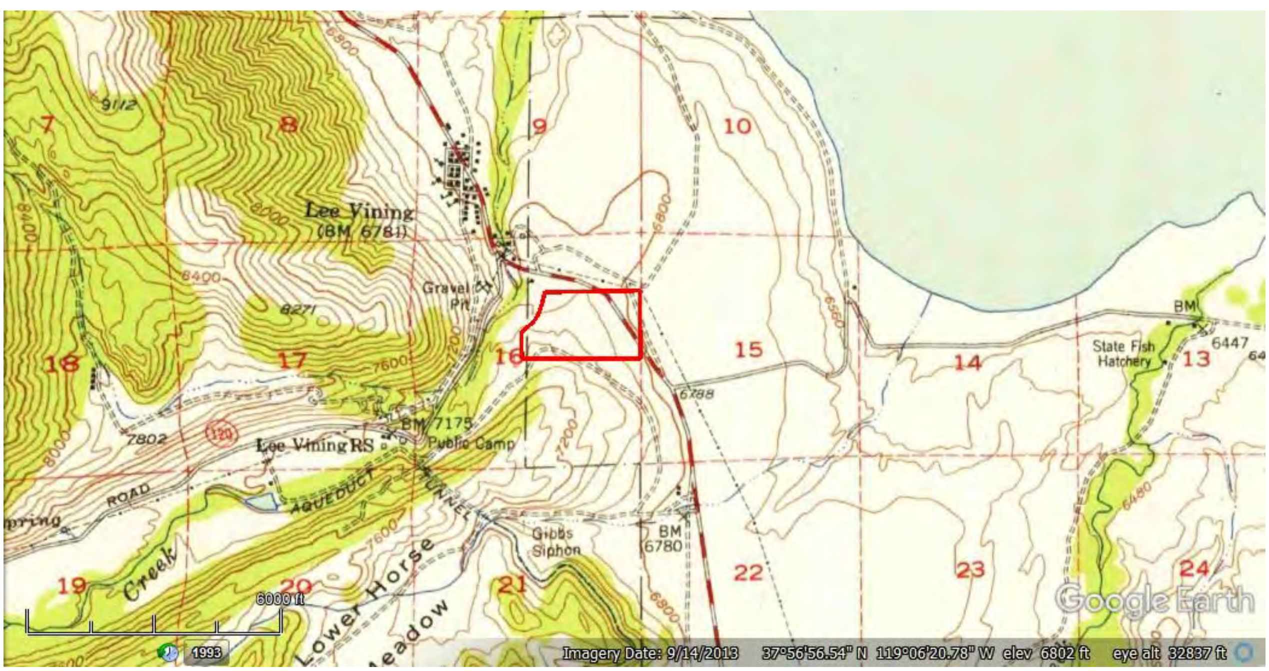

Figure 3. Portion of USGS 1953 Mono Craters topo map showing US Highway 395 through the project area. At this time, the lowest section of the Tioga Pass road's alignment was close to what is now Utility Road.

to the east and south of the Tioga Workforce Housing project area. Marvin and Costello (1993), as part of investigations conducted for the US Highway 395 widening project, recorded the ditch system as CA-MNO-2764H and researched its history:

> The upper ditch (Ditch B) conveyed water from Lee Vining Creek northeasterly and then southerly along the hillside to the settlement of Crater, on the Jake Mattly Ranch, and fields further south. The ditch was apparently constructed in the 1890s, when it brought water to various ranches along its route (Mono County 1896; USGS 1901). It was apparently abandoned sometime after the Southern Sierras Power Company and its subsidiary, the Cain Irrigation Company, acquired the rights to the waters of Lee Vining Creek in a judicial decree in 1916 (Mono County Deed Book S:213; Kahrl 1982:332). Another ditch (Ditch A) also conveyed water southerly from Lee Vining Creek from a point slightly below Ditch B. This water was dispersed into fields east of present Highway 395 through a system of lateral irrigation ditches. This system was constructed sometime after 1901, probably in the early 1920s after the Cain Irrigation Company obtained control of most of the water rights in the area (Lane 1974:3). This ditch system appears on a 1934 map of the Cain Irrigation Company, which sold all its holdings and water rights to the City of Los Angeles in the mid-1930s (Mono County Deed Books, various). The ditch was abandoned ca. 1970 (personal communication, Andrews 1993) when the Second Los Angeles Aqueduct was completed (Lane 1974:9). The southern segment of the ditch, south of Gibbs Creek, was utilized until about four or five years ago *[i.e. ca. 1988]* (personal communication, Andrews 1993, Sam 1993). In this last period of use, this ditch was charged with water from the Gibbs Siphon and used to irrigate lands leased by the LADWP to the Mono Sheep Company (Jones & Stokes 1993:3G-14).

More segments of the ditch system and associated trash scatters were recorded as part of additional environmental studies undertaken for the widening of US Highway 395 (Delu and Braco 2010). Following the contours of the slopes, both Ditch A and Ditch B head to the northeast across the northwest corner of the project area. Both alignments crossed US Highway 395, then headed southeast paralleling the highway for 500 feet, re-entering the project area east of the highway and crossing back to the south side of the highway, into the west parcel. CA-MNO-2764H was determined ineligible for inclusion on the National Register of Historic Places in 1996 (Office of Historic Preservation Archaeological Determinations of Eligibility).

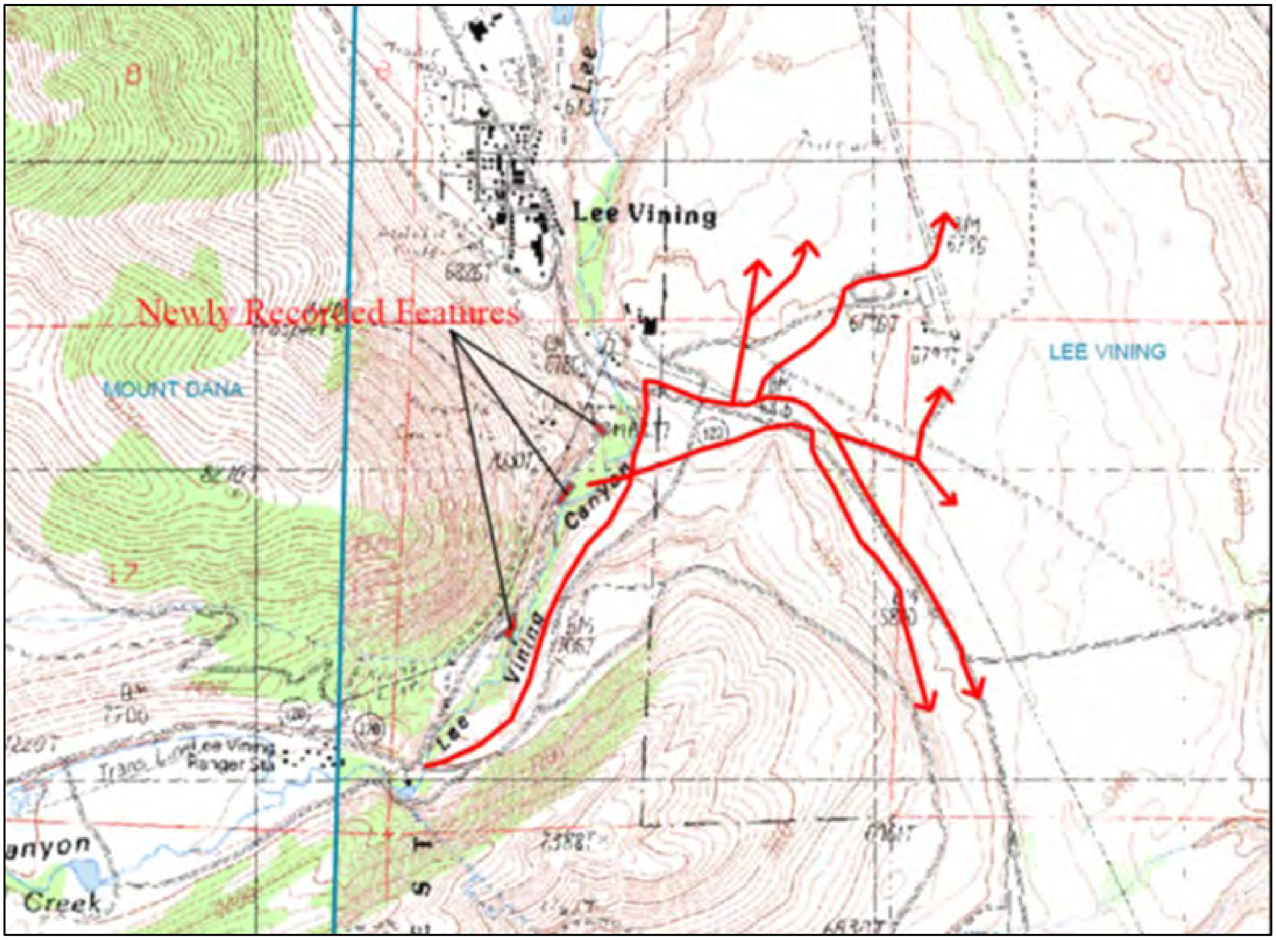

Figure 6. Alignment of Lee Vining ditch system, from CA-MNO-2764H site record supplement by Delu and Braco 2010.

Survey Methods and Results

Survey was conducted by the author on November 25, 2016, to assess whether additional archaeological sites had been exposed by ground disturbance associated with erosion or development, or if sites too young to have been considered historic in 1983 were present. Flat areas were inspected with parallel pedestrian traverses approximately 20m apart. Visibility of the ground surface was generally very good due to sparse vegetation, but limited at lawns, a boneyard or staging areas where employee housing would be constructed, and some small areas of dense brush.

When any artifact or feature was encountered, it was plotted with a Trimble Juno GPS receiver and photographed. The surrounding area was examined carefully to determine if the artifact or feature was part of an archaeological site. Eleven isolates were encountered, including four obsidian flakes (Table 1), and six historic-period artifacts and one historic-period feature (Table 2). Four of these artifacts (B, 1, 5, 6, and 7 in Tables 1 and 2 and Figures 6 and 7) were observed outside the project area. In addition, portions of the Lee Vining Ditch System and associated trash (CA-MNO-2764H) were noted (Table 3). These were not recorded in detail because the site has already been recorded thoroughly and determined not significant, that is, not eligible for the California Register of Historical Resources or the National Register of Historic Places.

Table 1. Prehistoric/Indigenous Isolates (# in Fig. 7).

No.	*Description*	*Notes*
A	Biface retouch flake	Approx. 3 cm long and 2.5 cm wide, of banded black and translucent obsidian, with possible use wear
B	Biface retouch flake	3.5 cm long, of banded black and translucent obsidian, with possible use wear (microchips) on both lateral edges. North of project area, on LADWP land
C	Biface retouch flake fragment	Distal fragment, of opaque glassy obsidian. Possible retouch on one edge
D	Flake fragment	Opaque glassy obsidian, lateral fragment

Table 2. Historic (19th-20th century) Isolates (#, in Fig. 7).

No.	*Description*	*Notes*
1	White ceramic bowl	Approx. 6 inches in diameter, Embossed floral and fruit design on rim; basemark is “Vernon Ware / Made in California” in a circle; “By METLOX” in center and “574” below
2	Sanitary seal can	Approximately 4½ inches high, 2½ inches in diameter.
3	High stump	About 2 ft diameter, and 3 ft high
4	Rusty can lid	Roller-opened
5	Can	Sanitary seal, roller-opened; north of project area, on LADWP land
6	Asphalt fragments	Piled, as though pushed or dumped from road construction; north of project area, on LADWP land
7	Asphalt	Segment, about 15 ft long, partially buried; north of project area, on LADWP land.

Table 3. Artifacts and Features of CA-MNO-2764H (#, in Fig. 7).

No.	*Description*	*Notes*
8	Wooden gate, can	Associated with Lee Vining Ditch System
9	Ditch	Associated with Lee Vining Ditch System
10	Ditch and trash scatter	Associated with Lee Vining Ditch System (outside project area)
11	Rectangular meat can	Adjacent to Lee Vining Ditch System
12	Small ditch	Associated with Lee Vining Ditch System
13	Sun-Rise soda bottle	Adjacent to Lee Vining Ditch System

Figures 7 and 8 are redacted from the public version of this document

Figure 9. Isolate 1, Vernon Ware bowl. The base stamp indicates the bowl was made by Metlox Potteries, which was founded in 1927 in Manhattan Beach, California. Vernon Ware dates from 1958 to 1980 (Kovels 2016).

Figure 10. Similar Vernon Ware bowl for sale on eBay, identified as "Antigua" pattern. The Antigua design was manufactured in the 1960s (http://metloxpottery.blogspot.com/2006/09/ metlox-story.html, accessed December 27, 2016).

Figure 11. Isolate 13, Sun-Rise soda bottle. The base mark indicates the bottle was made by the Owens-Illinois Glass Co. in 1959, at plant #20 (Oakland, CA).

Figure 12. Isolate 3, high-cut stump.

Context for Evaluation and Significance

The definition of "historical resources" is contained in Section 15064.5 of the CEQA Guidelines, and the California Office of Historic Preservation (2016) lists the criteria for designation:

1. Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
2. Associated with the lives of persons important to local, California or national history.
3. Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values.

4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

In addition, any resource that is eligible for the National Register of Historic Places, which has very similar criteria, would be considered a historic resource under CEQA.

The Lee Vining ditch system (CA-MNO-2764H, which crosses the project area, has been determined not eligible for the California Register of Historic Places. None of the isolates meets the criteria for eligibility for listing on the California Register of Historic Resources, nor the criteria for the National Register of Historic Places.

In recognition of California Native American tribal sovereignty and the unique relationship of California local governments and public agencies with California Native American tribal governments, Assembly Bill 52 requires special consideration of tribal cultural resources in CEQA analyses. Public Resources Code Section 21074 defines "Tribal cultural resources" as either of the following:

1. Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    a. Included or determined to be eligible for inclusion in the California Register of Historical Resources.
    b. Included in a local register of historical resources as defined in subdivision (k) of §5020.1.
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of §5024.1. In this instance, the lead agency must determine that the resource meets the criteria for listing in the state register of historic resources.

Tribes are recognized as having the expertise to identify tribal cultural resources. In preliminary discussions, Joseph Lent, the Tribal Historic Preservation Officer of the Bridgeport Indian Colony, indicated that ancestral burials are considered tribal cultural resources. Burials were generally located away from villages and camps, and after many decades or centuries, they are no longer marked. Mr. Lent noted that there is a possibility that one or more burials could be in the project area. Such burials, if present, would not be discernible in a pedestrian archaeological survey, but could be encountered during ground disturbance and excavation.

Recommendations

There are no significant archaeological sites within the proposed Tioga Workforce Housing Project area. Neither previously recorded site CA-MNO-2764H nor the isolates are significant resources that would require further consideration under the California Environmental Quality Act. No further archaeological work is recommended.

Because there is a possibility that one or more undocumented Native American burials could be encountered during grading and excavation, Bridgeport Indian Colony Tribal Historic Preservation Officer Joseph Lent recommended that initial excavation in the project area be monitored by a trained tribal representative. In a meeting on January 22, 2019, the Kutzadika'a Indian Community also requested this mitigation measure.

Upon consideration, the County determined that to require tribal monitoring would be inconsistent with the treatment of other resources under CEQA, where monitoring is not required if a protected resource is not known to occur within the area of potential effect. It is expected that California laws regarding the treatment of human remains discovered during construction would provide adequate protection, if any are present. Health and Safety Code Section 7050.5 stipulates that if human remains are discovered during project work, the specific area must be protected, with no further disturbance, until the county coroner has determined whether an investigation of the cause of death is required. If the human remains are determined to be those of a Native American, the coroner must contact the Native American Heritage Commission by telephone within 24 hours. Per Public Resources Code Section 5097.98, the Native American Heritage Commission then notifies the most likely descendant community, who then inspects the find and makes recommendations to the landowner how to treat the remains. Both laws have proscribed time frames, and PRC 5097.98 outlines some potential treatment options. Both California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98 are included as an Appendix to this report, for ease of reference.

To respect the identified concerns, however, the County developed mitigation measures that will ensure that interested Tribes are notified before grading or earthwork occurs. Further, all construction plans that require ground disturbance and excavation will contain an advisory statement that (1) there is potential for encountering human burials, (2) the Indian communities have been invited to observe the work at any time without compensation, (3) if human remains are encountered, all work shall stop immediately and the County shall be notified, and (4) that human remains must be treated with respect and in accordance with State laws and regulations.

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J2 STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

February 26, 2019

Michael Draper
Mono County Planning Analyst II
Community Development Department
Mammoth Lakes, CA 93546

Dear Mr. Draper,

Thank you for your follow up correspondence dated February 6, 2019. We appreciate your due diligence in respecting tribal cultural heritage and the protection of cultural resources.

Since the Bridgeport Indian Colony requested tribal monitoring during consultation for the project, Mono County is required to consider that option in the evaluation of the potential impacts. The Kuzedika'a Paiute Tribe is not on our consultation list, but nothing precludes the County from taking their concerns into consideration as public stakeholders.

The decision to include a Native American monitor on the project is wholly within the prevue of the lead agency and can be based on all the information you have about the potential impacts to cultural resources. The Native American Heritage Commission does not get involved in monitoring decisions.

If you have any questions or need additional information, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, B.S., M.A., Ph.D.
Associate Governmental Program Analyst

Attachment

J3

Mono County
Community Development Department

PO Box 347
Mammoth Lakes, CA 93546
760.924.1800, fax 924.1801
commdev@mono.ca.gov

PO Box 8
Bridgeport, CA 93517
760.932.5420, fax 932.5431
www.monocounty.ca.gov

April 26, 2018

Charlotte Lange, Chairperson
Mono Lake Kutzadika'a Paiute Indian Community
Post Office Box 237
Lee Vining, CA 93541

RE: NATIVE AMERICAN TRIBAL CONSULTATION FOR PROPOSED TIOGA INN WORKFORCE HOUSING PROJECT

Dear Mrs. Lange:

As lead agency, the Mono County Community Development Department (the County) is preparing a Subsequent EIR to analyze potential impacts associated with approval of up to 150 workforce housing bedrooms at the Tioga Mobile Station and Mini-Mart in Lee Vining. The proposed project also includes a third gas pump island with overhead canopy, adds substantial additional parking (to accommodate onsite guest vehicles as well as a general-use park-and-ride facility and bus parking for Yosemite transit vehicles), expands the existing onsite septic system to increase capacity and incorporate a greywater reclamation system, provides for a second water storage tank (adjacent to the existing water storage tank), and increases the number and capacity of the onsite propane tanks.

Tribal participation is very important in the local planning process, and we are sending this letter to the Kutzadika'a Tribe to comply with AB 52 and Senate Bill 18 (SB 18). Under AB 52, tribes have 30 days to request consultation. In keeping with this timeframe, please send us your request by **May 28, 2018**, for consultation as requested under AB 52.

The project proposal is described more fully in the attached Draft Project Description; note that project details are still being developed, and may change. The Draft Subsequent EIR is currently in preparation, and is expected to be ready for public review and comment late in the summer of 2018. No hearings have been scheduled, and no hearings or public meetings are expected until after the public review period ends later this year.

To respond, please contact Gerry LeFrancois, Principal Planner, Mono County Community Development Department, at 760.924.1800 or glefrancois@mono.ca.gov. We look forward to receiving your reply and any information you are able to share, and would welcome the opportunity to meet with you and other members of the Kutzadika'a Tribe. Thank you for taking the time to consider this invitation.

Sincerely,

Gerry LeFrancois
Principal Planner

ATTACHMENT TO AB 52 LETTER

TIOGA INN SPECIFIC PLAN AND DRAFT EIR

DRAFT PROJECT DESCRIPTION

3.1 PROJECT LOCATION AND SURROUNDING LAND USES

The proposed Tioga Inn project is located at 22 Vista Point Road, close to the intersection of SR 120 and US395 and about ½ mile south of Lee Vining. The project is located in the roughly the geographic center of Mono County, which covers an area of 3,132 square miles on the eastern slopes of the Sierra Nevada mountain range in east central California. Mono County is relatively long (108 miles at the longest point) and narrow (with an average width of 38 miles). The County seat is located in Bridgeport, and the only incorporated town in Mono County is Mammoth Lakes, home to 57% of the county population. The site is located in the southeast quarter of the northwest quarter, and the southwest quarter of the northeast quarter of Section 14, Township 1 North, Range 26 East (MDBM). Figure 1 depicts the regional layout of Mono County.

As a whole, Mono County is dominated by lands owned by the public and managed by various federal, state and local entities. The *General Plan* estimates that 94% of the county land area is publicly owned, 88% of which is managed by federal agencies. The Tioga Inn project is located about 10 miles west of Yosemite National Park, 25 miles north of Mammoth and 1 mile east of the Mono Lake Tufa State National Reserve and the Mono Scenic National Forest (Figure 2).

Figures 3-1 (Regional Location) & 3-2 (Mono Lake public lands, right)

3.2. PROJECT HISTORY AND PURPOSE

The Tioga Inn project proposal encompasses multiple elements, many of which were analyzed in a Final EIR and Specific Plan that was certified by the Mono County Board of Supervisors in 1993 for the Tioga Inn project. That project, approved by the Board of Supervisors in 1993, included the existing gas station, convenience store, employee housing and ancillary support facilities (all of which have been constructed) as well as a 120-room hotel and a full-service restaurant (which are scheduled for near-term development).

The current proposal retains the goals and concepts developed in 1993, with several newly added elements. Most significantly, the current proposal would provide up to 150 new workforce housing bedrooms. The current proposal also provides for a third gas pump island and overhead canopy, adds substantial additional parking (to accommodate onsite guest vehicles as well as a general-use park-and-ride facility and bus parking for Yosemite transit vehicles), expands the existing onsite septic system to increase capacity and incorporate a greywater reclamation system, provides for a second water storage tank (adjacent to the existing tank), and increases the number and capacity of the onsite propane tanks. Several of the uses approved in 1993 were constructed and placed into operation during the late 1990s. Construction of the hotel and restaurant elements was postponed due to a general economic downturn and other factors. The purpose of the current project proposal is to complement earlier approved components with modifications and new elements that respond to evolving trends in tourism, resource conservation and employment.

3.3 PROJECT DISCRETIONARY ACTIONS

The current proposal embodies concepts developed in 1993 with added elements, goals and refinements. A key task of the current Draft EIR and Specific Plan is to delineate between project elements that are, and those that are not, subject to discretionary action with the current project, as shown below:

Discretionary Status of Project Elements	
CATEGORY	**STATUS**
Actions approved in 1993 and subsequently constructed	**No discretionary actions or approvals required**
Actions approved in 1993, never constructed, and now proposed for implementation with no changes from 1993	**No discretionary actions or approvals required**
Actions approved in 1993 but never constructed, for which changes are now proposed	**None of the proposed actions fall into this category**
Newly proposed project elements and proposed modifications to existing project elements	**Subject to Discretionary Approval with Current Project Proposal**

3.3 PROJECT ELEMENTS

The project encompasses 4 parcels, all of which are listed in the table on the following page, along with existing and proposed uses. The applicant may sell or lease Parcel 1 (the hotel site) to an outside hotelier, and a portion of Parcel 2 (i.e., the full-service promontory restaurant site) to an outside restaurateur. The remaining uses and parcels are intended to stay under the ownership and management of the Domaille family. The table outlines approved elements and project elements now subject to discretionary approval. Only the newly proposed elements (shown in the 2 right-most columns) are subject to discretionary action as part of the current project.

TIOGA MART EXISTING, APPROVED & PROPOSED LAND USES AND ACREAGES					
PARCEL	**ACRES APPROVED IN 1993**	**PROPOSED ACRES**	**EXISTING LAND USES**	**LAND USES APPROVED IN 1993**	**LAND USES NOW PROPOSED &**
1	30.3	26.5	▪ Open Space Monument Signs (2)	▪ 120-room 2-story hotel with coffee shop, banquet room & gift shop; ▪ Parking spaces for onsite uses	▪ Changed parcel boundary and acreage ▪ Realignment of main access & road serving the existing workforce housing units
2	36.0	32.1	▪ Overflow parking ▪ Historical Marker ▪ 4-unit workforce housing ▪ Elec supply shed ▪ Water Well ▪ SCE powerlines ▪ Buried Utility Xing septic /leach field	▪ Full-service 100-seat restaurant atop promontory ▪ Restaurant parking ▪ Overflow/oversize vehicle parking ▪ Maintenance Building ▪ 30,000-gallon Propane Tank	▪ 150 bedroom housing area ▪ Reduction in Open Space (OS)/Facilities acreage ▪ Additional 30,000-gallon commercial propane tank ▪ Expanded sewage leach field ▪ New greywater reuse system ▪ Changed parcel boundary and acreage
3	2.4	2.4	▪ 2 Gas Pump Islands/canopies ▪ Tioga Gas Mart ▪ Whoa Nellie Deli	Reconfiguration of the 2 gas pump islands for added parking	▪ 3 Gas pump islands with overhead canopies & lighting
4	5.0	6.8	▪ 10 Workforce Housing Units ▪ 1 Water Tank ▪ 1 Cell Tower	New water storage tank (the location was changed in SP amendment #1).	▪ Construction of 2nd water storage tank ▪ Changed parcel boundary and acreage
SR 120 Easement	TBD	TBD	* 2-lane access to SR-120 * Park & Ride Area		▪ Caltrans ROW acquisition
TOTAL PROPOSED ACRES 67.83 (reduced from 73.7 acres in 1993)					

K

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2018-AWP-15708-OE

Issued Date: 12/07/2018

Dennis
Dennis Domaille
PO Box 2727
Mammoth Lakes, CA 93546

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Restaurant - NE Corner
Location:	Lee Vining, CA
Latitude:	37-56-54.89N NAD 83
Longitude:	119-06-37.53W
Heights:	6945 feet site elevation (SE)
	20 feet above ground level (AGL)
	6965 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does exceed obstruction standards but would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 2.

The structure considered under this study lies in proximity to an airport and occupants may be subjected to noise from aircraft operating to and from the airport.

This determination expires on 06/07/2020 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within

6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

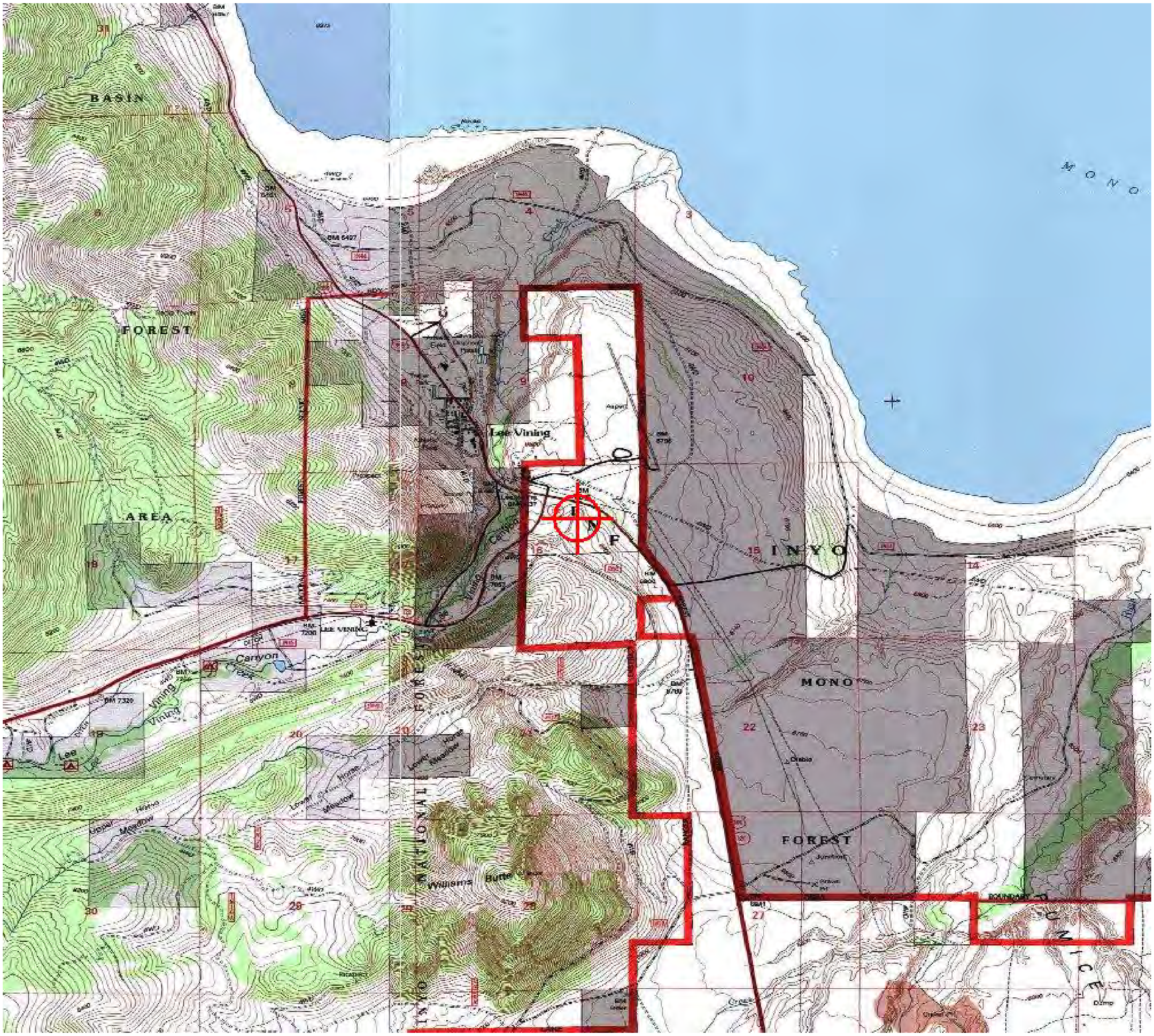
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (424) 405-7643, or karen.mcdonald@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2018-AWP-15708-OE.

Signature Control No: 387392054-391752378 (EBO)
Karen McDonald
Specialist

Attachment(s)
Map(s)

TOPO Map for ASN 2018-AWP-15708-OE



APPENDIX L

UPDATED TRAFFIC IMPACT ANALYSIS

TIOGA INN WORKFORCE HOUSING PROJECT
TRAFFIC IMPACT ANALYSIS

Mono County

Prepared for:

BAUER PLANNING & ENVIRONMENTAL SERVICES, INC.

Prepared by:

MT ENGINEERING

Mohammad A. Tabrizi, PE, TE

February 21, 2020

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1.0 Introduction

This study analyzes the forecast traffic conditions associated with the proposed Tioga Inn Workforce Housing project.

The study has been prepared, revised, and refined based on extensive discussions with and input from Caltrans District 9 and County of Mono staff.

The proposed Tioga Workforce Housing project is located at 22 Vista Point Road, close to the intersection of Tioga Road (State Route 120 or SR-120) and Highway 395 (US-395). The project is located in the geographic center of Mono County, which covers an area of 3,132 square miles on the eastern slopes of the Sierra Nevada mountain range in east central California.

The project site is located about half a mile south of Lee Vining, 10 miles west of Yosemite National Park, 25 miles north of Mammoth and 1 mile east of the Mono Lake Tufa State National Reserve and Scenic National Forest.

Exhibit 1-1 shows the regional location of the project site. Exhibit 1-2 shows the project site location.

Access for the project site will continue to be provided via one unsignalized driveway located on Tioga Road (SR-120) approximately 950 feet west of the Highway 395 / Tioga Road (SR-120) intersection.

The existing bus stop serving the Yosemite Area Rapid Transit System (YARTS) located along the project site frontage on Tioga Road (SR-120) will remain in place.

The project site currently contains the following land uses:

- Approximately 16 units of workforce housing;
- Existing Whoa Nelli Deli; and
- Gasoline Station with Convenience Store and 8 vehicle fueling positions (4 two-sided fuel pumps).

Additionally, during summer Thursday evenings, concert-type events are held in the lawn area of the site.

Aside from the existing uses located on the project site, the site is currently approved for addition of the following traffic-generating land uses:

- 120-room hotel; and

- Restaurant use with 100 seats and a seating area of approximately 5,000 square feet (gross area of approximately 10,000 square feet).

The proposed project consists of the following additional traffic-generating land uses:

- Workforce housing with 100 units, which includes approximately 150 bedrooms with a total capacity of 300 residents; and

- An additional island to the existing gas station, adding a total of 4 vehicle fueling positions (2 two-sided fuel pumps).

Under current conditions, approximately 6 of the 37 total employees live on the project site; the remaining employees commute to and from the site.

Exhibit 1-3 shows the conceptual site plan.

The project is planned to open in 2023.

1.1 Study Area

The study area consists of the following study intersections in the vicinity of the project site:

1. Highway 395 (US-395) / Tioga Road (SR-120); and

2. Project Site Access / Tioga Road (SR-120).

Both of the study intersections are a part of the California State Highway system and are in the jurisdiction of Caltrans District 9 which holds jurisdiction over the State Highway system in the central-east portion of the State of California including Inyo, Mono, and eastern Kern Counties.

Study area traffic conditions are very seasonal in this area and vary by the time of the year. Tioga Road (SR-120) is generally closed during winter and peak traffic conditions generally occur in the summer time.

Generally, in terms of traffic volumes and activity, the area experiences four seasonal periods throughout the year:

- Winter season: very limited traffic activity with Tioga Road (SR-120) generally closed off to vehicular traffic;

- Non-peak spring shoulder season: traffic volumes begin to pick up as winter ends and summer approaches;

- Peak summer season: traffic volumes generally reach their highest. This season typically lasts approximately two or three months.

- Non-peak fall shoulder season: traffic volumes and activities begin to reduce as summer ends and winter approaches.

Hence, as requested by the County of Mono staff, to reflect traffic conditions and evaluate potential impacts during the peak traffic season for the area, this study evaluates traffic conditions during the month of July, for the following time periods:

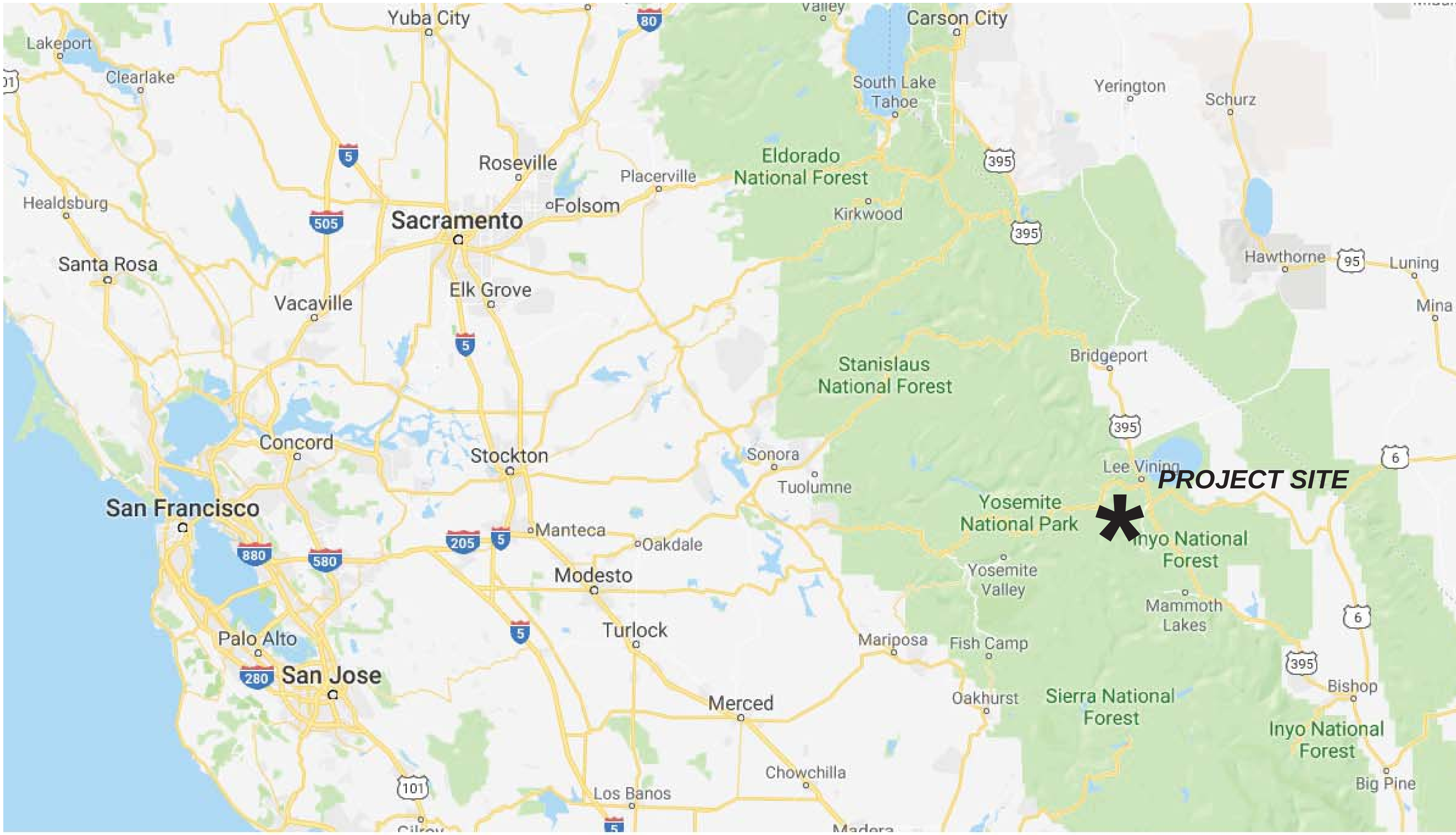
- AM: 8:00 AM to 10:00 AM;
- Mid-Day 12:00 PM to 2:00 PM; and
- PM: 4:00 PM to 6:00 PM.

As discussed in the forthcoming sections of the report, a mid-day analysis has also been prepared for nonpeak season (fall shoulder season conditions during the month of October).

Exhibit 1-4 shows the location of the study intersections which are analyzed for the following study scenarios:

- Existing Conditions;
- Existing Plus Project Conditions;
- Forecast Opening Year (2023) Without Project Conditions; and
- Forecast Opening Year (2023) With Project Conditions.

The analysis also evaluates vehicular queuing at the study intersections as requested by Caltrans.

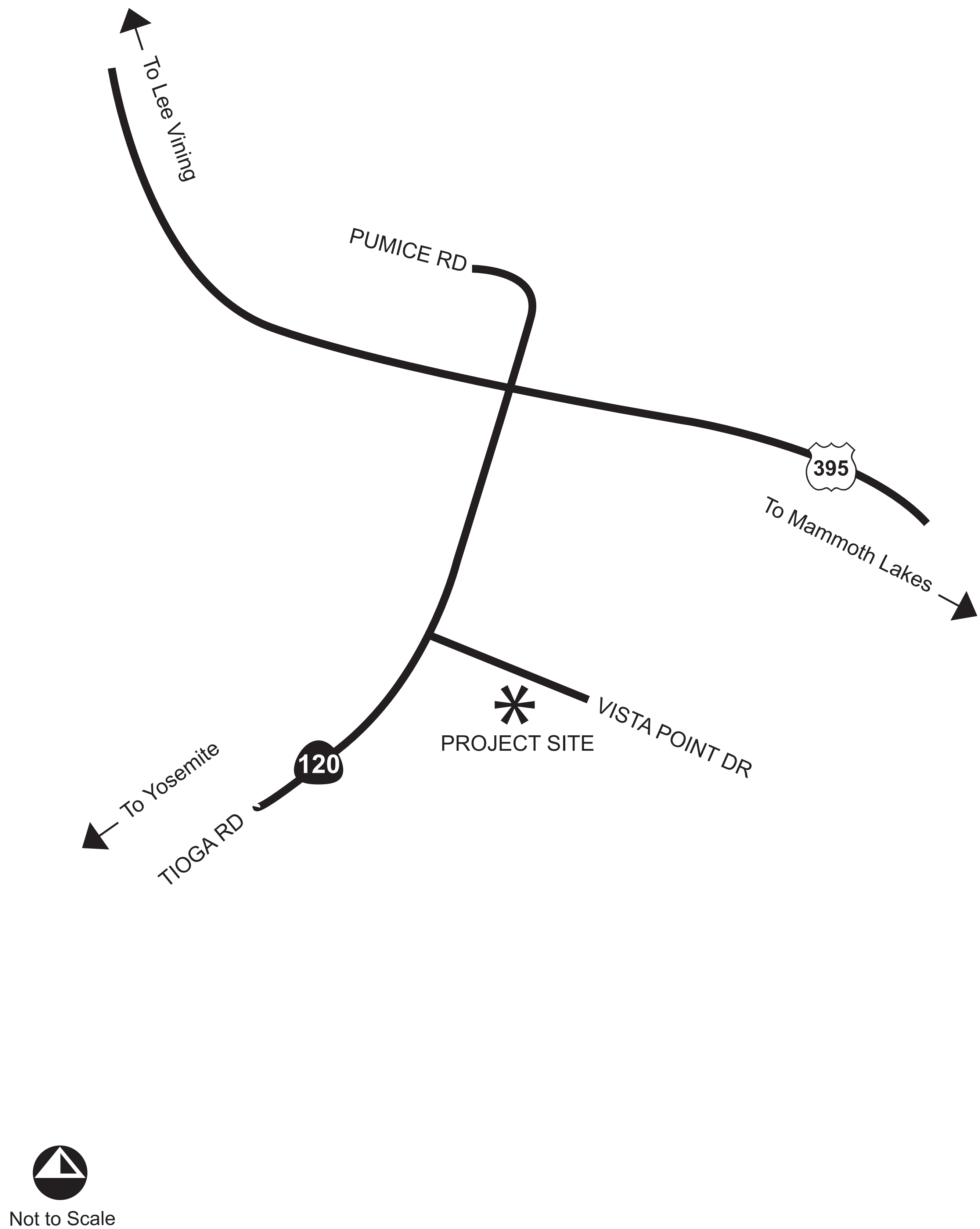


Not to Scale

MN ENGINEERING

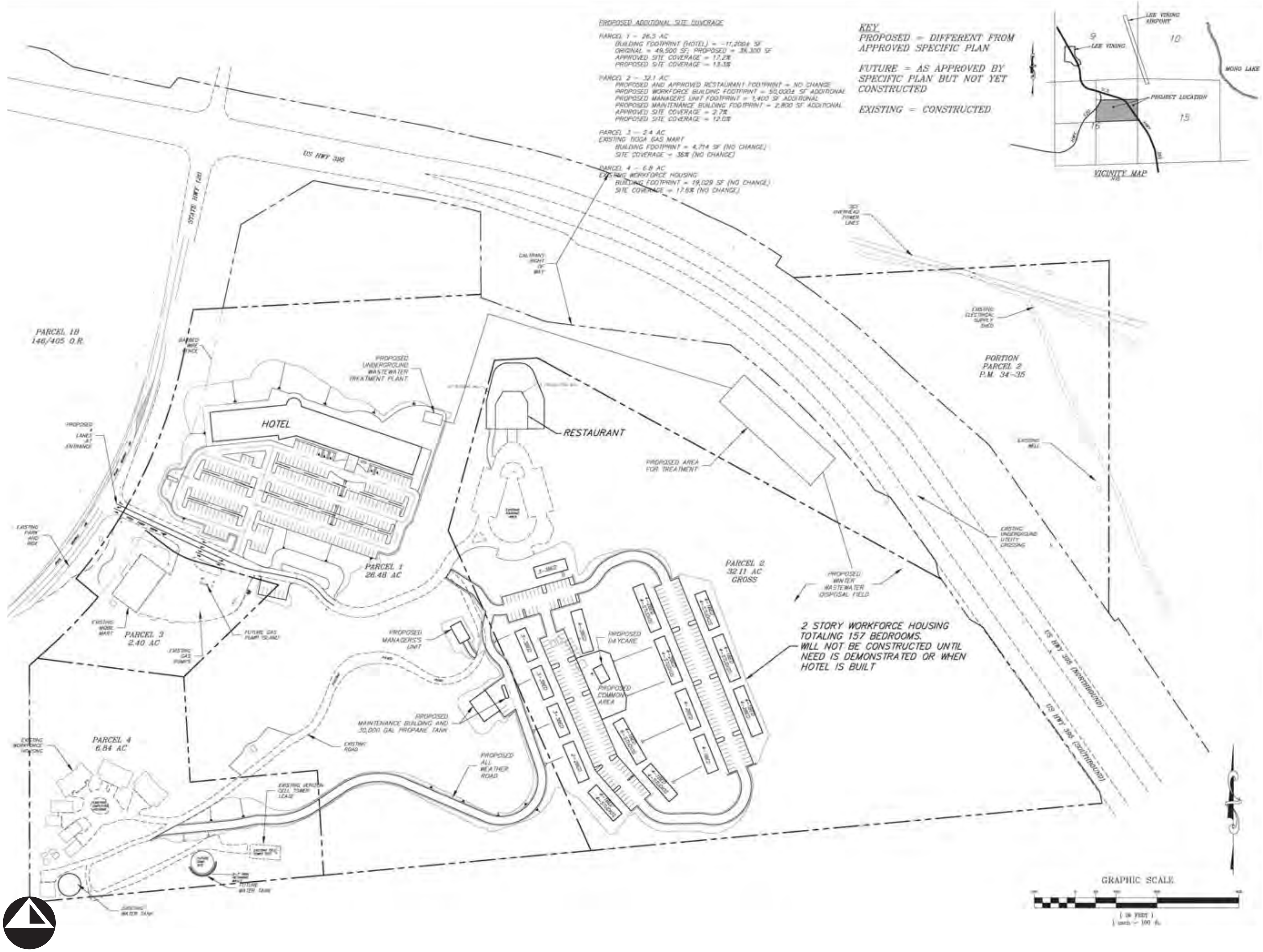
Regional Project Location

Exhibit 1-1



Project Site Location

Exhibit 1-2



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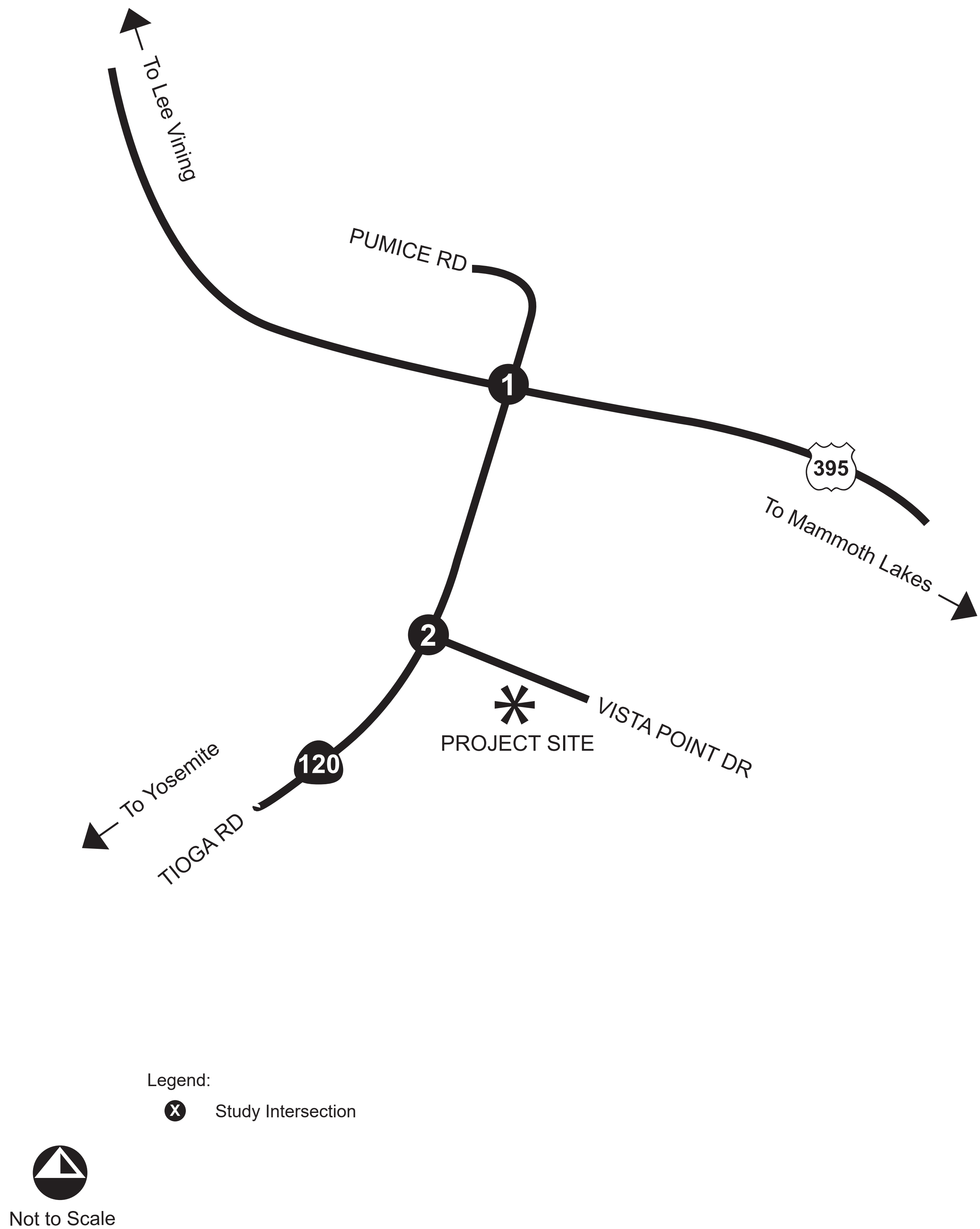
Site Plan

Exhibit 1-3



ENGINEERING

Study Intersection Locations

Tioga Inn Workforce Housing Project TIA NOV2018 Exhibit 1-4

2.0 Analysis Methodologies, Performance Criteria and Thresholds of Significance

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report in accordance with the County of Mono and Caltrans requirements.

This section also discusses the agency-established applicable performance criteria and thresholds of significance for the study facilities.

2.1 Intersection Analysis Methodology

Level of service (LOS) is commonly used as a qualitative description of intersection operation and is based on the capacity of the intersection and the volume of traffic using the intersection.

The Highway Capacity Manual (HCM) analysis methodology is utilized to determine the operating LOS of the study intersections consistent with the County of Mono and Caltrans requirements for evaluating intersection operations.

The *2010 HCM* analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding ranges of stopped delay experienced per vehicle for signalized and unsignalized intersections shown in Table 2-1.

Table 2-1
Intersection LOS & Delay Ranges

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: *2010 Highway Capacity Manual*

The definitions of level of service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

- LOS A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
- LOS B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
- LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
- LOS D represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
- LOS E represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
- LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations.

Level of service is based on the average stopped delay per vehicle for all movements of signalized intersections and all-way stop-controlled intersections; for one-way or two-way stop-controlled intersections, LOS is based on the worst stop-controlled approach.

2.2 Study Intersection Peak Hour Performance Criteria

The study intersections are all part of the State of California Highway System and under the jurisdiction and control of Caltrans.

In accordance with the *Caltrans Guide for the Preparation of Traffic Impact Studies (State of California Department of Transportation, December 2002),* Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities.

Hence, consistent with the *Tioga Inn Draft Specific Plan Environmental Impact Report (The Company of Eric Jay Toll, AICP, Inc., May 24, 1993),* this analysis assumes **LOS D** is the acceptable LOS for the study intersections evaluated in this study. Any study intersections operating at LOS E, or F will be considered deficient.

2.3 Study Intersection Thresholds of Significance

As previously noted, the study intersections are all part of the State of California Highway System and under the jurisdiction and control of Caltrans.

While Caltrans has not established traffic thresholds of significance, this traffic analysis utilizes the following traffic thresholds of significance:

- Any intersection operating at a deficient LOS (LOS E, or F) will be considered impacted and would require mitigation measures to achieve acceptable LOS operations (LOS A, B, C, or D).

3.0 Existing Traffic Volumes & Circulation System

This section provides a discussion of existing study area conditions and traffic volumes.

3.1 Roadway Description

The characteristics of the roadway system in the vicinity of the project site are described below:

Highway 395 (U.S. Route 395 or US-395) is a U.S. Route in the western United States. The southern terminus of the route is in the Mojave Desert at Interstate 15 near Hesperia. The northern terminus is at the Canada–US border near Laurier, where the road becomes Highway 395 upon entering British Columbia, Canada. At one time, the route extended south to San Diego. I-15 and I-215 replaced the stretch of 395 that ran from San Diego to Hesperia through Riverside and San Bernardino. "Old Highway 395" can be seen along or near I-15 in many locations before it branches off at Hesperia to head north.

US 395 runs along the Eastern Sierra in the Owens Valley and crosses through the Modoc Plateau along its route.

In the project vicinity, US-395 is a four-lane divided roadway (2 lanes in each direction of travel) traversing in the north-south direction.

Tioga Road (State Route 120 or SR-120) is located in central California. It runs from the San Joaquin Valley near Lathrop through Yosemite National Park, to its end at U.S. Route 6 in Mono County, eastern California. While the route is signed as a contiguous route through Yosemite National Park, the portion in park boundaries is federally maintained, and is not included in the state route logs. The portion at Tioga Pass is the highest paved through road in the California State Route system. This part is not maintained in the winter and is usually closed during the winter season. The road is a toll road through Yosemite National Park between the Big Oak Flats entrance and the Tioga Pass entrance. The National Park Service implemented the tolls along CA-120, along with the Central Yosemite Highway and Wawona Road to help restore funding after significant losses due to the Ferguson Fire and the construction of the rockshed underneath the site of the Ferguson Slide, which reopened the original alignment of the Central Yosemite Highway that had been closed since 2006.

In the project vicinity, SR-120 is a two-lane undivided roadway (1 lane in each direction of travel) traversing in the east-west direction.

As previously stated, generally, in terms of traffic volumes and activity, the area experiences four seasonal periods throughout the year:

- Winter season: very limited traffic activity with Tioga Road (SR-120) generally closed off to vehicular traffic;
- Non-peak spring shoulder season: traffic volumes begin to pick up as winter ends and summer approaches;
- Peak summer season: traffic volumes generally reach their highest. This season typically lasts approximately two or three months.
- Non-peak fall shoulder season: traffic volumes and activities begin to reduce as summer ends and winter approaches.

3.2 Existing Traffic Controls & Intersection Geometrics

Exhibit 3-1 identifies existing roadway conditions for the study area roadways. The number of through traffic lanes for existing roadways and the existing intersection controls are identified.

3.3 Existing Conditions Traffic Volumes

As previously noted, study area traffic conditions are very seasonal by time of day, month and vary by the time of the year. Tioga Road (SR-120) is generally closed during winter and peak traffic conditions generally occur in the summer time.

As also previously noted, during summer Thursday evenings, concert-type events are held in the lawn area of the site.

To evaluate and capture existing traffic conditions and volumes during peak traffic conditions of the study area, traffic counts were collected on Thursday July 12, 2018 and Thursday August 9, 2018 when concert-type events were being held at the project site.

As requested by the County of Mono staff, to reflect traffic conditions and evaluate potential impacts during the peak traffic season for the area, the counts were collected during the following time periods:

- AM: 8:00 AM to 10:00 AM;
- Mid-Day 12:00 PM to 2:00 PM
- PM: 4:00 PM to 6:00 PM.

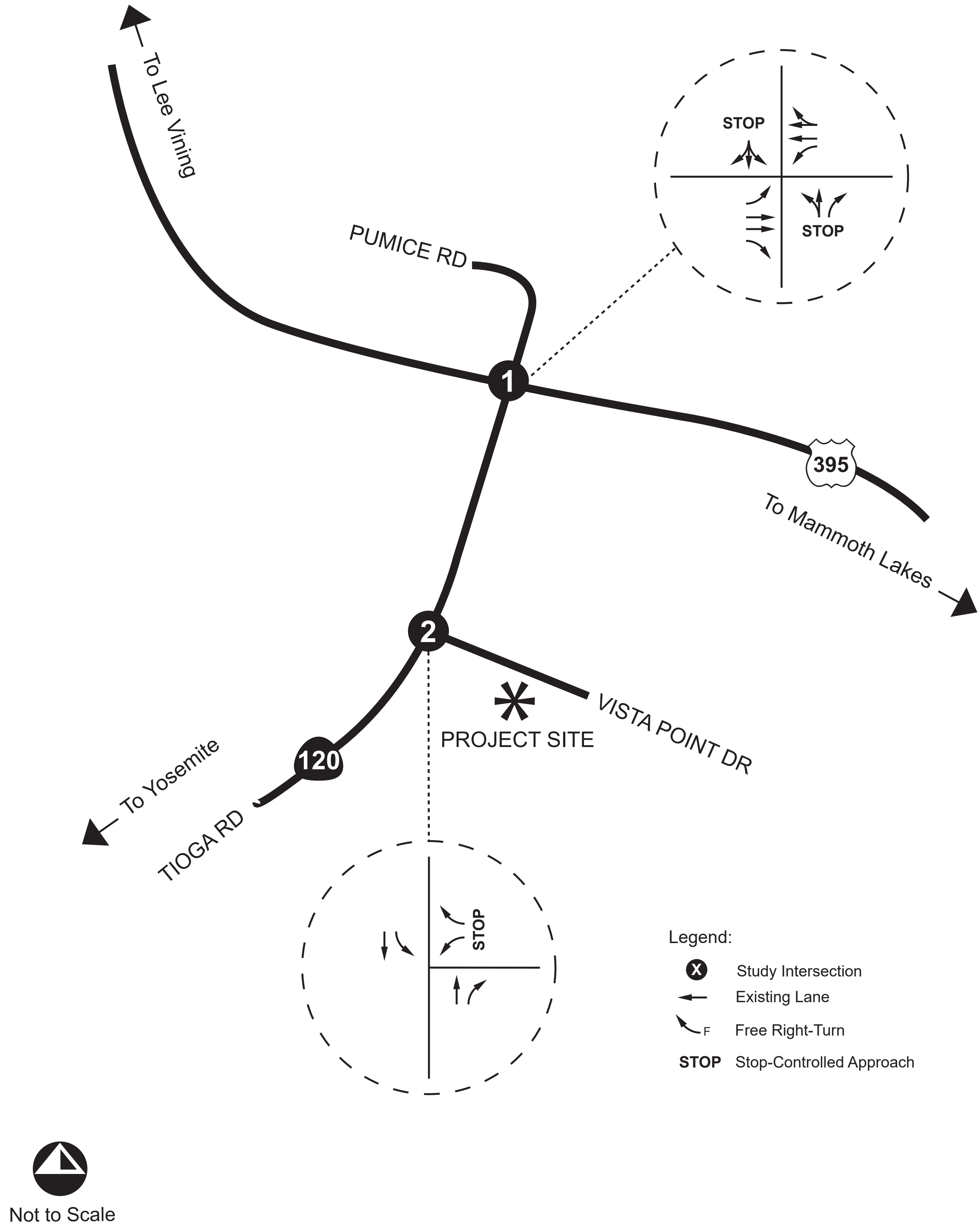
The counts used in this analysis were taken from the highest hour within the peak period counted.

Exhibit 3-2 show existing conditions traffic volumes at the study intersections; detailed traffic count data is contained in Appendix A.

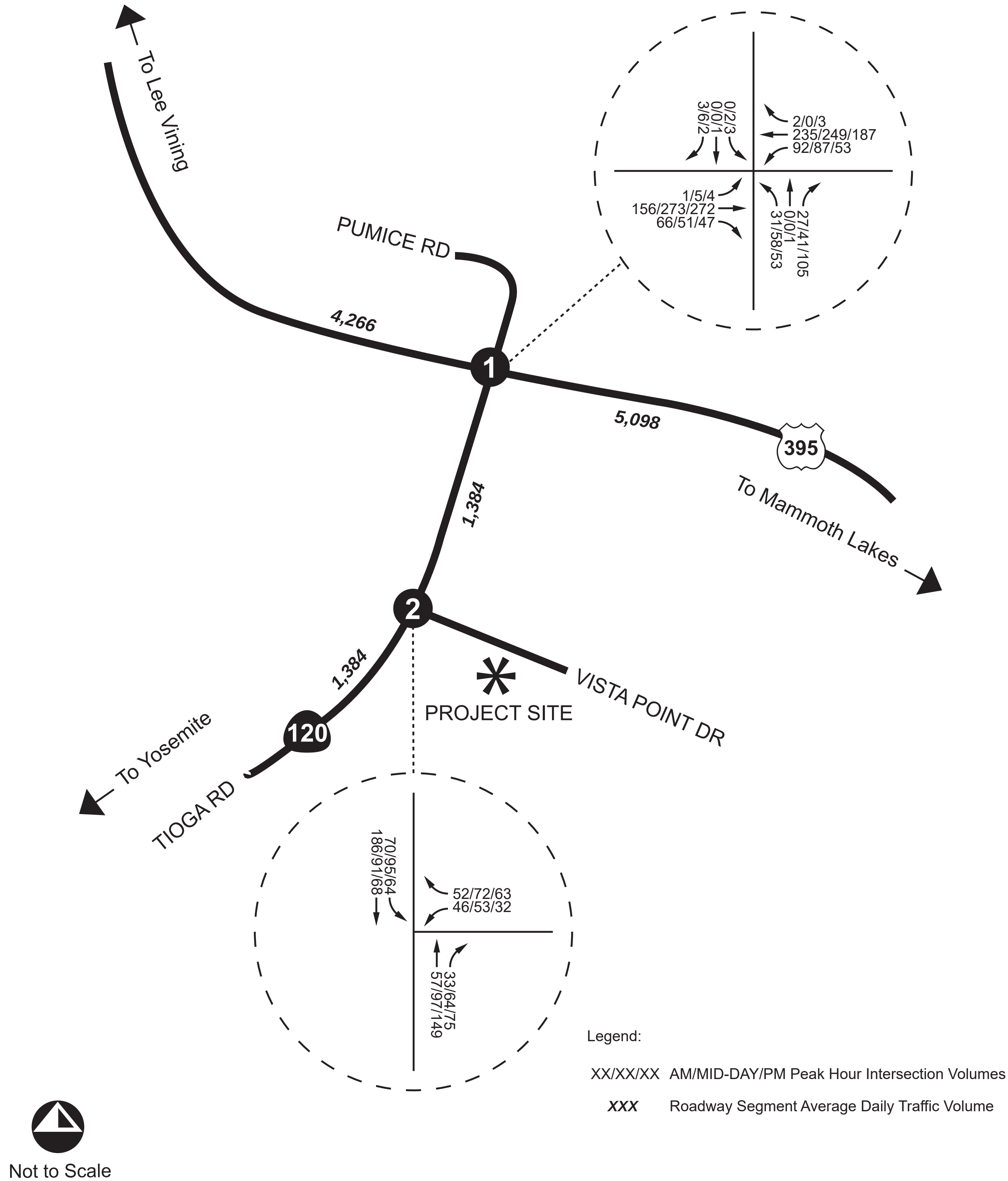
The analysis also utilizes the truck percentage mix of vehicles on Highway 395 and State Route 120 based on truck traffic information published by Caltrans.

Based on the Caltrans data, on a daily basis, the traffic volume on State Route 120 in the study area vicinity consists of 14 trucks and heavy vehicles. Similarly, the traffic volume on Highway 395 in the study area vicinity consists of 19 trucks and heavy vehicles.

The level of service analysis accounts for this parameter.



Existing Study Intersection Geometry & Control



Existing Conditions Traffic Volumes

4.0 Projected & Future Traffic Volumes

This section provides a discussion on methodologies utilized to derive future traffic volumes for the study area.

4.1 Project Traffic Conditions

This section provides a discussion on the methodologies utilized in determining the project's contribution of vehicular traffic to the study area.

4.1.1 Project ITE Trip Generation

Trip generation represents the amount of traffic that is attracted and produced by a development.

As previously noted, the proposed project consists of the following additional traffic-generating land uses:

- Workforce housing with 100 units, which includes approximately 150 bedrooms with a total capacity of 300 residents; and

- An additional island to the existing gas station, adding a total of 4 vehicle fueling positions (2 two-sided fuel pumps).

Trip generation for the proposed project is determined based on ITE 10th Edition trip generation rates for the proposed land uses as shown in Table 4-1.

Table 4-1
***ITE* Trip Generation Rates for Proposed Project Land Uses**

Land Use (*ITE* Code)	Units	AM Peak Hour Trip Generation Rate			Mid-Day Peak Hour Trip Generation Rate			PM Peak Hour Trip Generation Rate			Daily
		In	Out	Total	In	Out	Total	In	Out	Total	
Multi-Family Housing - Low-Rise (220)	Residents	0.05	0.23	0.28	0.20	0.12	0.32	0.20	0.12	0.32	1.42
Gas Station (944)	VFP	5.27	5.26	10.53	7.21	7.20	14.41	7.21	7.20	14.41	172.01

Source: *2017 ITE Trip Generation Manual, 10th Edition*.

Notes: Analysis utilizes the AM peak hour of generator rates for the AM Peak Hour and PM peak hour of generator rates for Mid-Day & PM Peak Hour.

VFP = Vehicle Fueling Positions

Utilizing the ITE trip generation rates shown in Table 4-1, Table 4-2 summarizes the daily and peak hour trip generation for the proposed project. It should be noted the trip generation for the proposed project has been reviewed by Mono County Department of Public Works staff prior to inclusion in this analysis.

Table 4-2
Trip Generation Summary for Proposed Project

Land Use	AM Peak Hour Trip Generation			Mid-Day Peak Hour Trip Generation			PM Peak Hour Trip Generation			Daily
	In	Out	Total	In	Out	Total	In	Out	Total	
300-Resident Workforce Housing	15	69	84	60	36	96	60	36	96	426
*Internal Trip Capture Adjustment (25%) **	*-4*	*-17*	*-21*	*-15*	*-9*	*-24*	*-15*	*-9*	*-24*	*-107*
Subtotal – Workforce Housing	***11***	***52***	***63***	***45***	***27***	***72***	***45***	***27***	***72***	***319***
Addition of 4-Vehicle Fueling Positions of Gas Station	21	21	42	29	29	58	29	29	58	688
*Internal Trip Capture Adjustment (25%) **	*-5*	*-5*	*-10*	*-7*	*-7*	*-14*	*-7*	*-7*	*-14*	*-172*
Subtotal – Gas Station	***16***	***16***	***32***	***22***	***22***	***44***	***22***	***22***	***44***	***516***
Total	**27**	**68**	**95**	**67**	**49**	**116**	**67**	**49**	**116**	**835**

Notes: * Consistent with the *Tioga Inn Specific Plan & Environmental Impact Report (The Company of Eric Jay Toll, AICP, Inc., May 24, 1993)*, the analysis assumes a 25% internal capture to account for the interaction between the compatible land uses on the site.

As shown in Table 4-2, the proposed project is forecast to generate approximately 835 daily trips which include approximately 95 AM peak hour trips, approximately 116 mid-day peak hour trips, and approximately 116 PM peak hour trips.

It should be noted the trip generation shown in Table 4-2 is considered conservative since it does not account for *ITE*'s pass-by trip reduction which is applicable to gas station and retail-related uses located along busy arterial highways attracting vehicle trips already on the roadway; this is particularly the case when the roadway is experiencing peak operating conditions. For example, a motorist already traveling along State Route 120 or Highway 395 between other destinations may stop at the proposed project site to get fuel.

*4.1.2 **Project Trip Distribution***

Trip distribution represents the directional orientation of traffic to and from the project. Trip distribution is heavily influenced by the geographical location of the site, the location of retail, employment, recreational opportunities, and the proximity to the regional freeway system.

The project's trip distribution has been developed through discussions and review by Mono County Department of Public Works staff and is based on review of existing land uses and roadway circulation system in the project site vicinity.

Exhibit 4-1 shows the trip distribution for the project's workforce housing element.

Exhibit 4-2 shows the trip distribution for the project's gas station element.

*4.1.3 **Modal Split***

The site currently sits adjacent to an existing bus stop serving the Yosemite Area Rapid Transit System (YARTS) located along the project site frontage on Tioga Road (SR-120). Additionally, the Eastern Sierra Transit Authority (ESTA) provides weekday service between Lone Pine and Reno (1 trip each way) with regular stops in Bishop, Mammoth Lakes and Lee Vining (the bus drop-off in Lee Vining is located about 1 miles north of the project site).

Modal split denotes the proportion of traffic generated by a project that would use any of the transportation modes, namely buses, cars, bicycles, motorcycles, trains, carpools, etc. The traffic reducing potential of public transit and other modes is significant. However, the traffic projections in this study are conservative in that public transit and alternative transportation may be able to reduce the traffic volumes, but, no modal split reduction is applied to the projections since precise quantification of the reduction is not feasible. With the implementation of additional transit service and provision of alternative transportation ideas and incentives, such as the ones discussed later in Section 8.4 of this report under Transportation Demand Management (TDM), the automobile traffic demand can be reduced significantly.

4.1.4 **Project Traffic Volumes/Assignment**

The assignment of traffic from the project site to the adjoining roadway system has been based upon the project's trip generation, trip distribution, and arterial highway and local street systems that are in place.

Project traffic volumes are shown on Exhibit 4-3.

4.2 Existing Plus Project Conditions Traffic Volumes

Existing Plus Project Conditions traffic volumes are derived by adding the project traffic volumes shown in Exhibit 4-3 to the existing traffic volumes shown in Exhibit 3-2.

Existing Plus Project Conditions traffic volumes are shown in Exhibit 4-4. The exhibit shows the project traffic added on top of the existing traffic volumes.

4.3 Background Traffic

4.3.1 Ambient Growth Method of Projection

To assess future conditions, project traffic is combined with existing traffic, area-wide growth, and cumulative projects' traffic.

For opening year (2023) conditions, to account for area wide/ambient growth in the study area, an annual growth rate of two percent (2%) has been applied to existing traffic volumes over a five-year period. This growth rate is based on review of past and present traffic volume data and traffic growth patterns in the study area as published by Caltrans through their annual traffic volume data and information for this area. Based on discussion with Caltrans, the 2 percent growth rate can be considered conservative for this area.

4.3.2 Cumulative Projects Traffic

The cumulative projects which are expected to affect the traffic conditions of the study area for project opening year (2023) consist of the currently approved but not yet constructed land uses on the project site which are as follows:

- 120-room hotel; and
- Restaurant use with 100 seats and a seating area of approximately 5,000 square feet (gross area of approximately 10,000 square feet).

Trip generation for the cumulative projects is determined based on ITE 10th Edition trip generation rates for the proposed land uses as shown in Table 4-3.

Table 4-3
***ITE* Trip Generation Rates for Cumulative Project Land Uses**

Land Use (*ITE* Code)	Units	AM Peak Hour Trip Generation Rate			Mid-Day Peak Hour Trip Generation Rate			PM Peak Hour Trip Generation Rate			Daily
		In	Out	Total	In	Out	Total	In	Out	Total	
High Turnover Sit-Down Restaurant (932)	TSF	8.00	6.04	14.04	9.05	8.36	17.41	9.05	8.36	17.41	112.18
Hotel (310)	Rooms	0.29	0.25	0.54	0.35	0.26	0.61	0.35	0.26	0.61	8.36

Source: *2017 ITE Trip Generation Manual, 10th Edition*.

Notes: Analysis utilizes the AM peak hour of generator rates for the AM Peak Hour and PM peak hour of generator rates for Mid-Day & PM Peak Hour.

TSF = Thousand Square Feet.

Utilizing the ITE trip generation rates shown in Table 4-3, Table 4-4 summarizes the daily and peak hour trip generation for the cumulative projects. It should be noted the trip generation for the cumulative projects has been reviewed by Mono County Department of Public Works staff prior to inclusion in this analysis.

Table 4-4
Trip Generation Summary for Cumulative Projects

Land Use (*ITE* Code)	AM Peak Hour Trip Generation			Mid-Day Peak Hour Trip Generation			PM Peak Hour Trip Generation			Daily
	In	Out	Total	In	Out	Total	In	Out	Total	
10,000 Square Feet – High Turnover Sit-Down Restaurant	80	60	140	91	83	174	91	83	174	1,122
*Internal Trip Capture Adjustment (25%) **	*-20*	*-15*	*-35*	*-23*	*-21*	*-44*	*-23*	*-21*	*-44*	*-281*
Subtotal – High Turnover Restaurant	***60***	***45***	***105***	***68***	***62***	***130***	***68***	***62***	***130***	***841***
120-Room Hotel	35	30	65	42	31	73	42	31	73	1,003
*Internal Trip Capture Adjustment (25%) **	*-9*	*-7*	*-16*	*-11*	*-7*	*-18*	*-11*	*-7*	*-18*	*-251*
Subtotal – Hotel	***26***	***23***	***49***	***31***	***24***	***55***	***31***	***24***	***55***	***752***
Total	**86**	**68**	**154**	**99**	**86**	**185**	**99**	**86**	**185**	**1,593**

Notes:

The cumulative projects consist of other currently-approved land uses planned to be constructed on the project site.

* Consistent with the *Tioga Inn Specific Plan & Environmental Impact Report (The Company of Eric Jay Toll, AICP, Inc., May 24, 1993)*, the analysis assumes a 25% internal capture to account for the interaction between the compatible land uses on the site.

As shown in Table 4-4, the cumulative projects are forecast to generate approximately 1,593 daily trips which include approximately 154 AM peak hour trips, approximately 185 mid-day peak hour trips, and approximately 185 PM peak hour trips.

It should again be noted the trip generation shown in Table 4-4 is considered conservative since it does not account for *ITE*'s pass-by trip reduction which is applicable to restaurant and retail-related uses located along busy arterial highways attracting vehicle trips already on the roadway; this is particularly the case when the roadway is experiencing peak operating conditions. For example, a motorist already traveling along State Route 120 or Highway 395 between other destinations may stop at the restaurant to get food.

Cumulative Projects traffic volumes are shown on Exhibit 4-5.

4.4 Forecast Opening Year (2023) Without Project Conditions Traffic Volumes

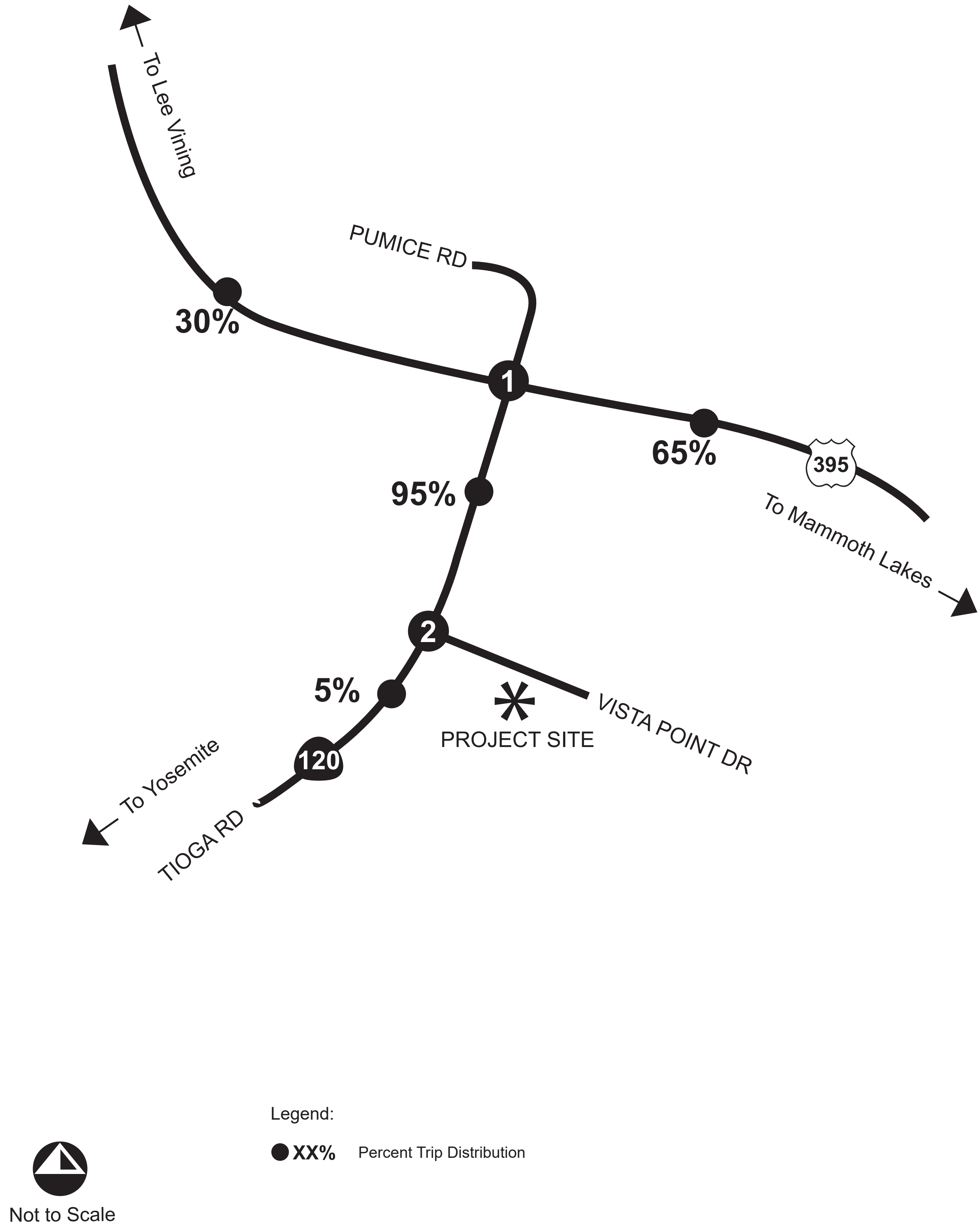
Forecast Opening Year (2023) Without Project Conditions traffic volumes consist of existing traffic volumes and a 10% growth rate (to account for five years of annual growth at a 2% rate) and also the traffic associated with cumulative projects in year 2023 as discussed in Section 4.3.2.

Forecast Opening Year (2023) Without Project Conditions traffic volumes are shown on Exhibit 4-6. The exhibit shows the traffic volumes for year 2023 after accounting for area-wide growth and background/cumulative projects, without the proposed project.

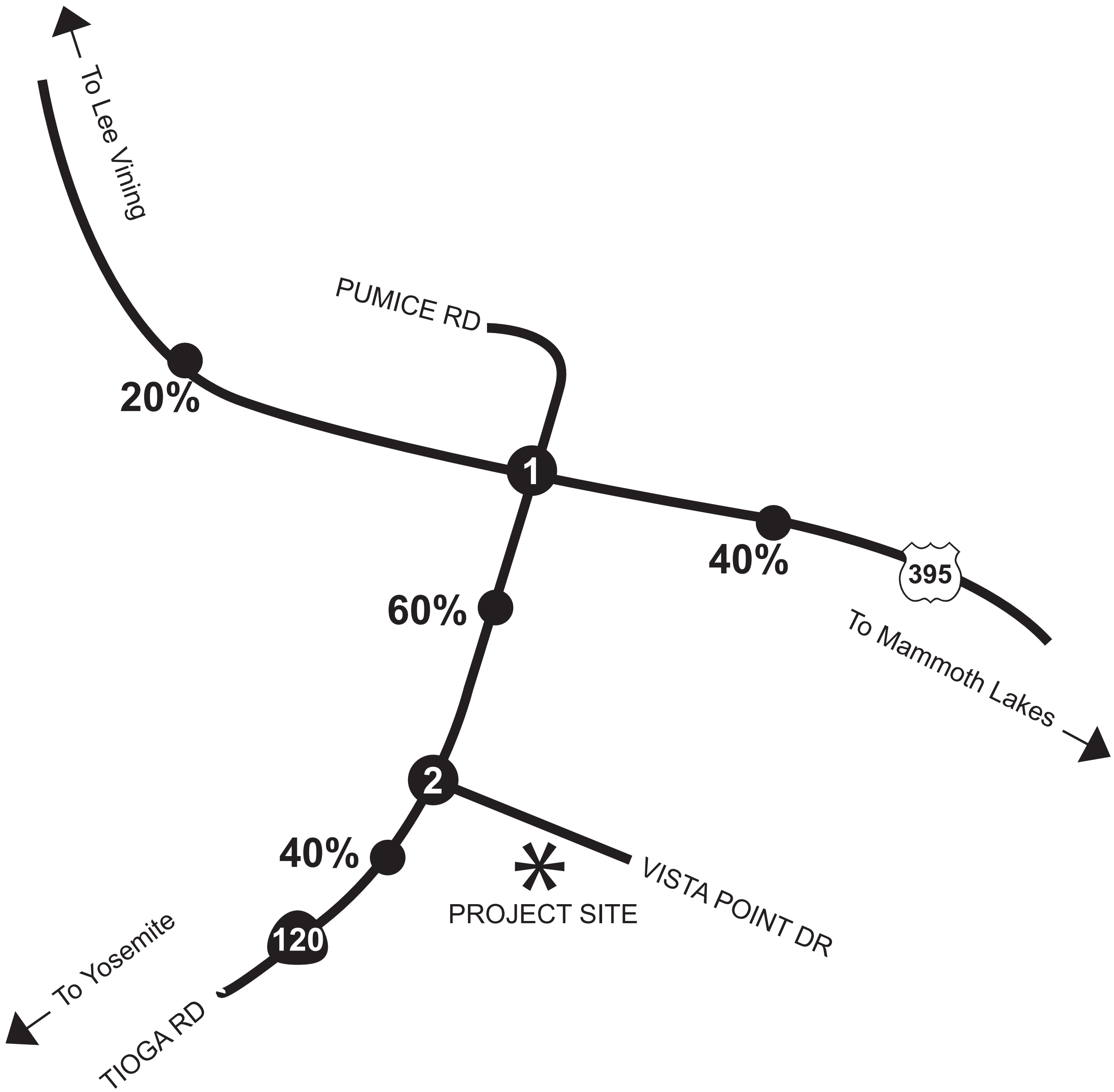
4.5 Forecast Opening Year (2023) With Project Conditions Traffic Volumes

Forecast Opening Year (2023) With Project Conditions traffic volumes are derived by adding project-generated traffic volumes to Forecast Opening Year (2023) Without Project Conditions traffic volumes.

Forecast Opening Year (2023) With Project Conditions traffic volumes are shown on Exhibit 4-7. The exhibit shows the traffic volumes for year 2023 after accounting for area-wide growth and background/cumulative projects, as well as the traffic associated with the proposed project.



Forecast Trip Percent Distribution of Proposed Project (Workforce Housing Element)



Legend:

● XX% Percent Trip Distribution

Not to Scale

Forecast Trip Percent Distribution of Proposed Project (Gas Station Element)

Project Traffic Volumes

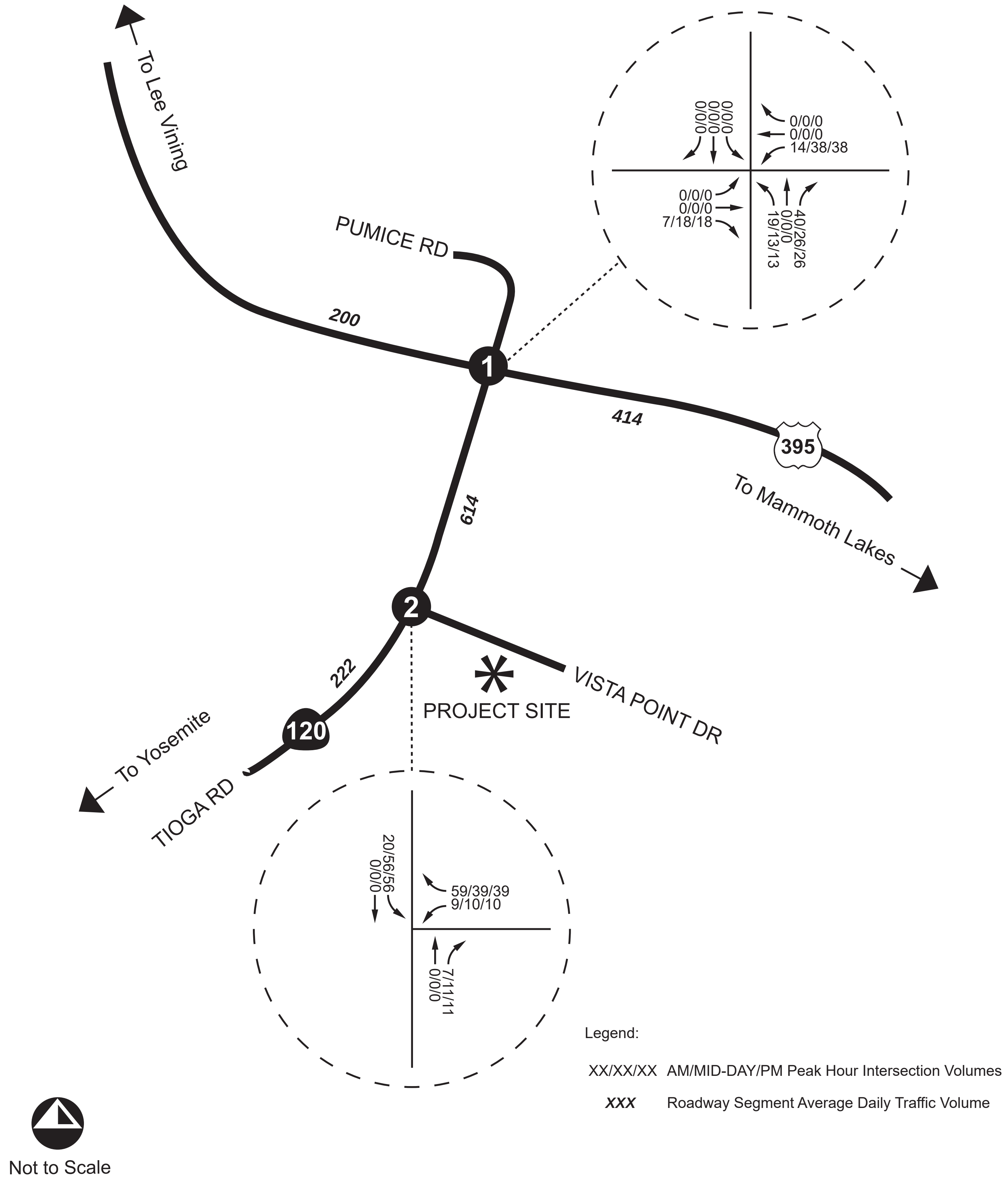
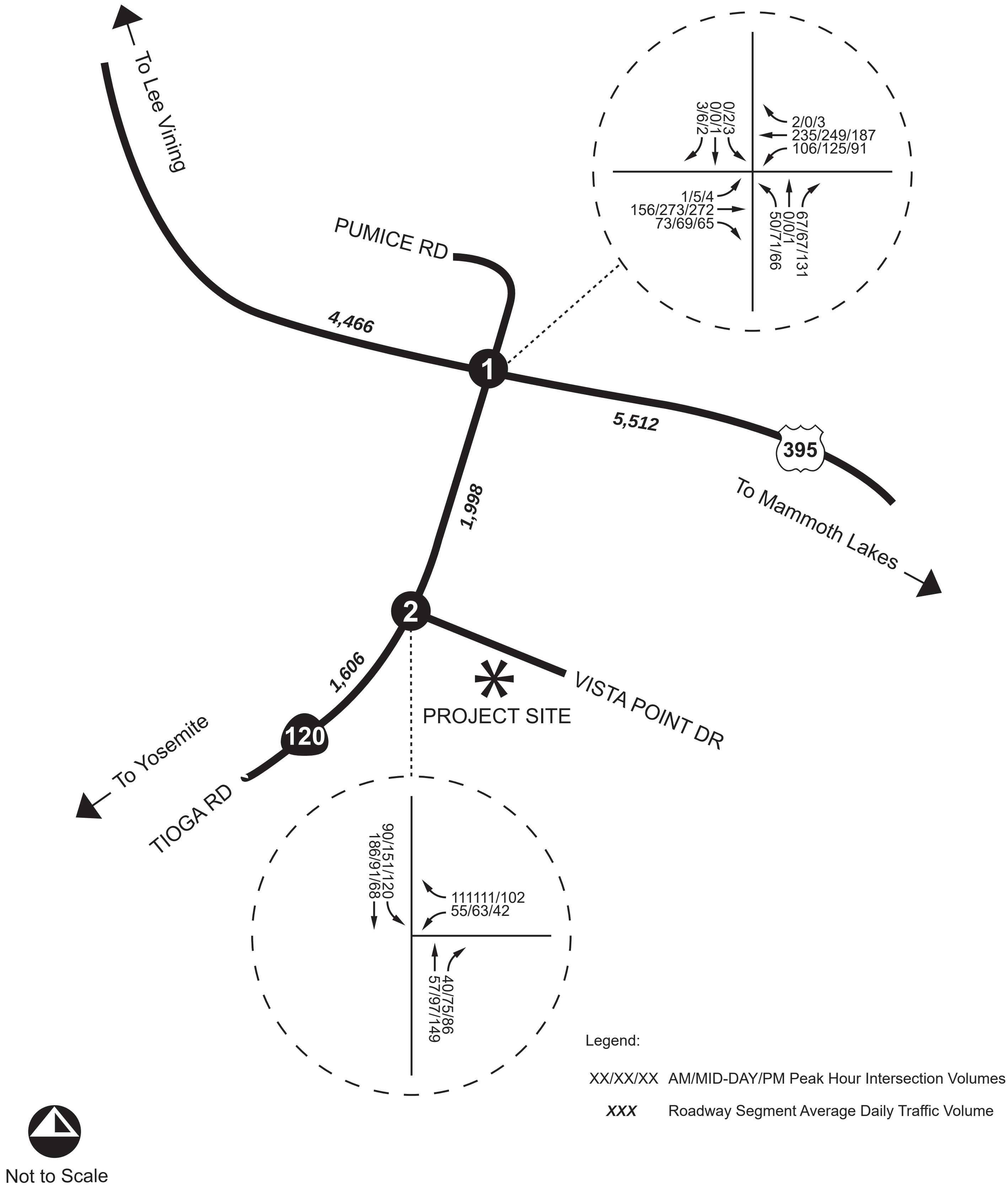
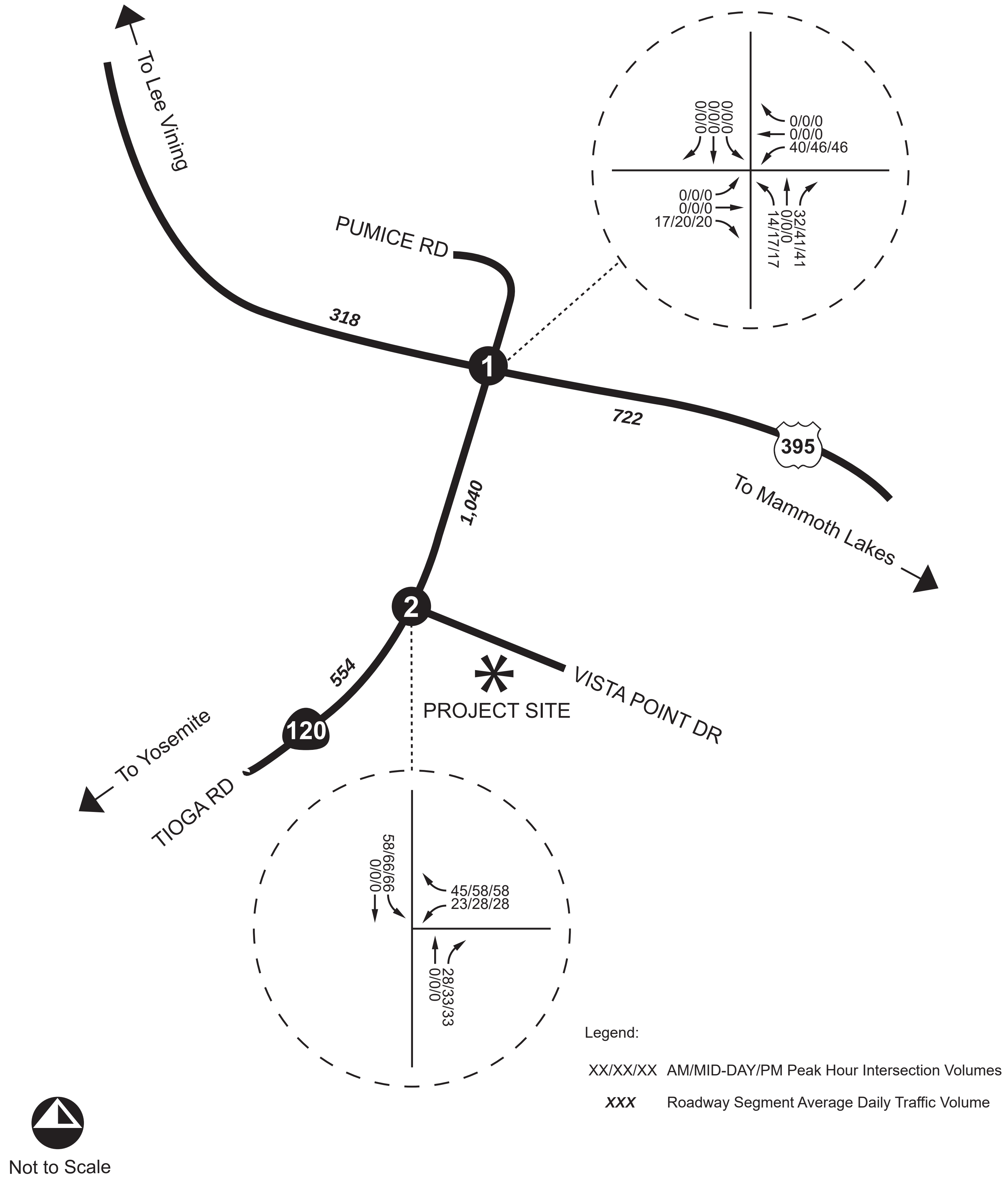


Exhibit 4-3

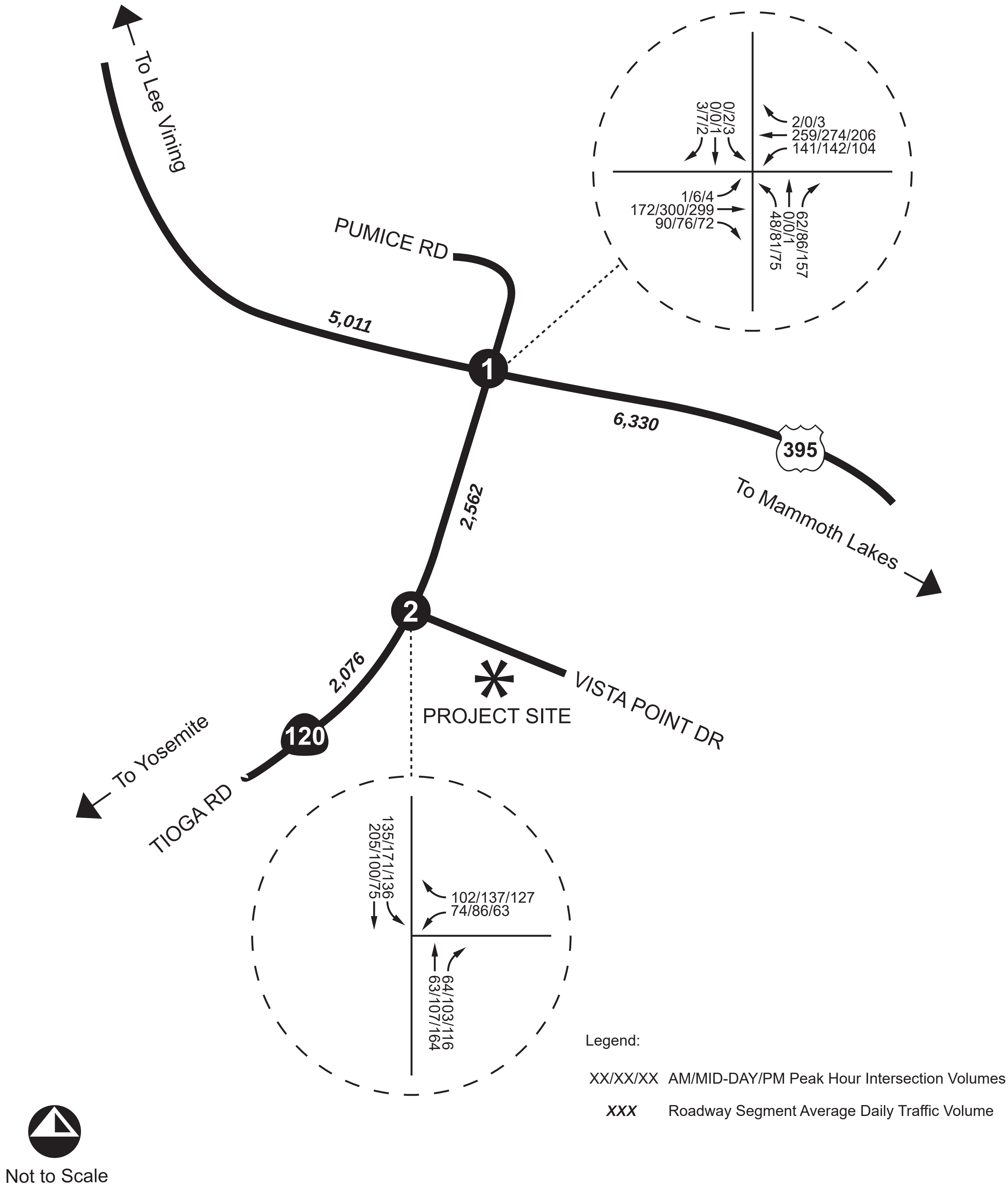


MN ENGINEERING

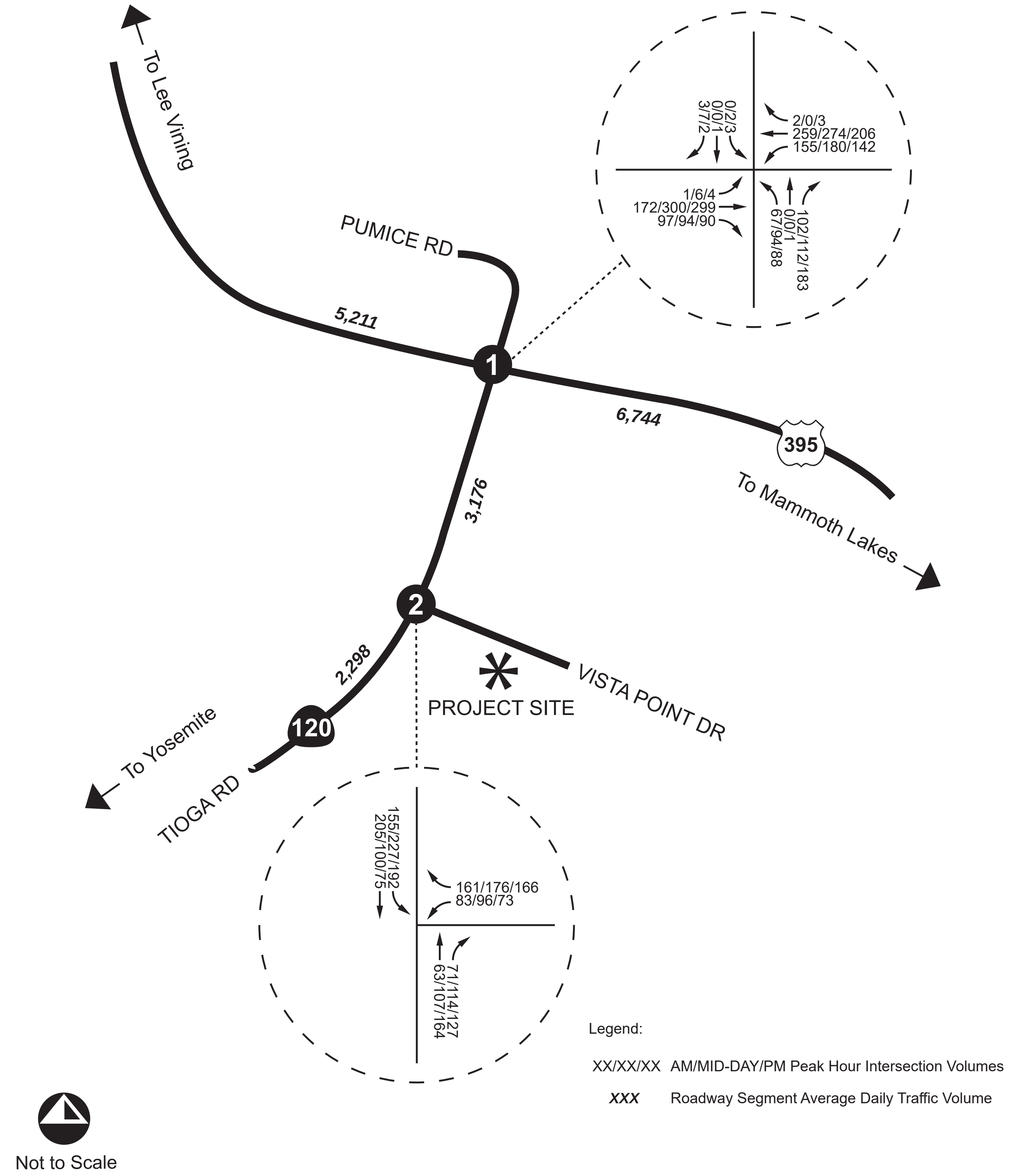
Existing Plus Project Conditions Traffic Volumes



Cumulative Projects Traffic Volumes



Forecast Opening Year (2023) Without Project Conditions Traffic Volumes



Forecast Opening Year (2023) With Project Conditions Traffic Volumes

5.0 MUTCD Traffic Signal Warrant Analysis

The existing Highway 395 / Tioga Road (SR-120) unsignalized study intersection has been evaluated for signalization based on the peak hour and daily warrants and procedures contained in the *California Manual on Uniform Traffic Control Devices (CA MUTCD).* The MUTCD is utilized by Caltrans.

The *California Manual on Uniform Traffic Control Devices (CA MUTCD)* peak hour methodology for evaluation of signal warrants determines if a traffic signal is warranted based on the magnitude of the traffic entering the intersection during a single hour.

Per direction received from Caltrans staff, the traffic signal warrants do not include the eastbound Tioga Road (SR-120) traffic volumes in evaluation of signal warrants since the eastbound right-turn traffic has minimal conflict with the opposing through traffic at this location

Table 5-1 summarizes the results of the *MUTCD* peak hour and daily signal warrant analysis at the Highway 395 / Tioga Road (SR-120) unsignalized study intersection for the analysis scenarios evaluated as part of this report; detailed *MUTCD* signal warrant analysis sheets are contained in Appendix B.

Table 5-1
Highway 395 / Tioga Road (SR-120) MUTCD Traffic Signal Warrant Analysis Summary

Analysis Scenario	Signal Warrant Satisfied?			
	AM Peak Hour	Mid-Day Peak Hour	PM Peak Hour	Daily
Existing Conditions	NO	NO	NO	NO
Existing Plus Project Conditions	NO	NO	NO	NO
Forecast Opening Year (2023) Without Project Conditions	NO	NO	NO	NO
Forecast Opening year (2023) With Project Conditions	NO	NO	NO	NO

As shown in Table 5-1, the Highway 395 / Tioga Road (SR-120) unsignalized study intersection does not satisfy the MUTCD traffic signal warrants for any of the analysis scenarios evaluated as part of this report.

6.0 Peak Hour Level of Service Analysis

This section provides a discussion on the study intersection peak hour level of service analysis and findings.

6.1 Existing Conditions Level of Service Analysis

Existing Conditions Level of Service (LOS) calculations for the study intersections are shown in Table 6-1 and are based upon peak hour turning movement manual counts compiled in July and August 2018; results are shown in Exhibit 3-2 and the existing geometry shown in Exhibit 3-1.

Table 6-1
Existing Conditions
Study Intersection Level of Service Analysis Summary

Study Intersection	Existing Conditions					
	AM Peak Hour		Mid-Day Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
Highway 395 / Tioga Road (SR-120)	15.3	C	23.6	C	15.9	C
Project Access / Tioga Road (SR-120)	12.5	B	13.7	B	12.2	B

Notes:
delay shown in seconds based on 2010 Highway Capacity Manual methodology & Synchro 10 Analysis Software.

As shown in Table 6-1, all study area intersections are currently operating at an acceptable level of service (LOS D or better) during the peak hours for Existing Conditions.

Detailed LOS analysis sheets for Existing Conditions are contained in Appendix C.

6.2 Existing Plus Project Conditions Level of Service Analysis

Existing Plus Project Conditions Level of Service (LOS) calculations for the study intersections are shown in Table 6-2 and are based on the Existing Plus Project Conditions traffic volumes shown in Exhibit 4-4 and the existing geometry shown in Exhibit 3-1.

Table 6-2
Existing Plus Project Conditions
Study Intersection Level of Service Analysis Summary

Study Intersection	Existing Conditions						Existing Plus Project Conditions						Significant Impact?
	AM Peak Hour		Mid-Day Peak Hour		PM Peak Hour		AM Peak Hour		Mid-Day Peak Hour		PM Peak Hour		
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
Highway 395 / Tioga Road (SR-120)	15.3	C	23.6	C	15.9	C	16.8	C	32.4	D	19.1	C	NO
Project Access / Tioga Road (SR-120)	12.5	B	13.7	B	12.2	B	13.3	B	17.2	C	14.6	B	NO

Notes:
Delay shown in seconds based on 2010 Highway Capacity Manual methodology & Synchro 10 Analysis Software.

As shown in Table 6-2, all study area intersections are forecast to continue to operate at an acceptable level of service (LOS D or better) during the peak hours for Existing Plus Project Conditions.

As also shown in Table 6-2, based on agency-established thresholds of significance, the proposed project is forecast to result in a less-than significant traffic impact at the study intersections for Existing Plus Project Conditions.

Detailed LOS analysis sheets for Existing Plus Project Conditions are contained in Appendix D.

6.3 *Forecast Opening Year (2023) Without Project Conditions Level of Service Analysis*

Forecast Opening Year (2023) Without Project Conditions Level of Service (LOS) calculations for the study intersections are shown in Table 6-3; the calculations are based on the Forecast Opening Year (2023) Without Project Conditions traffic volumes shown in Exhibit 4-6 and the existing geometry shown in Exhibit 3-1.

Table 6-3
Forecast Opening Year (2023) Without Project Conditions
Study Intersection Level of Service Analysis Summary

Study Intersection	Forecast Opening Year (2023) Without Project Conditions					
	AM Peak Hour		Mid-Day Peak Hour		PM Peak Hour	
	Delay	LOS	Delay	LOS	Delay	LOS
Highway 395 / Tioga Road (SR-120)	20.2	C	**48.5**	**E**	22.4	C
Project Access / Tioga Road (SR-120)	16.4	C	21.3	C	16.8	C

Notes:
delay shown in seconds based on 2010 Highway Capacity Manual methodology & Synchro 10 Analysis Software.

Deficient operation and significant impact shown in **bold.**

As shown in Table 6-3, all study area intersections are forecast to continue to operate at an acceptable level of service (LOS D or better) during the peak hours for Forecast Opening year (2023) Without Project Conditions with the exception of the following study intersection which is forecast to operate at a deficient level of service (LOS E or worse) during one or more of the analysis peak hours:

- Highway 395 / Tioga Road (SR-120) (Mid-day peak hour).

The deficiency is resulted from the addition of background trips and the traffic associated with the background/cumulative projects in the area, without the project traffic being added.

Detailed LOS analysis sheets for Forecast Opening Year (2023) Without Project Conditions are contained in Appendix E.

6.4 Forecast Opening Year (2023) With Project Conditions Level of Service Analysis

Forecast Opening Year (2023) With Project Conditions Level of Service (LOS) calculations for the study intersections are shown in Table 6-4 and are based on the Forecast Opening Year (2023) With Project Conditions traffic volumes shown in Exhibit 4-7 and the existing geometry shown in Exhibit 3-1.

Table 6-4
Forecast Opening Year (2023) With Project Conditions
Study Intersection Level of Service Analysis Summary

Study Intersection	Forecast Opening Year (2023) Without Project Conditions						Forecast Opening Year (2023) With Project Conditions						Significant Impact?
	AM Peak Hour		Mid-Day Peak Hour		PM Peak Hour		AM Peak Hour		Mid-Day Peak Hour		PM Peak Hour		
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	
Highway 395 / Tioga Road (SR-120)	20.2	C	**48.5**	**E**	22.4	C	23.2	C	**88.5**	**F**	29.6	D	**YES**
With Traffic Signal	---	---	---	---	---	---	*10.8*	*B*	*11.4*	*B*	*11.0*	*B*	*NO*
With One-Lane Roundabout	---	---	---	---	---	---	*9.9*	*A*	*15.9*	*C*	*11.4*	*B*	*NO*
Project Access / Tioga Road (SR-120)	16.4	C	21.3	C	16.8	C	18.1	C	32.0	D	22.4	C	NO

Notes:
For unsignalized and signalized locations, delay shown in seconds based on 2010 Highway Capacity Manual methodology & Synchro 10 Analysis Software.

For roundabouts, delay shown in seconds based on 2010 Highway Capacity Manual methodology & aaSIDRA 6.1 Analysis Software.

Deficient operation and significant impact shown in **bold.**

As shown in Table 6-4, all study area intersections are forecast to continue to operate at an acceptable level of service (LOS D or better) during the peak hours for Forecast Opening year (2023) With Project Conditions with the exception of the following study intersection which is forecast to continue to operate at a deficient level of service (LOS E or worse) during one or more of the analysis peak hours:

- Highway 395 / Tioga Road (SR-120) (Mid-day peak hour).

As also shown in Table 6-4, based on agency-established thresholds of significance, the proposed project is forecast to result in a significant traffic impact at the following study intersection for Forecast Opening Year (2023) With Project Conditions:

- Highway 395 / Tioga Road (SR-120) (Mid-day peak hour).

It should be noted in accordance with the HCM methodology, for one-way or two-way stop-controlled intersections, LOS is based on the worst stop-controlled approach.

Hence, the identified deficient operation and excess delay at the Highway 395 / Tioga Road (SR-120) intersection is experienced only by vehicles on the minor street (stop controlled Tioga Road approach) of the intersection which are performing a left-turn maneuver onto northbound Highway 395. Vehicles traveling along the major roadway (Highway 395) have free flow movement with minimal delay and the overall average delay of the intersection is 10.6 seconds (equivalent to LOS B).

Detailed LOS analysis sheets for Forecast Opening Year (2023) With Project Conditions are contained in Appendix F.

As previously shown in Section 5.0 of this report, the Highway 395 / Tioga Road (SR-120) unsignalized study intersection does <u>not</u> satisfy MUTCD traffic signal warrants for any of the analysis scenarios evaluated as part of this report. Hence, <u>installation of a traffic signal is not warranted and recommended</u>.

Extensive discussions have been held with both Caltrans District 9 and County of Mono staff regarding potential mitigation measures for the Highway 395 / Tioga Road (SR-120) study intersection. Various mitigation measures including signalization, installation of a roundabout, and other less significant modifications have been discussed and evaluated for feasibility and none of the potential modifications have found to be feasible by the agencies.

Hence, the project is found to have a significant and unavoidable impact at the Highway 395 / Tioga Road (SR-120) study intersection during mid-day conditions for Forecast Opening Year (2023) With Project Conditions.

For information purposes, the following two alternatives mitigation measures have been evaluated to improve the operation of the intersection to an acceptable level (LOS D or better). The options are presented as alternatives for consideration by Caltrans for this intersection since both are forecast to achieve acceptable level of service:

- *Highway 395 / Tioga Rd (SR-120) Improvement Alternative A:* Signalize the intersection.

  As shown in Table 6-4, installation of a traffic signal is forecast to achieve acceptable level of service (LOS D or better) at the study intersection for Forecast Opening Year (2023) With Project Conditions and the project's identified significant impact would be reduced to a level considered less than significant.

  Detailed LOS analysis sheets for Forecast Opening Year (2023) With Project Conditions with traffic signal are contained in Appendix G.

- *Highway 395 / Tioga Rd (SR-120) Improvement Alternative B: Convert to a Single-Lane Roundabout*.

  As shown in Table 6-4, conversion of the intersection to a single-lane roundabout is forecast to achieve acceptable level of service (LOS D or better) at the study intersection for Forecast Opening Year (2023) With Project Conditions and the project's identified significant impact would be reduced to a level considered less than significant.

  Detailed LOS analysis sheets for Forecast Opening Year (2023) With Project Conditions with single-lane roundabout are contained in Appendix H.

  If a two-lane roundabout is installed, it is expected to provide even further increased capacity compared to a single-lane roundabout.

However, as previously noted, none of the potential modifications have found to be feasible by the Caltrans and Mono County staff. Hence, the project is found to have a significant and unavoidable impact at the Highway 395 / Tioga Road (SR-120) study intersection during mid-day conditions for Forecast Opening Year (2023) With Project Conditions

As also previously noted, this analysis evaluates traffic conditions during the peak traffic season which is approximately two to three months in length. As requested by Caltrans, to further evaluate the extent of the project's identified mid-day traffic impact for Forecast Opening Year (2023) With Project Conditions, MAT Engineering, Inc., has collected mid-day traffic volumes at the intersection of Highway 395 / Tioga Road (SR-120) during the non-peak season in October 2019. The non-peak season October 2019 mid-day counts are contained in Appendix A.

Exhibit 6-1 shows the Non-peak season mid-day traffic volumes at the Highway 395 / Tioga Road (SR-120) study intersections for the study scenarios evaluated as part of this report.

The same methodologies previously discussed in Section 4.0 of this report were utilized to derive all future non-peak season traffic volumes at this intersection.

Non-peak Season Mid-Day Level of Service (LOS) calculations at the Highway 395 / Tioga Road (SR-120) study intersection for the analysis scenarios evaluated as part of the report are shown in Table 6-5.

Table 6-5
Highway 395 / Tioga Road (SR-120) Study Intersection
***Non-Peak Season Mid-Day* Conditions**
Level of Service Analysis Summary

Study Intersection	Existing Conditions		Existing Plus Project Conditions		Forecast Opening Year (2023) Without Project Conditions		Forecast Opening Year (2023) With Project Conditions	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Highway 395 / Tioga Road (SR-120)	12.7	B	14.9	B	16.5	C	20.6	C

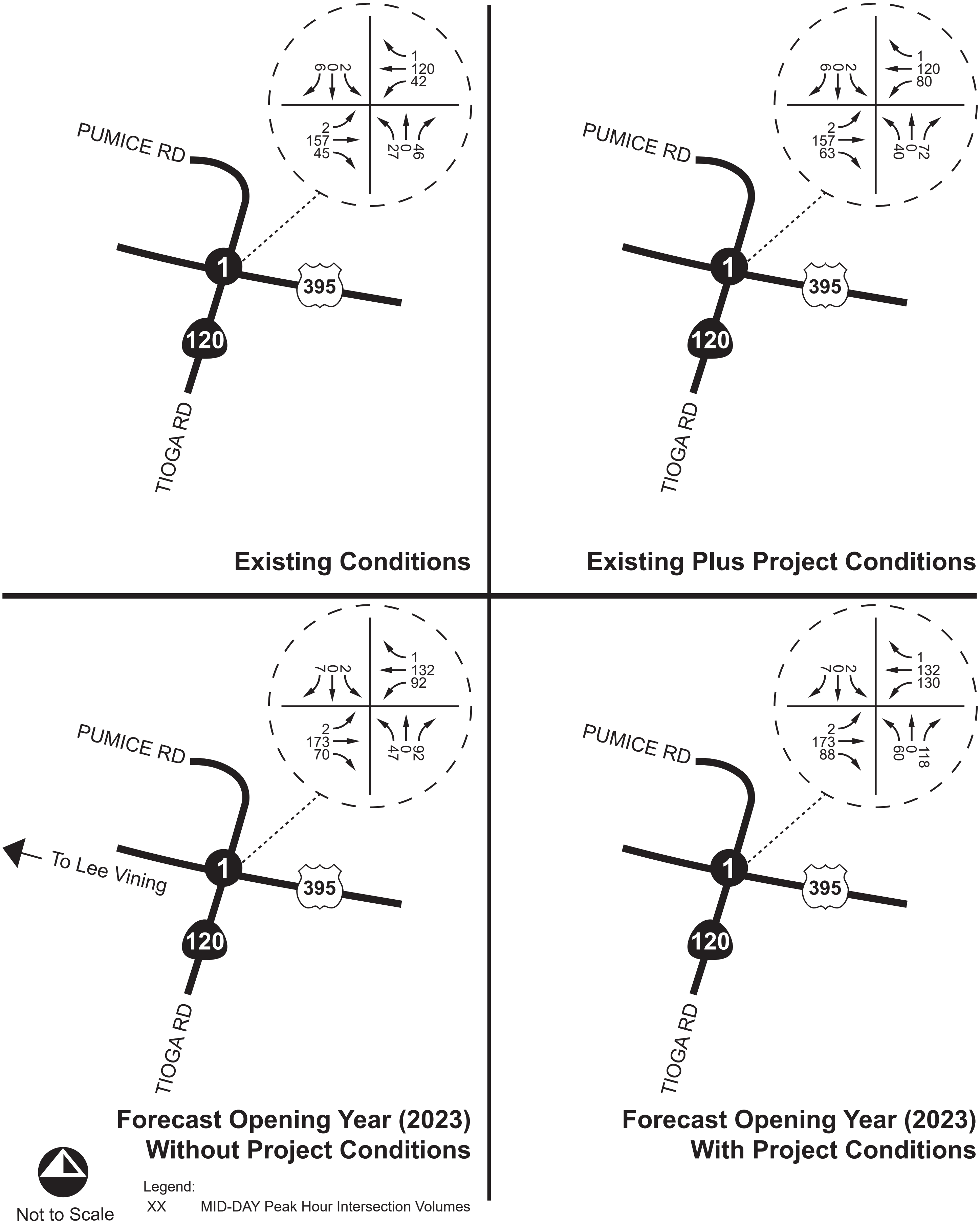
Notes:
Delay shown in seconds based on 2010 Highway Capacity Manual methodology & Synchro 10 Analysis Software.

As shown in Table 6-5, during non-peak season mid-day conditions the Highway 395 / Tioga Road (SR-120) is currently operating at an acceptable level of service (LOS D or better) and is forecast to continue to operate at an acceptable level of service (LOS D or better) for all the analysis scenarios evaluated as part of this report.

Detailed LOS analysis sheets for Non-Peak Season Mid-Day Conditions at the Highway 395 / Tioga Road (SR-120) are contained in Appendix I.

Hence, the deficient mid-day level of service deficiency and related traffic impact is forecast to only occur during the two to three months of peak traffic conditions in the area.

Nevertheless, based on the peak season traffic conditions and volumes, the project is found to have a significant and unavoidable impact at the Highway 395 / Tioga Road (SR-120) study intersection during mid-day conditions for Forecast Opening Year (2023) With Project Conditions.



Legend:
XX MID-DAY Peak Hour Intersection Volumes

Highway 395 / Tioga Road (SR-120) Study Intersection
Non-Peak Season Mid-Day Conditions Traffic Volumes

7.0 Peak Hour Vehicular Queue Analysis

Caltrans has previously reviewed the Notice of Preparation for the proposed project and has provided comments which were contained in a comment letter dated November 17, 2016.

As requested by Caltrans in the comment letter, a peak hour 95th percentile vehicular queue evaluation has been prepared to determine the required turn lane storage to accommodate the forecast traffic volumes at the study intersections. The queue analysis has been prepared for Forecast Opening Year (2023) With Project Conditions, which is the most trip-intensive scenario evaluated as part of this report.

The analysis utilizes the Highway Capacity Manual (HCM) 95th percentile methodology which estimates the vehicular queues with a probability of five percent or less of being exceeded. This methodology is commonly utilized for design of storage lanes and determination of turn lane pocket lengths.

It should be noted, Caltrans does not have established and adopted performance criteria and significant impact thresholds for vehicular queuing. Hence, the vehicular queuing analysis presented in this report is strictly for informational purposes.

Table 7-1 summarizes the results of the HCM 95th percentile vehicular queue evaluation.

Table 7-1
Forecast Opening Year With Project Conditions
HCM 95th Percentile Vehicular Queue Analysis Summary

Study Intersection & Movement	Existing Turn Lane Storage (Feet)	AM Peak Hour		Mid-Day Peak Hour		PM Peak Hour		Adequate Storage?
		Peak Hour Volume	Queue (Feet)	Peak Hour Volume	Queue (Feet)	Peak Hour Volume	Queue (Feet)	
Highway 395 / Tioga Road (SR-120)								
NB Highway 395 Left-Turn Lane	270	155	*12.5*	180	*20.0*	142	*12.5*	YES
SB Highway 395 Right-Turn Lane	380	97	*Nom*	94	*Nom*	90	*Nom*	YES
EB Tioga Rd (SR-120) Shared Through/Left-Turn Lane	800*	67	*27.5*	94	*125.0*	89	*45.0*	YES
Project Access / Tioga Road (SR-120)								
NB Project Access Left-Turn Lane	95	83	*25.0*	96	*60.0*	73	*30.0*	YES
SB Project Access Right-Turn Lane	95	161	*17.5*	176	*25.0*	166	*22.5*	YES
EB Tioga Rd (SR-120) Right-Turn Lane	275	71	*Nom*	114	*Nom*	127	*Nom*	YES
WB Tioga Rd (SR-120) Left-Turn Lane	70	155	*10.0*	227	*22.5*	192	*17.5*	YES

Notes:
Vehicular queue is based on 2010 Highway Capacity Manual 95th percentile methodology & Synchro 10 Analysis Software.

* Distance measured to the nearest/next intersection; Nom = Nominal

As shown in Table 7-1, the existing vehicular storage capacities are forecast to be adequate to accommodate the 95th percentile vehicular queues at the study intersections for Forecast Opening Year (2023) With Project Conditions.

As also shown in Table 7-1, for Forecast Opening Year (2023) With Project Conditions, approximately 227 vehicles are expected to turn left into the project site from Tioga Road (SR-120) during the mid-day peak hour. If needed in the future, this left-turn storage can be extended to provide additional storage capacity beyond the existing capacity by restriping within the existing right-of-way.

8.0 Evaluation of Other Elements

This section provides a discussion and recommendations on the following elements related to the study area and circulation system:

- Collision History and Patterns at the Highway 395 / Tioga Road (SR-120) study intersection;

- Pedestrian & Bicycle Circulation System;

- Caltrans Right-of-Way Acquisition and parking along the Tioga Road frontage; and

- Transportation Demand Management (TDM) recommendations.

8.1 Highway 395 / Tioga Road (SR-120) Collision History

To determine the frequency and patterns of collisions at the Highway 395 / Tioga Road (SR-120) intersection, MAT Engineering reviewed the collision history at the intersection through the California Highway Patrol Statewide Integrated Traffic Records System (SWITRS) database.

The database contains collision history for all jurisdictions reported through local police department and also the Highway Patrol. Data was reviewed for years 2010 through present (2018).

Table 8-1 summarizes the collision history for the intersection.

Table 8-1
Highway 395 / Tioga Road (SR-120) Collision History

Year	Collisions by Category						
	Improper Turn	Unsafe Speed	Right of Way	Travel on Wrong Side	Lane Change	Other *	Total
2010	1	2	1	1	1	1	**7**
2011	1	2	3	0	1	5	**12**
2012	3	5	0	0	0	3	**11**
2013	0	1	1	0	0	1	**3**
2014	1	1	1	0	0	3	**6**
2015	2	3	2	0	0	0	**7**
2016	1	4	0	0	0	0	**5**
2017	2	0	1	0	0	1	**4**
2018	0	2	1	0	0	2	**5**
Total	***11***	***20***	***10***	***1***	***2***	***16***	***60***

Notes:
Source: Statewide Integrated Traffic Records System (SWITRS) for Mono County region accessed in October 2018.

* Mostly consists of collisions of vehicles with wildlife.

As shown in Table 8-1, based on the SWITRS database, there are a total of 60 reported collisions at the Highway 395 / Tioga Road (SR-120) intersection from 2010 to present (2018).

Twenty of the 60 collisions are attributed to high travel speeds.

A substantial number of the collisions are suspected to be a result of high rates of travel speed on Highway 395 near the Tioga Road intersection in addition to limited visibility and sight distance for vehicles approaching the Highway 395 / Tioga Road (SR-120) intersection.

Based on the review of the SWITRS data, there are not a substantial number of collisions reported at the Project Site Access / Tioga Road (SR-120) intersection.

However, based on field observations, drivers traveling eastbound on Tioga Road and approaching the project site access from the Yosemite Park area, appear to sometimes mistakenly shift into the existing right-turn lane into the project site access as they are looking to turn right and southbound onto Highway 395.

Caltrans is considering plans to integrate 'Traffic Calming' improvements on US 395 through Lee Vining, and enhanced safety upgrades at the intersection of Highway 395/ Tioga Road (SR-120) as well as along the apron on both sides of the entry to Tioga Mart, and pedestrian access along 395. Other relevant improvements may also be considered.

Based on the foregoing analysis, it is recommended as part of the improvement project for the State Highway system in this area, that Caltrans consider the following:

- Reduce travel speeds on Highway 395 by implementation of effective traffic calming measures such as narrowing of travel lanes, etc.,
- Provide additional advanced warning signs and/or flashing beacons for vehicles approaching the Highway 395 / Tioga Road (SR-120) intersection;
- Provide additional advanced warning signs and lane assignment information for vehicles approaching the Project Site Access / Tioga Road (SR-120) intersection;
- Consider alternative lane striping options to better and more clearly delineate the right-turn lane entering the project site access from Tioga Road; and
- Increase law enforcement presence.

8.2 <u>Pedestrian & Bicycle Circulation System</u>

To improve the pedestrian and bicycle circulation between the project site and Lee Vining, it is recommended a pedestrian link between the project site and Lee Vining be provided by Caltrans to increase walkability, reduce parking demand in town, and enhance the visitor experience.

Caltrans might want to consider a pedestrian connection across Tioga Road (SR-120), and work with applicable agencies to identify additional alternatives and options for improving pedestrian and bicycle connectivity and circulation.

8.3 <u>Caltrans Right-of-Way Acquisition</u>

Another project element pertains to Caltrans' sale of a 70-foot wide portion of the Tioga Road (SR-120) right-of-way easement to the project applicant. The easement extends for a distance of 1,170-feet adjacent to the Tioga site. A portion of this easement (west of the entry) has long been used informally by Tioga Mart customers as a picnic and play area. The ownership transfer will facilitate long-term use of the picnic area by customers, and provide greater flexibility in design of the land adjacent to and north of the hotel.

Caltrans will continue to own the remaining SR120 right of way, which includes an apron (east and west of the entry) that is used heavily by motorists as a Mono Lake vista point, and also used as an overflow parking area by Tioga Mart patrons.

The following is recommended for implementation by Caltrans and the project applicant:

- Improve and maintain the area to continue to provide parking for patrons and visitors;

- To reduce conflicts between vehicles traveling along Tioga Road (SR-120) and vehicles accessing the parking area, consider implementing a designated point of ingress and egress for this parking area.

- Provide a parking arrangement that maintains adequate sight distance at the project site access on Tioga Road (SR-120); and

- Relocate the existing YARTS bus stop in a manner to maintain adequate sight distance for the Project Site Access / Tioga Road (SR-120) intersection and also minimize conflicts between the busses and vehicles parking in this area or accessing the project site.

8.4 Transportation Demand Management (TDM) Recommendations

TDM is a program of information, encouragement and incentives provided by local or regional organizations to help people know about and use all their transportation options to optimize all modes in the system – and to counterbalance the incentives to drive that are so prevalent in subsidies of parking and roads. These are both traditional and innovative technology-based services to help people use transit, ridesharing, walking, biking, and telework.

8.5 Vehicle Miles Traveled (VMT) Analysis

The County of Mono and Caltrans do not currently have adopted and established threshold of significance for vehicles miles traveled (VMT) analysis and impact. An analysis of VMT has been included in this report for informational purposes.

Table 8-2 summarizes the project's weekday, Saturday, Sunday and overall VMT based on data from the air quality model analysis. The table shows the VMT for both the proposed project as well as the cumulative projects (currently approved hotel and restaurant).

Table 8-2
Forecast Vehicle Miles Traveled (VMT)

Land Use	Annual VMT (miles)
Proposed Project	
Housing	913,057
Gas Station	276,785
Total Proposed Project	1,189,842
Cumulative Projects	
Restaurant	950,261
Hotel	1,511,699
Total Cumulative Projects	2,461,960
Total Proposed Project & Cumulative Projects	***3,651,802***

Notes:
Source: Proposed Project's Air Quality Analysis Model.

As shown in Table 8-2, the proposed project is forecast to result in an annual VMT of 1,189,842 miles.

As also shown in Table 8-2, the cumulative projects are forecast to result in an annual VMT of 2,461,960 miles.

Hence, the proposed project and the cumulative projects combined are forecast to result in an annual VMT of 3,651,802 miles.

9.0 Findings, Conclusions & Recommendations

Provided below is a summary of key findings, conclusions and recommendation of this traffic impact assessment:

9.1 Level of Service & Impact Analysis Summary

Existing Conditions

All study area intersections are currently operating at an acceptable level of service (LOS D or better) during the peak hours for Existing Conditions.

Existing Plus Project Conditions

All study area intersections are forecast to continue to operate at an acceptable level of service (LOS D or better) during the peak hours for Existing Plus Project Conditions.

Based on agency-established thresholds of significance, the proposed project is forecast to not result in a significant traffic impact at the study intersections for Existing Plus Project Conditions.

Forecast Opening Year (2023) Without Project Conditions

All study area intersections are forecast to continue to operate at an acceptable level of service (LOS D or better) during the peak hours for Forecast Opening year Without Project Conditions with the exception of the following study intersection which is forecast to operate at a deficient level of service (LOS E or worse) during one or more of the analysis peak hours:

- Highway 395 / Tioga Road (SR-120) (Mid-day peak hour).

Forecast Opening Year (2023) With Project Conditions

All study area intersections are forecast to continue to operate at an acceptable level of service (LOS D or better) during the peak hours for Forecast Opening year (2023) With Project Conditions with the exception of the following study intersection which is forecast to continue to operate at a deficient level of service (LOS E or worse) during one or more of the analysis peak hours:

- Highway 395 / Tioga Road (SR-120) (Mid-day peak hour).

Based on agency-established thresholds of significance, the proposed project is forecast to result in a significant traffic impact at the following study intersection for Forecast Opening Year (2023) With Project Conditions:

- Highway 395 / Tioga Road (SR-120) (Mid-day peak hour).

It should be noted in accordance with the HCM methodology, for one-way or two-way stop-controlled intersections, LOS is based on the worst stop-controlled approach.

Hence, the identified deficient operation and excess delay at the Highway 395 / Tioga Road (SR-120) intersection is experienced only by vehicles on the minor street (stop controlled Tioga Road approach) of the intersection which are performing a left-turn maneuver onto northbound Highway 395. Vehicles traveling along the major roadway (Highway 395) have free flow movement with minimal delay and the overall average delay of the intersection is 10.6 seconds (equivalent to LOS B).

As previously shown in Section 5.0 of this report, the Highway 395 / Tioga Road (SR-120) unsignalized study intersection does not satisfy MUTCD traffic signal warrants for any of the analysis scenarios evaluated as part of this report. Hence, installation of a traffic signal is not warranted and recommended.

Extensive discussions have been held with both Caltrans District 9 and County of Mono staff regarding potential mitigation measures for the Highway 395 / Tioga Road (SR-120) study intersection. Various mitigation measures including signalization, installation of a roundabout, and other less significant modifications have been discussed and evaluated for feasibility and none of the potential modifications have found to be feasible by the agencies.

Hence, the project is found to have a significant and unavoidable impact at the Highway 395 / Tioga Road (SR-120) study intersection during mid-day conditions for Forecast Opening Year (2023) With Project Conditions.

For information purposes, the following two alternatives mitigation measures have been evaluated to improve the operation of the intersection to an acceptable level (LOS D or better). The options are presented as alternatives for consideration by Caltrans for this intersection since both are forecast to achieve acceptable level of service:

- *Highway 395 / Tioga Rd (SR-120) Improvement Alternative A:* Signalize the intersection.

Installation of a traffic signal is forecast to achieve acceptable level of service (LOS D or better) at the study intersection for Forecast Opening Year (2023) With Project Conditions and the project's identified significant impact would be reduced to a level considered less than significant.

- _Highway 395 / Tioga Rd (SR-120) Improvement Alternative B_: *Convert to a Single-Lane Roundabout*.

  Conversion of the intersection to a single-lane roundabout is forecast to achieve acceptable level of service (LOS D or better) at the study intersection for Forecast Opening Year (2023) With Project Conditions and the project's identified significant impact would be reduced to a level considered less than significant.

  If a two-lane roundabout is installed, it is expected to provide even further increased capacity compared to a single-lane roundabout.

However, as previously noted, none of the potential modifications have found to be feasible by the Caltrans and Mono County staff. Hence, the project is found to have a significant and unavoidable impact at the Highway 395 / Tioga Road (SR-120) study intersection during mid-day conditions for Forecast Opening Year (2023) With Project Conditions

As also previously noted, this analysis evaluates traffic conditions during the peak traffic season which is approximately two to three months in length. As requested by Caltrans, to further evaluate the extent of the project's identified mid-day traffic impact for Forecast Opening Year (2023) With Project Conditions, MAT Engineering, Inc., has collected mid-day traffic volumes at the intersection of Highway 395 / Tioga Road (SR-120) during the non-peak season in October 2019. The non-peak season October 2019 mid-day counts are contained in Appendix A.

During non-peak season mid-day conditions the Highway 395 / Tioga Road (SR-120) is currently operating at an acceptable level of service (LOS D or better) and is forecast to continue to operate at an acceptable level of service (LOS D or better) for all the analysis scenarios evaluated as part of this report.

Hence, the deficient mid-day level of service deficiency and related traffic impact is forecast to only occur during the two to three months of peak traffic conditions in the area.

Nevertheless, based on the peak season traffic conditions and volumes, the project is found to have a significant and unavoidable impact at the Highway 395 / Tioga Road (SR-120) study intersection during mid-day conditions for Forecast Opening Year (2023) With Project Conditions

9.2 Peak Hour Vehicular Queue Analysis Summary

The existing vehicular storage capacities are forecast to be adequate to accommodate the 95th percentile vehicular queues at the study intersections for Forecast Opening Year (2023) With Project Conditions.

For Forecast Opening Year (2023) With Project Conditions, approximately 227 vehicles are expected to turn left into the project site from Tioga Road (SR-120) during the mid-day peak hour. If needed in the future, this left-turn storage can be extended to provide additional storage capacity beyond the existing capacity by restriping within the existing right-of-way.

9.3 Evaluation of Other Elements Summary

Highway 395 / Tioga Road (SR-120) Collision History

Based on the SWITRS database, there are a total of 60 reported collisions at the Highway 395 / Tioga Road (SR-120) intersection from 2010 to present (2018).

Twenty of the 60 collisions are attributed to high travel speeds.

A substantial number of the collisions are suspected to be a result of high rates of travel speed on Highway 395 near the Tioga Road intersection in addition to limited visibility and sight distance for vehicles approaching the Highway 395 / Tioga Road (SR-120) intersection.

Based on the review of the SWITRS data, there are not a substantial number of collisions reported at the Project Site Access / Tioga Road (SR-120) intersection.

However, based on field observations, drivers traveling eastbound on Tioga Road and approaching the project site access from the Yosemite Park area, appear to sometimes mistakenly shift into the existing right-turn lane into the project site access as they are looking to turn right and southbound onto Highway 395.

Caltrans is considering plans to integrate 'Traffic Calming' improvements on US 395 through Lee Vining, and enhanced safety upgrades at the intersection of Highway 395/ Tioga Road (SR-120) as well as along the apron on both sides of the entry to Tioga Mart, and pedestrian access along 395. Other relevant improvements may also be considered.

Based on the foregoing analysis, it is recommended as part of the improvement project for the State Highway system in this area, that Caltrans consider the following:

- Reduce travel speeds on Highway 395 by implementation of effective traffic calming measures such as narrowing of travel lanes, etc.,

- Provide additional advanced warning signs and/or flashing beacons for vehicles approaching the Highway 395 / Tioga Road (SR-120) intersection;

- Provide additional advanced warning signs and lane assignment information for vehicles approaching the Project Site Access / Tioga Road (SR-120) intersection;

- Consider alternative lane striping options to better and more clearly delineate the right-turn lane entering the project site access from Tioga Road; and

- Increase law enforcement presence.

Pedestrian & Bicycle Circulation System

To improve the pedestrian and bicycle circulation between the project site and Lee Vining, it is recommended a pedestrian link between the project site and Lee Vining be provided by Caltrans to increase walkability, reduce parking demand in town, and enhance the visitor experience.

Caltrans might want to consider a pedestrian connection across Tioga Road (SR-120), and work with applicable agencies to identify additional alternatives and options for improving pedestrian and bicycle connectivity and circulation.

Caltrans Right-of-Way Acquisition

Another project element pertains to Caltrans' sale of a 70-foot wide portion of the Tioga Road (SR-120) right-of-way easement to the project applicant. The easement extends for a distance of 1,170-feet adjacent to the Tioga site. A portion of this easement (west of the entry) has long been used informally by Tioga Mart customers as a picnic and play area. The ownership transfer will facilitate long-term use of the picnic area by customers, and provide greater flexibility in design of the land adjacent to and north of the hotel.

Caltrans will continue to own the remaining SR120 right of way, which includes an apron (east and west of the entry) that is used heavily by motorists as a Mono Lake vista point, and also used as an overflow parking area by Tioga Mart patrons.

The following is recommended for implementation by Caltrans and the project applicant:

- Improve and maintain the area to continue to provide parking for patrons and visitors;

- To reduce conflicts between vehicles traveling along Tioga Road (SR-120) and vehicles accessing the parking area, consider implementing a designated point of ingress and egress for this parking area.

- Provide a parking arrangement that maintains adequate sight distance at the project site access on Tioga Road (SR-120); and

Relocate the existing YARTS bus stop in a manner to maintain adequate sight distance for the Project Site Access / Tioga Road (SR-120) intersection and also minimize conflicts between the busses and vehicles parking in this area or accessing the project

Transportation Demand Management (TDM)

TDM is a program of information, encouragement and incentives provided by local or regional organizations to help people know about and use all their transportation options to optimize all modes in the system – and to counterbalance the incentives to drive that are so prevalent in subsidies of parking and roads. These are both traditional and innovative technology-based services to help people use transit, ridesharing, walking, biking, and telework.

Vehicles Miles Traveled (VMT)

The County of Mono and Caltrans do not currently have adopted and established threshold of significance for vehicles miles traveled (VMT) analysis and impact. An analysis of VMT has been included in this report for informational purposes.

The proposed project is forecast to result in an annual VMT of 1,189,842 miles.

The cumulative projects are forecast to result in an annual VMT of 2,461,960 miles.

Hence, the proposed project and the cumulative projects combined are forecast to result in an annual VMT of 3,651,802 miles.

APPENDIX A
Existing Traffic Count Worksheets

Location: State Highway 395 / State Route 120
Day: Thursday 8/9/2018
Time: 8:00 AM to 10:00 AM

15-Minute Counts

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			Westbound Pumice Road			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
8:00 - 8:15	14	26	0	3	21	9	7	0	1	0	0	0	81
8:15-8:30	3	31	0	1	19	9	1	0	2	1	0	2	69
8:30-8:45	22	41	0	0	36	10	5	0	12	0	0	1	127
8:45-9:00	24	40	1	0	26	12	6	0	10	0	0	1	120
Hour Total	**63**	**138**	**1**	**4**	**102**	**40**	**19**	**0**	**25**	**1**	**0**	**4**	**397**
9:00-9:15	26	45	1	0	27	8	10	0	4	0	0	1	122
9:15-9:30	20	69	1	1	50	20	4	0	8	0	0	1	174
9:30-9:45	22	57	0	0	36	17	8	0	4	0	0	1	145
9:45-10:00	24	64	0	0	43	21	9	0	11	0	0	0	172
Hour Total	**92**	**235**	**2**	**1**	**156**	**66**	**31**	**0**	**27**	**0**	**0**	**3**	**613**
Total	***155***	***373***	***3***	***5***	***258***	***106***	***50***	***0***	***52***	***1***	***0***	***7***	***1010***

60-Minute Counts

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			Westbound Pumice Road			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
8:00 - 9:00	63	138	1	4	102	40	19	0	25	1	0	4	**397**
8:15 - 9:15	75	157	2	1	108	39	22	0	28	1	0	5	**438**
8:30 - 9:30	92	195	3	1	139	50	25	0	34	0	0	4	**543**
8:45 - 9:45	92	211	3	1	139	57	28	0	26	0	0	4	**561**
9:00 - 10:00	92	235	2	1	156	66	31	0	27	0	0	3	**613**

Peak Hour

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			---			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
9:00 - 10:00	92	235	2	1	156	66	31	0	27	0	0	3	**613**

Peak Hour Factor: 0.88

Location: State Highway 395 / State Route 120
Day: Thursday 8/9/2018
Time: 12:00 PM to 2:00 PM

15-Minute Counts

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			Westbound Pumice Road			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
12:00 - 12:15	26	85	0	2	93	11	12	0	8	1	0	2	240
12:15 - 12:30	29	55	0	0	61	12	15	0	6	1	0	1	180
12:30 - 12:45	20	54	0	0	54	12	15	0	12	0	0	2	169
12:45 - 1:00	12	55	0	3	65	16	16	0	15	0	0	1	183
Hour Total	**87**	**249**	**0**	**5**	**273**	**51**	**58**	**0**	**41**	**2**	**0**	**6**	**772**
1:00 - 1:15	8	71	0	0	60	14	18	0	13	1	0	0	185
1:15 - 1:30	11	58	0	0	62	21	23	0	21	0	0	1	197
1:30 - 1:45	13	39	0	0	51	20	13	4	20	0	0	1	161
1:45 - 2:00	17	66	0	0	73	8	20	0	9	0	0	0	193
Hour Total	**49**	**234**	**0**	**0**	**246**	**63**	**74**	**4**	**63**	**1**	**0**	**2**	**736**
Total	***136***	***483***	***0***	***5***	***519***	***114***	***132***	***4***	***104***	***3***	***0***	***8***	***1508***

60-Minute Counts

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			Westbound Pumice Road			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
12:00 - 1:00	87	249	0	5	273	51	58	0	41	2	0	6	**772**
12:15 - 1:15	69	235	0	3	240	54	64	0	46	2	0	4	**717**
12:30 - 1:30	51	238	0	3	241	63	72	0	61	1	0	4	**734**
12:45 - 1:45	44	223	0	3	238	71	70	4	69	1	0	3	**726**
1:00 - 2:00	49	234	0	0	246	63	74	4	63	1	0	2	**736**

Peak Hour

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			---			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
12:00 - 1:00	87	249	0	5	273	51	58	0	41	2	0	6	**772**

Peak Hour Factor: 0.8

Location: State Highway 395 / State Route 120
Day: Thursday 8/9/2018
Time: 4:00 PM to 6:00 PM

15-Minute Counts

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			Westbound Pumice Road			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
4:00 - 4:15	14	50	0	0	65	8	17	0	24	0	0	0	178
4:15 - 4:30	9	54	1	0	61	12	15	0	24	0	0	0	176
4:30 - 4:45	16	49	0	2	79	5	16	0	30	1	0	2	200
4:45 - 5:00	11	40	2	1	54	19	14	0	26	1	1	0	169
Hour Total	**50**	**193**	**3**	**3**	**259**	**44**	**62**	**0**	**104**	**2**	**1**	**2**	**723**
5:00 - 5:15	17	44	0	1	78	11	8	1	25	1	0	0	186
5:15 - 5:30	10	44	0	0	59	13	16	0	22	0	1	1	166
5:30 - 5:45	11	44	0	1	53	9	18	0	14	1	0	0	151
5:45 - 6:00	16	46	0	0	40	10	16	1	20	0	1	1	151
Hour Total	**54**	**178**	**0**	**2**	**230**	**43**	**58**	**2**	**81**	**2**	**2**	**2**	**654**
Total	***104***	***371***	***3***	***5***	***489***	***87***	***120***	***2***	***185***	***4***	***3***	***4***	***1377***

60-Minute Counts

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			Westbound Pumice Road			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
4:00 - 5:00	50	193	3	3	259	44	62	0	104	2	1	2	**723**
4:15 - 5:15	53	187	3	4	272	47	53	1	105	3	1	2	**731**
4:30 - 5:30	54	177	2	4	270	48	54	1	103	3	2	3	**721**
4:45 - 5:45	49	172	2	3	244	52	56	1	87	3	2	1	**672**
5:00 - 6:00	54	178	0	2	230	43	58	2	81	2	2	2	**654**

Peak Hour

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			---			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
4:15 - 5:15	53	187	3	4	272	47	53	1	105	3	1	2	**731**

Peak Hour Factor: 0.91

Location: Project Access / State Route 120
Day: Thursday 7/12/2018
Time: 8:00 AM to 10:00 AM

15-Minute Counts

Time	Northbound Project Access			---			Eastbound SR 120			Westbound SR 120			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
8:00 - 8:15	3	0	5	0	0	0	0	4	3	11	31	0	57
8:15-8:30	6	0	5	0	0	0	0	14	7	9	30	0	71
8:30-8:45	7	0	12	0	0	0	0	8	12	21	34	0	94
8:45-9:00	10	0	6	0	0	0	0	6	10	13	37	0	82
Hour Total	**26**	**0**	**28**	**0**	**0**	**0**	**0**	**32**	**32**	**54**	**132**	**0**	**304**
9:00-9:15	21	0	12	0	0	0	0	10	5	25	33	0	106
9:15-9:30	9	0	8	0	0	0	0	12	9	12	44	0	94
9:30-9:45	10	0	16	0	0	0	0	17	9	21	47	0	120
9:45-10:00	6	0	16	0	0	0	0	18	10	12	62	0	124
Hour Total	**46**	**0**	**52**	**0**	**0**	**0**	**0**	**57**	**33**	**70**	**186**	**0**	**444**
Total	***72***	***0***	***80***	***0***	***0***	***0***	***0***	***89***	***65***	***124***	***318***	***0***	***748***

60-Minute Counts

Time	Northbound Project Access			---			Eastbound SR 120			Westbound SR 120			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
8:00 - 9:00	26	0	28	0	0	0	0	32	32	54	132	0	**304**
8:15 - 9:15	44	0	35	0	0	0	0	38	34	68	134	0	**353**
8:30 - 9:30	47	0	38	0	0	0	0	36	36	71	148	0	**376**
8:45 - 9:45	50	0	42	0	0	0	0	45	33	71	161	0	**402**
9:00 - 10:00	46	0	52	0	0	0	0	57	33	70	186	0	**444**

Peak Hour

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			---			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
9:00 - 10:00	46	0	52	0	0	0	0	57	33	70	186	0	**444**

Peak Hour Factor: 0.9

Location: Project Access / State Route 120
Day: Thursday 7/12/2018
Time: 12:00 PM to 2:00 PM

15-Minute Counts

Time	Northbound Project Access			---			Eastbound SR 120			Westbound SR 120			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
12:00 - 12:15	8	0	9	0	0	0	0	26	9	13	45	0	110
12:15 - 12:30	9	0	13	0	0	0	0	22	13	15	26	0	98
12:30 - 12:45	4	0	14	0	0	0	0	24	21	20	25	0	108
12:45 - 1:00	12	0	18	0	0	0	0	27	15	21	14	0	107
Hour Total	**33**	**0**	**54**	**0**	**0**	**0**	**0**	**99**	**58**	**69**	**110**	**0**	**423**
1:00 - 1:15	10	0	18	0	0	0	0	21	8	22	23	0	102
1:15 - 1:30	11	0	17	0	0	0	0	22	18	19	28	0	115
1:30 - 1:45	20	0	19	0	0	0	0	27	23	33	26	0	148
1:45 - 2:00	15	0	16	0	0	0	0	27	9	16	22	0	105
Hour Total	**56**	**0**	**70**	**0**	**0**	**0**	**0**	**97**	**58**	**90**	**99**	**0**	**470**
Total	***89***	***0***	***124***	***0***	***0***	***0***	***0***	***196***	***116***	***159***	***209***	***0***	***893***

60-Minute Counts

Time	Northbound Project Access			---			Eastbound SR 120			Westbound SR 120			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
12:00 - 1:00	33	0	54	0	0	0	0	99	58	69	110	0	**423**
12:15 - 1:15	35	0	63	0	0	0	0	94	57	78	88	0	**415**
12:30 - 1:30	37	0	67	0	0	0	0	94	62	82	90	0	**432**
12:45 - 1:45	53	0	72	0	0	0	0	97	64	95	91	0	**472**
1:00 - 2:00	56	0	70	0	0	0	0	97	58	90	99	0	**470**

Peak Hour

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			---			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
12:45 - 1:45	53	0	72	0	0	0	0	97	64	95	91	0	**472**

Peak Hour Factor: 0.8

Location: Project Access / State Route 120
Day: Thursday 7/12/2018
Time: 4:00 PM to 6:00 PM

15-Minute Counts

Time	Northbound Project Access			---			Eastbound SR 120			Westbound SR 120			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
4:00 - 4:15	10	0	14	0	0	0	0	38	25	17	21	0	125
4:15 - 4:30	7	0	16	0	0	0	0	43	17	19	18	0	120
4:30 - 4:45	10	0	17	0	0	0	0	47	13	15	17	0	119
4:45 - 5:00	5	0	16	0	0	0	0	21	20	13	12	0	87
Hour Total	**32**	**0**	**63**	**0**	**0**	**0**	**0**	**149**	**75**	**64**	**68**	**0**	**451**
5:00 - 5:15	6	0	15	0	0	0	0	38	12	9	14	0	94
5:15 - 5:30	7	0	13	0	0	0	0	35	11	19	19	0	104
5:30 - 5:45	6	0	22	0	0	0	0	26	14	15	18	0	101
5:45 - 6:00	10	0	24	0	0	0	0	50	14	20	16	0	134
Hour Total	**29**	**0**	**74**	**0**	**0**	**0**	**0**	**149**	**51**	**63**	**67**	**0**	**433**
Total	***61***	***0***	***137***	***0***	***0***	***0***	***0***	***298***	***126***	***127***	***135***	***0***	***884***

60-Minute Counts

Time	Northbound Project Access			---			Eastbound SR 120			Westbound SR 120			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
4:00 - 5:00	32	0	63	0	0	0	0	149	75	64	68	0	**451**
4:15 - 5:15	28	0	64	0	0	0	0	149	62	56	61	0	**420**
4:30 - 5:30	28	0	61	0	0	0	0	141	56	56	62	0	**404**
4:45 - 5:45	24	0	66	0	0	0	0	120	57	56	63	0	**386**
5:00 - 6:00	29	0	74	0	0	0	0	149	51	63	67	0	**433**

Peak Hour

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			---			Total
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
4:00 - 5:00	32	0	63	0	0	0	0	149	75	64	68	0	**451**

Peak Hour Factor: 0.84

Location: State Highway 395 / State Route 120
Day: Tuesday 10/29/2019
Time: 12:00 PM to 2:00 PM

15-Minute Counts

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			Westbound Pumice Road			Total
	NBL	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	
12:00 - 12:15	9	32	0	0	30	14	7	0	15	1	0	2	110
12:15 - 12:30	13	28	0	0	47	12	7	0	9	1	0	1	118
12:30 - 12:45	15	26	1	1	40	8	3	0	12	0	0	2	108
12:45 - 1:00	5	34	0	1	40	11	10	0	10	0	0	1	112
Hour Total	**42**	**120**	**1**	**2**	**157**	**45**	**27**	**0**	**46**	**2**	**0**	**6**	**448**
1:00 - 1:15	8	22	1	0	36	7	11	0	7	1	0	0	93
1:15 - 1:30	6	31	0	1	39	8	3	0	10	0	0	1	99
1:30 - 1:45	9	28	0	0	29	11	3	4	9	0	0	1	94
1:45 - 2:00	6	39	0	0	35	9	10	0	9	0	0	0	108
Hour Total	**29**	**120**	**1**	**1**	**139**	**35**	**27**	**4**	**35**	**1**	**0**	**2**	**394**
Total	***71***	***240***	***2***	***3***	***296***	***80***	***54***	***4***	***81***	***3***	***0***	***8***	***842***

60-Minute Counts

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			Westbound Pumice Road			Total
	NBL	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	
12:00 - 1:00	42	120	1	2	157	45	27	0	46	2	0	6	**448**
12:15 - 1:15	41	110	2	2	163	38	31	0	38	2	0	4	**431**
12:30 - 1:30	34	113	2	3	155	34	27	0	39	1	0	4	**412**
12:45 - 1:45	28	115	1	2	144	37	27	4	36	1	0	3	**398**
1:00 - 2:00	29	120	1	1	139	35	27	4	35	1	0	2	**394**

Peak Hour

Time	Northbound Highway 395			Southbound Highway 395			Eastbound SR 120			---			Total
	NBL	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	
12:00 - 1:00	42	120	1	2	157	45	27	0	46	2	0	6	**448**

Peak Hour Factor: 0.95

APPENDIX B
MUTCD Traffic Signal Analysis Worksheets

California MUTCD 2014 Edition

Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

Urban/Rural (1/2) =	**2**					
SCENARIO:	**Existing Conditions**					
MAJOR STREET:	**Highway 395**	ADT	=	**4,682**	Lanes=	**2**
MINOR STREET:	**Tioga Rd (SR-120)**	ADT	=	**692**	Lanes=	**1**

(Based on Estimated Average Daily Traffic-See Note)

URBAN	RURAL XX	Minimum Requirements EADT	
1A - Minimum Vehicular Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)
Satisfied	Not Satisfied XX		
Number of lanes for moving traffic on each approach.			
Major Street	Minor Street	Urban / Rural	Urban / Rural
1	1	8,000 / 5,600	2,400 / 1,680
2 or More 4,682	1 692	9,600 / 6,720	2,400 / 1,680
2 or More	2 or More	9,600 / 6,720	3,200 / 2,240
1	2 or More	8,000 / 5,600	3,200 / 2,240
1B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)
Satisfied	Not Satisfied XX		
Number of lanes for moving traffic on each approach.			
Major Street	Minor Street	Urban / Rural	Urban / Rural
1	1	12,000 / 8,400	1,200 / 850
2 or More 4,682	1 692	14,400 / 10,080	1,200 / 850
2 or More	2 or More	14,400 / 10,080	1,600 / 1,120
1	2 or More	12,000 / 8,400	1,600 / 1,120
1A&B - Combinations			
Satisfied	Not Satisfied XX		
No one warrant satisfied, but following warrants fulfilled 80% or more…		2 Warrants	2 Warrants
41% 1A	46% 1B		

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

10/4/2018

2014 Edition

WARRANT 3 - PEAK HOUR (70% FACTOR)
(Rural Areas)

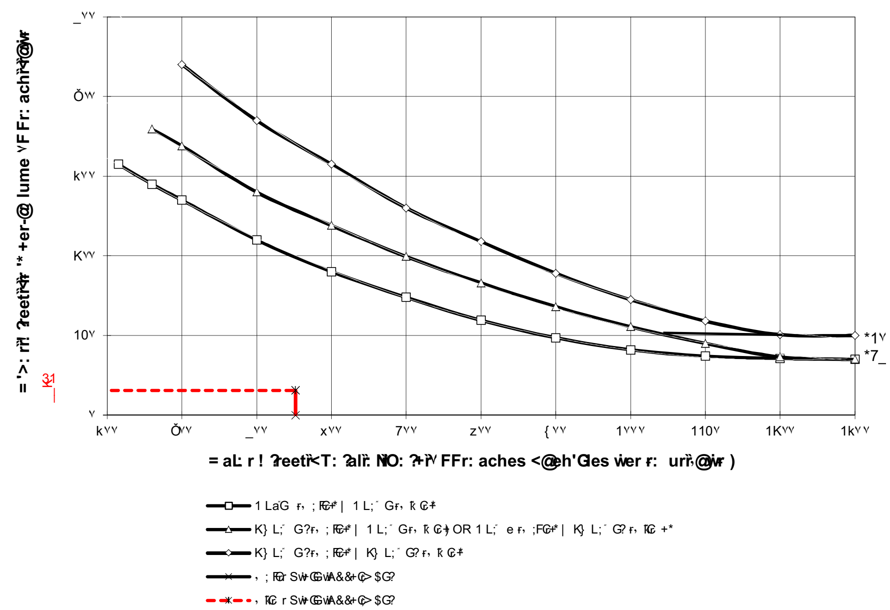
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 MPH OR ABOVE 40 MPH ON MAJOR STREET)

Traffic Conditions = **Existing Conditions Peak Hour**

Major Street Name = **Highway 395** — Total Volume Both Approaches (VPH) = **552**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Tioga Rd (SR-120)** — High Volume Approach (VPH) = **31**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approaching with one lane.

NOTE XG 2014

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Kꟸ RRANT 3kṙwĈK HOUR (€0%ṙFꟸ CTOR)
(Rural Areas)

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,; FĈr St+CĈiN; " G@**r '* +. a/ ṙ395**

TĈij KC<BoĀ A&&+C; >$G? (VPH) @ **566**

NumXG+C<A&&+C;>h Lanes , ;FC+SwGGĀ@ **2**

,ṙ˙ C+SwGGiN; " G@**T': * a R; ṙ! R<120)**

HṙY$ VoKC' GA&&+C; >$ (VPH) @ **59**

NumXG+C<A&&+C;>h Lanes , ṙC+ SwGGĀ@ **1**

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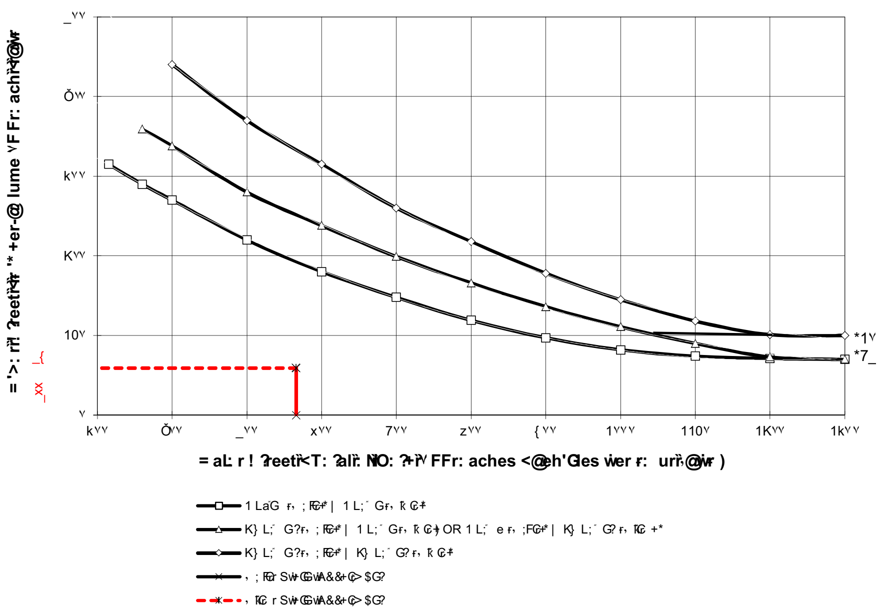

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2014 ṙ dṁĀC

Kꟸ RRANT 3kṙwĈK HOUR (€0%ṙFꟸ CTOR)
(Rural Areas)

ṙCO, UNITY LESS THAN 10,000 POPULATION OR ABOVE 70 ! " #$ OR ABOVE 40 " ph ON , AJOR STREET)

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,; FĈr St+CĈiN; " G@r '* +. a/ ṙ395

TĈij KC<BoĀ A&&+C; >$G? (VPH) @ 566

NumXG+C<A&&+C;>h Lanes , ;FC+SwGGĀ@ 2

,ṙ˙ C+SwGGiN; " G@T': * a R; ṙ! R<120)

HṙY$ VoKC' GA&&+C; >$ (VPH) @ 59

NumXG+C<A&&+C;>h Lanes , ṙC+ SwGGĀ@ 1

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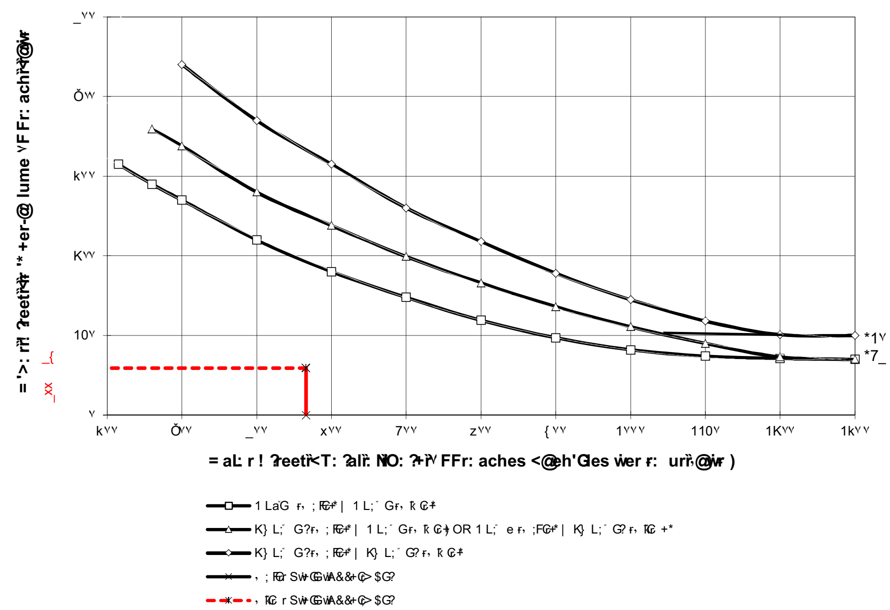

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th+G?$CK \ CKC' GfC+a mṙ C+^?ĀGĀ;&&+C;>h] ĀĀ one KG`

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California MUTCD 2014 Edition

Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**

SCENARIO: **Existing + Project Conditions**

MAJOR STREET: **Highway 395** ADT = **4,989** Lanes= **2**

MINOR STREET: **Tioga Rd (SR-120)** ADT = **999** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

URBAN RURAL XX	Minimum Requirements EADT	
1A - Minimum Vehicular Traffic Satisfied / Not Satisfied XX	Vehicles Per Day on Major Street (Total of Both Approaches)	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)
Number of lands for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	8,000 / 5,600	2,400 / 1,680
2 or More 4,989 / 1 999	9,600 / 6,720	2,400 / 1,680
2 or More / 2 or More	9,600 / 6,720	3,200 / 2,240
1 / 2 or More	8,000 / 5,600	3,200 / 2,240
1B - Interruption of Continuous Traffic Satisfied / Not Satisfied XX	Vehicles Per Day on Major Street (Total of Both Approaches)	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)
Number of lanes for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	12,000 / 8,400	1,200 / 850
2 or More 4,989 / 1 999	14,400 / 10,080	1,200 / 850 *
2 or More / 2 or More	14,400 / 10,080	1,600 / 1,120
1 / 2 or More	12,000 / 8,400	1,600 / 1,120
1A&B - Combinations Satisfied / Not Satisfied XX No one warrant satisfied, but following warrants fulfilled 80% or more… 59% 1A / 49% 1B	2 Warrants	2 Warrants

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

10/4/2018

2014 Edition

WARRANT 3 - PEAK HOUR (70% FACTOR)
(Rural Areas)

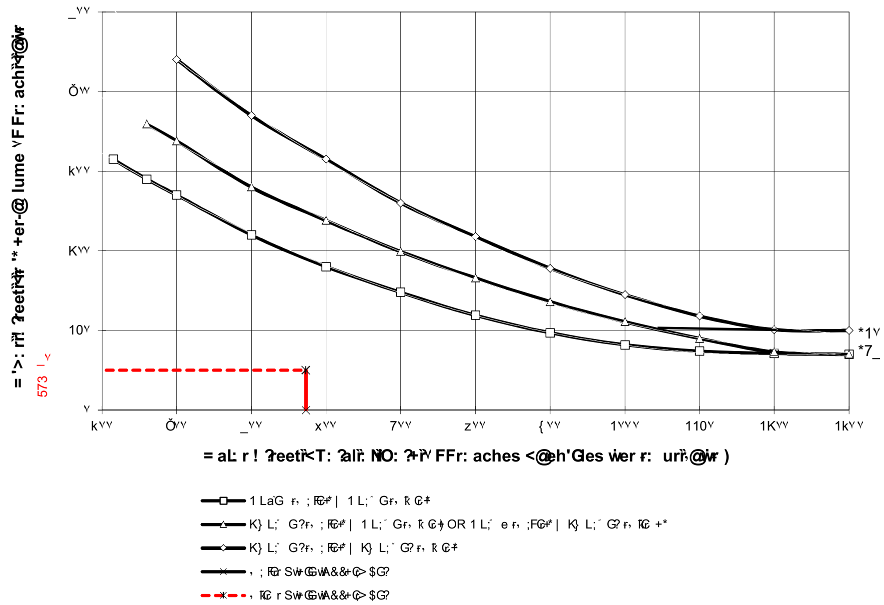
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 MPH OR ABOVE 40 MPH ON MAJOR STREET)

Traffic Conditions = **Existing + Project Conditions - Peak Hour**

Major Street Name = **Highway 395** Total of Both Approaches (VPH) = **573**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Tioga Rd (SR-120)** High Volume Approach (VPH) = **50**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approaching with one lane.

Figure 4C-4

2014 ï dkÑ

K᳟ RRANT 3kÏwÇK HOUR (Ç0%ïF᳟ CTOR)
(Rural Areas)

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,; Fr St+GN; " G@r '* +. a/ ï395 — TÇ KC<Bo A&&+C; >$G? (VPH) @ **721**

NumXG+C<A&&+C;>h Lanes , ;FC+SGG@ **2**

,k˙ C+SGG N; " G@T': * a R; ï! R<120) — HÏ$ VoK' GA&&+C; >$ (VPH) @ **72**

NumXG+C<A&&+C;>h Lanes , C+ SGG@ **1**

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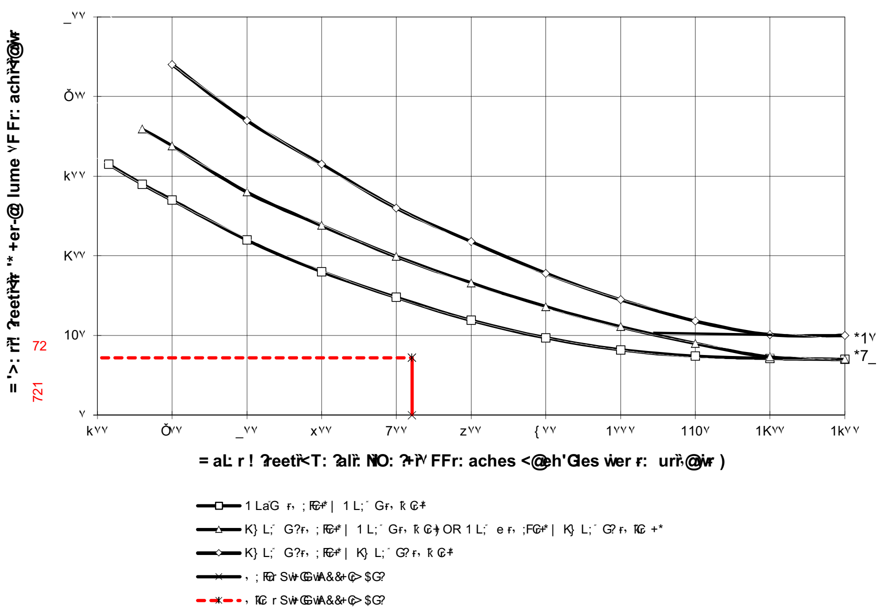

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2014 ï dkÑ

K᳟ RRANT 3kÏwÇK HOUR (Ç0%ïF᳟ CTOR)
(Rural Areas)

ŗCO, , UNITY LESS THAN 10,000 POPULATION OR ABOVE 70 ! " #$ OR ABOVE 40 " ph ON , AJOR STREET)

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,; Fr St+GN; " G@r '* +. a/ ï395 — TÇ KC<Bo A&&+C; >$G? (VPH) @ **622**

NumXG+C<A&&+C;>h Lanes , ;FC+SGG@ **2**

,k˙ C+SGG N; " G@T': * a R; ï! R<120) — HÏ$ VoK' GA&&+C; >$ (VPH) @ **PC**

NumXG+C<A&&+C;>h Lanes , C+ SGG@ **1**

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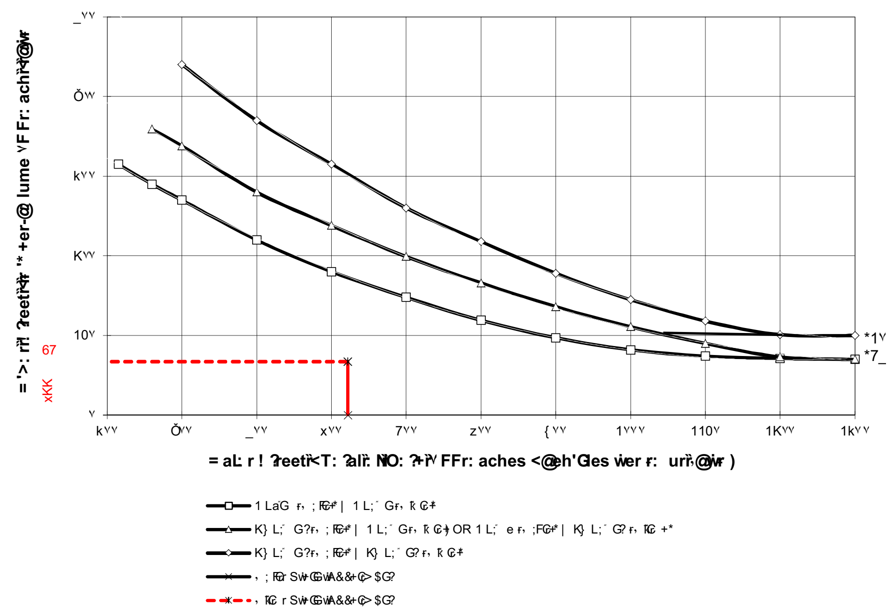

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Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

Urban/Rural (1/2) = 2

SCENARIO: Opening Year Without Project Conditions

MAJOR STREET: Highway 395 ADT = 5,671 Lanes= 2

MINOR STREET: Tioga Rd (SR-120) ADT = 1,281 Lanes= 1

(Based on Estimated Average Daily Traffic-See Note)

URBAN	RURAL XX	Minimum Requirements EADT	
1A - Minimum Vehicular Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)
Satisfied	Not Satisfied XX		
Number of lanes for moving traffic on each approach.			
Major Street	Minor Street	Urban / Rural	Urban / Rural
1	1	8,000 / 5,600	2,400 / 1,680
2 or More 5,671	1 1,281	9,600 / 6,720	2,400 / 1,680
2 or More	2 or More	9,600 / 6,720	3,200 / 2,240
1	2 or More	8,000 / 5,600	3,200 / 2,240
1B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)
Satisfied	Not Satisfied XX		
Number of lanes for moving traffic on each approach.			
Major Street	Minor Street	Urban / Rural	Urban / Rural
1	1	12,000 / 8,400	1,200 / 850
2 or More 5,671	1 1,281	14,400 / 10,080	1,200 / 850 *
2 or More	2 or More	14,400 / 10,080	1,600 / 1,120
1	2 or More	12,000 / 8,400	1,600 / 1,120
1A&B - Combinations			
Satisfied	Not Satisfied XX		
No one warrant satisfied, but following warrants fulfilled 80% or more… 76% 1A	56% 1B	2 Warrants	2 Warrants

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

2014 Edition

WARRANT 3 - PEAK HOUR (70% FACTOR)
(Rural Areas)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 MPH OR ABOVE 40 MPH ON MAJOR STREET)

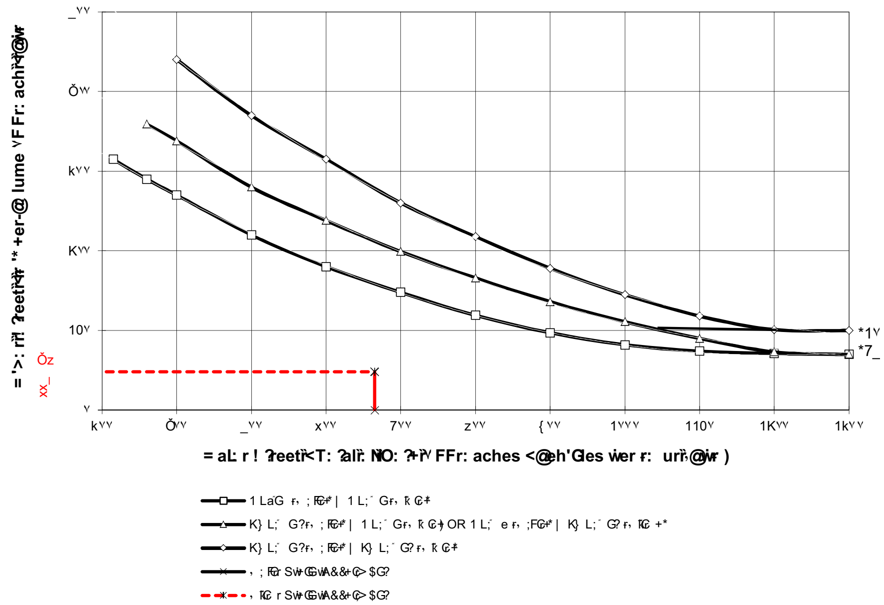
Traffic Conditions = Opening Year Without Project Conditions - PM Peak

Major Street Name = Highway 395 Total of Both Approaches (VPH) = 665

Number of Approach Lanes Major Street = 2

Minor Street Name = Tioga Rd (SR-120) High Volume Approach (VPH) =]^

Number of Approach Lanes Minor Street = 1



* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

NOVEMBER 2014

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Kᵞ RRANT 3ǩȓwG Ǩ HOUR (Ȼ0%ȓFᵞ CTOR)
(Rural Areas)

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‚; Ǩr St+GwN; " G@ȓ '* +. a/ ȓ395 — TǨ KG<Bow A&&+G; >$G? (VPH) @ Ȼ7^

NumXG+G<A&&+G;>h Lanes ‚ ;FG+SwGGw@ 2

‚ȓ´ G+SwGGwN; " G@T': * a R; ȓ! R<120) — HǨ$ VoǨ' GA&&+G; >$ (VPH) @ 82

NumXG+G<A&&+G;>h Lanes ‚ ǨG+ SwGGw@ 1

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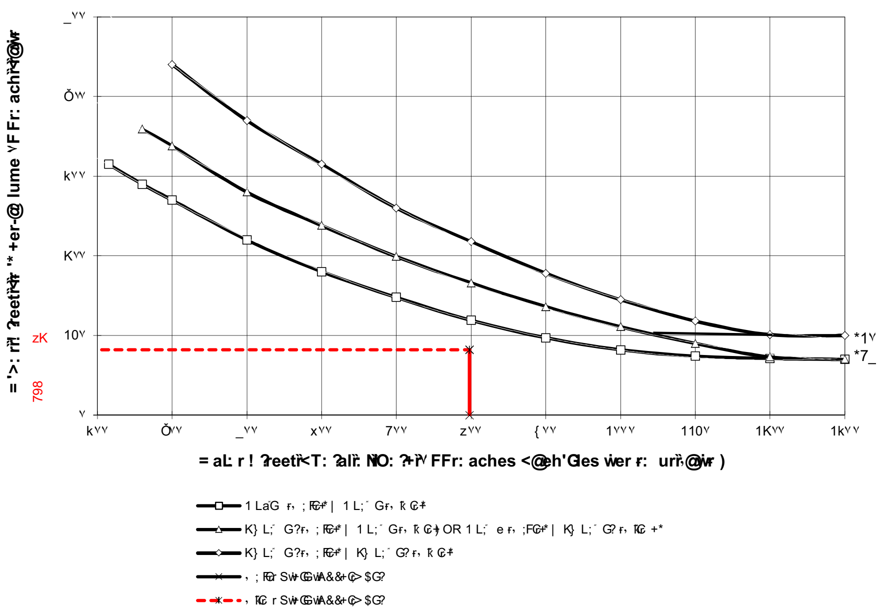

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Kᵞ RRANT 3ǩȓwG Ǩ HOUR (Ȼ0%ȓFᵞ CTOR)
(Rural Areas)

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NumXG+G<A&&+G;>h Lanes ‚ ǨG+ SwGGw@ 1

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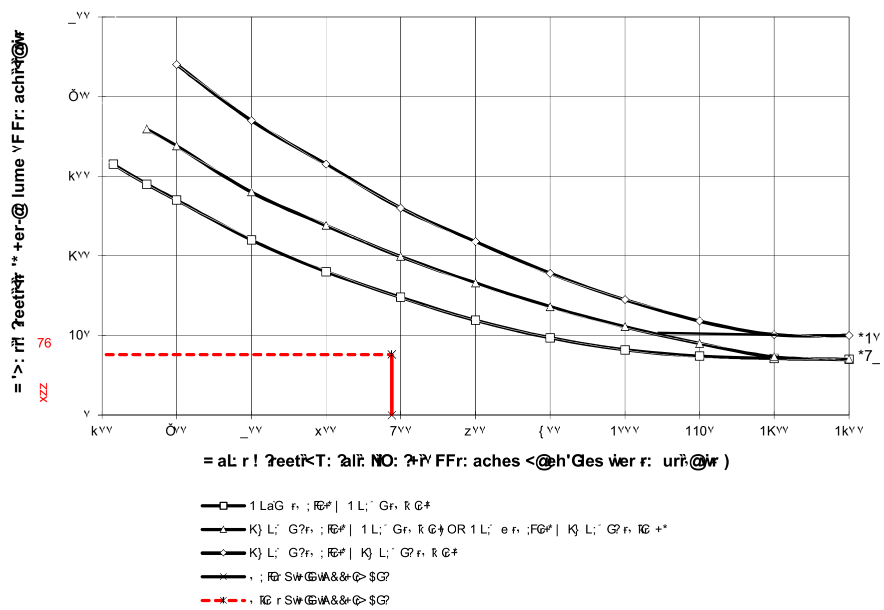

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California MUTCD 2014 Edition

Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

Urban/Rural (1/2) = **2**

SCENARIO: **Opening Year With Project Conditions**

MAJOR STREET: **Highway 395** ADT = **5,978** Lanes= **2**

MINOR STREET: **Tioga Rd (SR-120)** ADT = **1,588** Lanes= **1**

(Based on Estimated Average Daily Traffic-See Note)

URBAN RURAL XX	Minimum Requirements EADT	
1A - Minimum Vehicular Traffic Satisfied Not Satisfied XX	Vehicles Per Day on Major Street (Total of Both Approaches)	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)
Number of lines for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	8,000 / 5,600	2,400 / 1,680
2 or More 5,978 / 1 1,588	9,600 / 6,720	2,400 / 1,680
2 or More / 2 or More	9,600 / 6,720	3,200 / 2,240
1 / 2 or More	8,000 / 5,600	3,200 / 2,240
1B - Interruption of Continuous Traffic Satisfied Not Satisfied XX	Vehicles Per Day on Major Street (Total of Both Approaches)	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)
Number of lanes for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	12,000 / 8,400	1,200 / 850
2 or More 5,978 / 1 1,588	14,400 / 10,080	1,200 / 850 *
2 or More / 2 or More	14,400 / 10,080	1,600 / 1,120
1 / 2 or More	12,000 / 8,400	1,600 / 1,120
1A&B - Combinations Satisfied Not Satisfied XX No one warrant satisfied, but following warrants fulfilled 80% or more… 89% 1A 59% 1B	2 Warrants	2 Warrants

Note: Use only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

2014 Edition

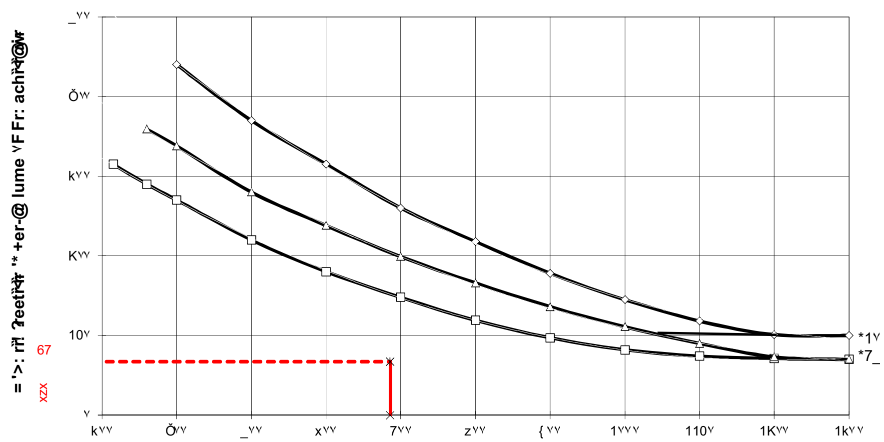
WARRANT 3 - PEAK HOUR (70% FACTOR)
(Rural Areas)

COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 70 KM/HR OR ABOVE 40 MPH ON MAJOR STREET)

Traffic Conditions = **Opening Year With Project Conditions - Peak Hour**

Major Street Name = **Highway 395** Total of Both Approaches (VPH) = **P^P**
Number of Approach Lanes Major Street = **2**

Minor Street Name = **Tioga Rd (SR-120)** High Volume Approach (VPH) = **PC**
Number of Approach Lanes Minor Street = **1**



* NOTE: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

NOTE 2014

2014 ľ dłŴĊ

Kᵞ RRANT 3łľŵĊᵞK HOUR (Є0%ľFᵞ CTOR)

(Rural Areas)

ғCO˛ ˛ UNITY LESS THAN 10,000 POPULATION OR ABOVE 70 ! " #$ OR ABOVE 40 " ph ON ˛ AJOR STREET)

T+;<4> CondiŴĊ? @Open'>* ľ_earľK'?ľPr: lect C: >; '?: >sľŵ= '; <%a/ ľPeak

˛; ҒĊr St+ĊŴN; " G@ґ '* +. a/ ľ395

TĊŵ KĊ<Boŵ A&&+Ċ; >$Ċ? (VPH) @ 854

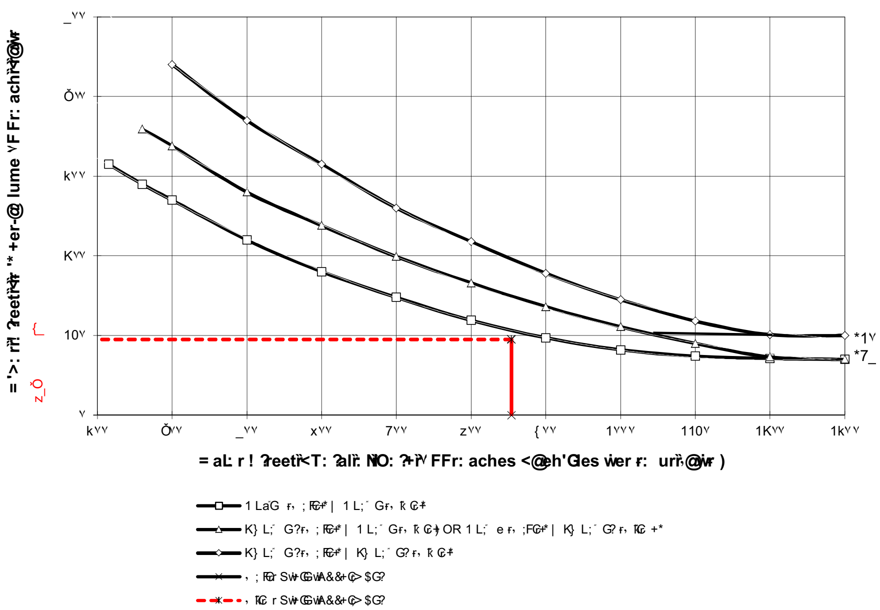
NumXG+Ċ<A&&+Ċ;>h Lanes ˛ ;FĊ+SŵGGŵ@ 2

˛ľ˙ Ċ+SŵĊGŵN; " G@T': * a R; ľ.! R<120)

HľŶ$ VoKQ' GA&&+Ċ; >$ (VPH) @ 95

NumXG+Ċ<A&&+Ċ;>h Lanes ˛ ҒĊ+ SŵGGŵ@ 1

!"#Ŏᵞ$ľKᵞRRᵞŎTľŎOTľ!ᵞ T'SF'Ċ%



* NOŴĊ[100 \ ph ;&&ľĊ? ;? ŵne ľĊ] G+ŵ$+Ċ?$ĊŁ \ ĊŁQ' G<Ċ+; " ҒĊ+ ^?ŵGGŵ ;&&+Ċ;>h] ľŵ$ ŵJ o Ċ+" Ċ+e ľĜ? and 75 \ ph ;&&ľĊ? ;? ŵne ľĊ] G+ th+Ċ?$ĊŁ \ ĊŁQ' GfĊ+a mľ Ċ+^?ŵĊGŵ;&&+Ċ;>h] ľŵ$ one ľĜ`

NĊĜ" XG+2014

01_395 ;ŵ120_OY} P~˛ D`XLS

SĜ>t. 4C`ᵞx

2014 ľ dłŴĊ

Kᵞ RRANT 3łľŵĊᵞK HOUR (Є0%ľFᵞ CTOR)

(Rural Areas)

ғCO˛ ˛ UNITY LESS THAN 10,000 POPULATION OR ABOVE 70 ! " #$ OR ABOVE 40 " ph ON ˛ AJOR STREET)

T+;<4> CondiŴĊ? @Open'>* ľ_earľK'?ľPr: lect C: >; '?: >sľŵ= Peak H: ur

˛; ҒĊr St+ĊŴN; " G@ґ '* +. a/ ľ395

TĊŵ KĊ<Boŵ A&&+Ċ; >$Ċ? (VPH) @ Є]]

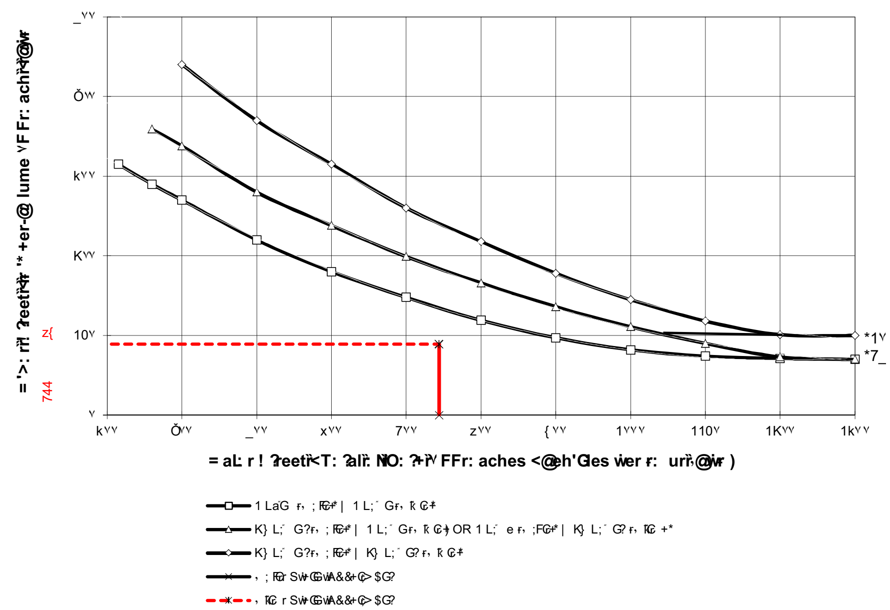
NumXG+Ċ<A&&+Ċ;>h Lanes ˛ ;FĊ+SŵGGŵ@ 2

˛ľ˙ Ċ+SŵĊGŵN; " G@T': * a R; ľ.! R<120)

HľŶ$ VoKQ' GA&&+Ċ; >$ (VPH) @ ^7

NumXG+Ċ<A&&+Ċ;>h Lanes ˛ ҒĊ+ SŵGGŵ@ 1

!"#Ŏᵞ$ľKᵞRRᵞŎTľŎOTľ!ᵞ T'SF'Ċ%



* NOŴĊ[100 \ ph ;&&ľĊ? ;? ŵne ľĊ] G+ŵ$+Ċ?$ĊŁ \ ĊŁQ' G<Ċ+; " ҒĊ+ ^?ŵGGŵ ;&&+Ċ;>h] ľŵ$ ŵJ o Ċ+" Ċ+e ľĜ? and 75 \ ph ;&&ľĊ? ;? ŵne ľĊ] G+ th+Ċ?$ĊŁ \ ĊŁQ' GfĊ+a mľ Ċ+^?ŵĊGŵ;&&+Ċ;>h] ľŵ$ one ľĜ`

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APPENDIX C
Existing Conditions LOS Analysis Worksheets

Lanes and Geometrics

TIOGA INN TIA

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

09/27/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.865	
Flt Protected	0.950			0.950				0.950				
Satd. Flow (prot)	1583	3034	1417	1583	3032	0	0	1583	1417	0	1442	0
Flt Permitted	0.950			0.950				0.950				
Satd. Flow (perm)	1583	3034	1417	1583	3032	0	0	1583	1417	0	1442	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Volume

TIOGA INN TIA

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

09/27/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	156	66	92	235	2	31	0	27	0	0	3
Future Volume (vph)	1	156	66	92	235	2	31	0	27	0	0	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	177	75	105	267	2	35	0	31	0	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	177	75	105	269	0	0	35	31	0	3	0

Intersection Summary

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	156	66	92	235	2	31	0	27	0	0	3
Future Vol, veh/h	1	156	66	92	235	2	31	0	27	0	0	3
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	1	177	75	105	267	2	35	0	31	0	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	269	0	0	177	0	0	523	658	-	569	657	135
Stage 1	-	-	-	-	-	-	179	179	-	478	478	-
Stage 2	-	-	-	-	-	-	344	479	-	91	179	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1209	-	-	1313	-	-	411	359	0	380	360	852
Stage 1	-	-	-	-	-	-	772	722	0	507	525	-
Stage 2	-	-	-	-	-	-	613	524	0	872	722	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1209	-	-	1313	-	-	384	330	-	356	331	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	384	330	-	356	331	-
Stage 1	-	-	-	-	-	-	771	721	-	506	483	-
Stage 2	-	-	-	-	-	-	562	482	-	871	721	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.2	15.3	9.2
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	384	-	1209	-	-	1313	-	-	852
HCM Lane V/C Ratio	0.092	-	0.001	-	-	0.08	-	-	0.004
HCM Control Delay (s)	15.3	0	8	-	-	8	-	-	9.2
HCM Lane LOS	C	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.3	-	0	-	-	0.3	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	46	52	57	33	70	186
Future Volume (vph)	46	52	57	33	70	186
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	51	58	63	37	78	207
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	58	63	37	78	207
Intersection Summary						

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑	↱	↰	↑
Traffic Vol, veh/h	46	52	57	33	70	186
Future Vol, veh/h	46	52	57	33	70	186
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	51	58	63	37	78	207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	426	63	0	0	100	0
Stage 1	63	-	-	-	-	-
Stage 2	363	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	563	969	-	-	1421	-
Stage 1	930	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	532	969	-	-	1421	-
Mov Cap-2 Maneuver	532	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	678	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	2.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	532	969	1421	-
HCM Lane V/C Ratio	-	-	0.096	0.06	0.055	-
HCM Control Delay (s)	-	-	12.5	9	7.7	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.2	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850						0.850		0.902	
Flt Protected	0.950			0.950				0.950			0.987	
Satd. Flow (prot)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1484	0
Flt Permitted	0.950			0.950				0.950			0.987	
Satd. Flow (perm)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1484	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	5	273	51	87	249	0	58	0	41	2	0	6
Future Volume (vph)	5	273	51	87	249	0	58	0	41	2	0	6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	341	64	109	311	0	73	0	51	3	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	341	64	109	311	0	0	73	51	0	11	0

Intersection Summary

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	273	51	87	249	0	58	0	41	2	0	6
Future Vol, veh/h	5	273	51	87	249	0	58	0	41	2	0	6
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	6	341	64	109	311	0	73	0	51	3	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	311	0	0	341	0	0	727	882	-	712	882	156
Stage 1	-	-	-	-	-	-	353	353	-	529	529	-
Stage 2	-	-	-	-	-	-	374	529	-	183	353	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1164	-	-	1133	-	-	290	263	0	298	263	825
Stage 1	-	-	-	-	-	-	605	600	0	472	496	-
Stage 2	-	-	-	-	-	-	587	496	0	768	600	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1164	-	-	1133	-	-	265	236	-	275	236	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	236	-	275	236	-
Stage 1	-	-	-	-	-	-	602	597	-	470	448	-
Stage 2	-	-	-	-	-	-	526	448	-	764	597	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.2	23.6	11.7
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	265	-	1164	-	-	1133	-	-	550
HCM Lane V/C Ratio	0.274	-	0.005	-	-	0.096	-	-	0.018
HCM Control Delay (s)	23.6	0	8.1	-	-	8.5	-	-	11.7
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.1	-	0	-	-	0.3	-	-	0.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	53	72	97	64	95	91
Future Volume (vph)	53	72	97	64	95	91
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	66	90	121	80	119	114
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	90	121	80	119	114

Intersection Summary

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	53	72	97	64	95	91
Future Vol, veh/h	53	72	97	64	95	91
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	66	90	121	80	119	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	473	121	0	0	201	0
Stage 1	121	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	529	899	-	-	1302	-
Stage 1	875	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	481	899	-	-	1302	-
Mov Cap-2 Maneuver	481	-	-	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	686	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	4.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	481	899	1302	-
HCM Lane V/C Ratio	-	-	0.138	0.1	0.091	-
HCM Control Delay (s)	-	-	13.7	9.4	8	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.3	0.3	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			↰↑	↱		✣	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.998				0.850		0.955	
Flt Protected	0.950			0.950				0.953			0.976	
Satd. Flow (prot)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Flt Permitted	0.950			0.950				0.953			0.976	
Satd. Flow (perm)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	4	272	47	53	187	3	53	1	105	3	1	2
Future Volume (vph)	4	272	47	53	187	3	53	1	105	3	1	2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	4	299	52	58	205	3	58	1	115	3	1	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	299	52	58	208	0	0	59	115	0	6	0

Intersection Summary

Intersection												
Int Delay, s/veh	2.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	272	47	53	187	3	53	1	105	3	1	2
Future Vol, veh/h	4	272	47	53	187	3	53	1	105	3	1	2
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	4	299	52	58	205	3	58	1	115	3	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	208	0	0	299	0	0	526	631	-	481	630	104
Stage 1	-	-	-	-	-	-	307	307	-	323	323	-
Stage 2	-	-	-	-	-	-	219	324	-	158	307	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1277	-	-	1177	-	-	409	373	0	442	373	893
Stage 1	-	-	-	-	-	-	645	630	0	631	620	-
Stage 2	-	-	-	-	-	-	730	619	0	795	630	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1277	-	-	1177	-	-	391	354	-	423	354	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	391	354	-	423	354	-
Stage 1	-	-	-	-	-	-	643	628	-	629	590	-
Stage 2	-	-	-	-	-	-	691	589	-	791	628	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	1.8	15.9	12.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	390	-	1277	-	-	1177	-	-	494
HCM Lane V/C Ratio	0.152	-	0.003	-	-	0.049	-	-	0.013
HCM Control Delay (s)	15.9	0	7.8	-	-	8.2	-	-	12.4
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	-	0	-	-	0.2	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	32	63	149	75	64	68
Future Volume (vph)	32	63	149	75	64	68
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	38	75	177	89	76	81
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	75	177	89	76	81

Intersection Summary

Intersection	
Int Delay, s/veh	3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	63	149	75	64	68
Future Vol, veh/h	32	63	149	75	64	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	38	75	177	89	76	81

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	410	177	0	0	266	0
Stage 1	177	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	575	836	-	-	1231	-
Stage 1	826	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	539	836	-	-	1231	-
Mov Cap-2 Maneuver	539	-	-	-	-	-
Stage 1	775	-	-	-	-	-
Stage 2	778	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	3.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	539	836	1231	-
HCM Lane V/C Ratio	-	-	0.071	0.09	0.062	-
HCM Control Delay (s)	-	-	12.2	9.7	8.1	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.3	0.2	-

APPENDIX D
Existing Plus Project Conditions LOS Analysis Worksheets

Lanes and Geometrics

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.865	
Flt Protected	0.950			0.950				0.950				
Satd. Flow (prot)	1583	3034	1417	1583	3032	0	0	1583	1417	0	1442	0
Flt Permitted	0.950			0.950				0.950				
Satd. Flow (perm)	1583	3034	1417	1583	3032	0	0	1583	1417	0	1442	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Volume

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	156	73	106	235	2	50	0	67	0	0	3
Future Volume (vph)	1	156	73	106	235	2	50	0	67	0	0	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	177	83	120	267	2	57	0	76	0	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	177	83	120	269	0	0	57	76	0	3	0

Intersection Summary

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	156	73	106	235	2	50	0	67	0	0	3
Future Vol, veh/h	1	156	73	106	235	2	50	0	67	0	0	3
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	1	177	83	120	267	2	57	0	76	0	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	269	0	0	177	0	0	553	688	-	599	687	135
Stage 1	-	-	-	-	-	-	179	179	-	508	508	-
Stage 2	-	-	-	-	-	-	374	509	-	91	179	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1209	-	-	1313	-	-	391	344	0	361	345	852
Stage 1	-	-	-	-	-	-	772	722	0	486	508	-
Stage 2	-	-	-	-	-	-	587	507	0	872	722	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1209	-	-	1313	-	-	362	312	-	335	313	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	362	312	-	335	313	-
Stage 1	-	-	-	-	-	-	771	721	-	486	462	-
Stage 2	-	-	-	-	-	-	531	461	-	871	721	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.5	16.8	9.2
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	362	-	1209	-	-	1313	-	-	852
HCM Lane V/C Ratio	0.157	-	0.001	-	-	0.092	-	-	0.004
HCM Control Delay (s)	16.8	0	8	-	-	8	-	-	9.2
HCM Lane LOS	C	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.6	-	0	-	-	0.3	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	55	111	57	40	90	186
Future Volume (vph)	55	111	57	40	90	186
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	61	123	63	44	100	207
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	123	63	44	100	207
Intersection Summary						

Intersection	
Int Delay, s/veh	4.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	55	111	57	40	90	186
Future Vol, veh/h	55	111	57	40	90	186
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	61	123	63	44	100	207

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	470	63	0	0	107	0
Stage 1	63	-	-	-	-	-
Stage 2	407	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	531	969	-	-	1412	-
Stage 1	930	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	493	969	-	-	1412	-
Mov Cap-2 Maneuver	493	-	-	-	-	-
Stage 1	864	-	-	-	-	-
Stage 2	647	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	2.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	493	969	1412	-
HCM Lane V/C Ratio	-	-	0.124	0.127	0.071	-
HCM Control Delay (s)	-	-	13.3	9.3	7.7	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.4	0.2	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850						0.850		0.902	
Flt Protected	0.950			0.950				0.950			0.987	
Satd. Flow (prot)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1484	0
Flt Permitted	0.950			0.950				0.950			0.987	
Satd. Flow (perm)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1484	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	5	273	69	125	249	0	71	0	67	2	0	6
Future Volume (vph)	5	273	69	125	249	0	71	0	67	2	0	6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	6	341	86	156	311	0	89	0	84	3	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	341	86	156	311	0	0	89	84	0	11	0

Intersection Summary

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	273	69	125	249	0	71	0	67	2	0	6
Future Vol, veh/h	5	273	69	125	249	0	71	0	67	2	0	6
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	6	341	86	156	311	0	89	0	84	3	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	311	0	0	341	0	0	821	976	-	806	976	156
Stage 1	-	-	-	-	-	-	353	353	-	623	623	-
Stage 2	-	-	-	-	-	-	468	623	-	183	353	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1164	-	-	1133	-	-	247	230	0	253	230	825
Stage 1	-	-	-	-	-	-	605	600	0	412	448	-
Stage 2	-	-	-	-	-	-	514	448	0	768	600	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1164	-	-	1133	-	-	218	197	-	225	197	825
Mov Cap-2 Maneuver	-	-	-	-	-	-	218	197	-	225	197	-
Stage 1	-	-	-	-	-	-	602	597	-	410	386	-
Stage 2	-	-	-	-	-	-	439	386	-	764	597	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.9	32.4	12.4
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	218	-	1164	-	-	1133	-	-	495
HCM Lane V/C Ratio	0.407	-	0.005	-	-	0.138	-	-	0.02
HCM Control Delay (s)	32.4	0	8.1	-	-	8.7	-	-	12.4
HCM Lane LOS	D	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.8	-	0	-	-	0.5	-	-	0.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	63	111	97	75	151	91
Future Volume (vph)	63	111	97	75	151	91
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	79	139	121	94	189	114
Shared Lane Traffic (%)						
Lane Group Flow (vph)	79	139	121	94	189	114

Intersection Summary

Intersection	
Int Delay, s/veh	5.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	111	97	75	151	91
Future Vol, veh/h	63	111	97	75	151	91
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	79	139	121	94	189	114

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	613	121	0	0	215	0
Stage 1	121	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	437	899	-	-	1287	-
Stage 1	875	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	373	899	-	-	1287	-
Mov Cap-2 Maneuver	373	-	-	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	591	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	5.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	373	899	1287	-
HCM Lane V/C Ratio	-	-	0.211	0.154	0.147	-
HCM Control Delay (s)	-	-	17.2	9.7	8.3	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.5	0.5	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.998				0.850		0.955	
Flt Protected	0.950			0.950				0.953			0.976	
Satd. Flow (prot)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Flt Permitted	0.950			0.950				0.953			0.976	
Satd. Flow (perm)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	4	272	65	91	187	3	66	1	131	3	1	2
Future Volume (vph)	4	272	65	91	187	3	66	1	131	3	1	2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	4	299	71	100	205	3	73	1	144	3	1	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	299	71	100	208	0	0	74	144	0	6	0

Intersection Summary

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	272	65	91	187	3	66	1	131	3	1	2
Future Vol, veh/h	4	272	65	91	187	3	66	1	131	3	1	2
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	4	299	71	100	205	3	73	1	144	3	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	208	0	0	299	0	0	610	715	-	565	714	104
Stage 1	-	-	-	-	-	-	307	307	-	407	407	-
Stage 2	-	-	-	-	-	-	303	408	-	158	307	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1277	-	-	1177	-	-	355	332	0	383	332	893
Stage 1	-	-	-	-	-	-	645	630	0	561	566	-
Stage 2	-	-	-	-	-	-	649	566	0	795	630	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1277	-	-	1177	-	-	329	303	-	356	303	893
Mov Cap-2 Maneuver	-	-	-	-	-	-	329	303	-	356	303	-
Stage 1	-	-	-	-	-	-	643	628	-	559	518	-
Stage 2	-	-	-	-	-	-	591	518	-	791	628	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.7	19.1	13.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	329	-	1277	-	-	1177	-	-	430
HCM Lane V/C Ratio	0.224	-	0.003	-	-	0.085	-	-	0.015
HCM Control Delay (s)	19.1	0	7.8	-	-	8.3	-	-	13.5
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.8	-	0	-	-	0.3	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	42	102	149	86	120	68
Future Volume (vph)	42	102	149	86	120	68
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	50	121	177	102	143	81
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	121	177	102	143	81
Intersection Summary						

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	42	102	149	86	120	68
Future Vol, veh/h	42	102	149	86	120	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	50	121	177	102	143	81

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	544	177	0	0	279	0
Stage 1	177	-	-	-	-	-
Stage 2	367	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	480	836	-	-	1218	-
Stage 1	826	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	424	836	-	-	1218	-
Mov Cap-2 Maneuver	424	-	-	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	675	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	5.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	424	836	1218	-
HCM Lane V/C Ratio	-	-	0.118	0.145	0.117	-
HCM Control Delay (s)	-	-	14.6	10	8.3	-
HCM Lane LOS	-	-	B	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.5	0.4	-

APPENDIX E
Forecast Opening Year (2023) Without Project Conditions LOS Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.865	
Flt Protected	0.950			0.950				0.950				
Satd. Flow (prot)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1442	0
Flt Permitted	0.950			0.950				0.950				
Satd. Flow (perm)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1442	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	172	90	141	259	2	48	0	62	0	0	3
Future Volume (vph)	1	172	90	141	259	2	48	0	62	0	0	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	195	102	160	294	2	55	0	70	0	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	195	102	160	296	0	0	55	70	0	3	0

Intersection Summary

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	172	90	141	259	2	48	0	62	0	0	3
Future Vol, veh/h	1	172	90	141	259	2	48	0	62	0	0	3
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	1	195	102	160	294	2	55	0	70	0	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	296	0	0	195	0	0	664	813	-	715	812	148
Stage 1	-	-	-	-	-	-	197	197	-	615	615	-
Stage 2	-	-	-	-	-	-	467	616	-	100	197	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1180	-	-	1292	-	-	323	290	0	296	290	835
Stage 1	-	-	-	-	-	-	753	708	0	417	452	-
Stage 2	-	-	-	-	-	-	515	451	0	861	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1180	-	-	1292	-	-	291	254	-	268	254	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	291	254	-	268	254	-
Stage 1	-	-	-	-	-	-	752	707	-	417	396	-
Stage 2	-	-	-	-	-	-	449	395	-	860	707	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.9	20.2	9.3
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	291	-	1180	-	-	1292	-	-	835
HCM Lane V/C Ratio	0.187	-	0.001	-	-	0.124	-	-	0.004
HCM Control Delay (s)	20.2	0	8.1	-	-	8.2	-	-	9.3
HCM Lane LOS	C	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.7	-	0	-	-	0.4	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	74	102	63	64	135	205
Future Volume (vph)	74	102	63	64	135	205
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	82	113	70	71	150	228
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	113	70	71	150	228
Intersection Summary						

Intersection	
Int Delay, s/veh	5.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	102	63	64	135	205
Future Vol, veh/h	74	102	63	64	135	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	82	113	70	71	150	228

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	598	70	0	0	141	0
Stage 1	70	-	-	-	-	-
Stage 2	528	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	446	960	-	-	1372	-
Stage 1	923	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	397	960	-	-	1372	-
Mov Cap-2 Maneuver	397	-	-	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	568	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	3.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	397	960	1372	-
HCM Lane V/C Ratio	-	-	0.207	0.118	0.109	-
HCM Control Delay (s)	-	-	16.4	9.3	7.9	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.8	0.4	0.4	-

Lanes and Geometrics

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850						0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1480	0
Flt Permitted	0.950			0.950				0.950			0.988	
Satd. Flow (perm)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1480	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Volume

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	6	300	76	142	274	0	81	0	86	2	0	7
Future Volume (vph)	6	300	76	142	274	0	81	0	86	2	0	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	375	95	178	343	0	101	0	108	3	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	375	95	178	343	0	0	101	108	0	12	0

Intersection Summary

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	300	76	142	274	0	81	0	86	2	0	7
Future Vol, veh/h	6	300	76	142	274	0	81	0	86	2	0	7
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	8	375	95	178	343	0	101	0	108	3	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	343	0	0	375	0	0	919	1090	-	903	1090	172
Stage 1	-	-	-	-	-	-	391	391	-	699	699	-
Stage 2	-	-	-	-	-	-	528	699	-	204	391	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1131	-	-	1098	-	-	208	196	0	214	196	805
Stage 1	-	-	-	-	-	-	573	576	0	370	412	-
Stage 2	-	-	-	-	-	-	472	412	0	745	576	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1131	-	-	1098	-	-	179	163	-	186	163	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	179	163	-	186	163	-
Stage 1	-	-	-	-	-	-	569	572	-	367	345	-
Stage 2	-	-	-	-	-	-	391	345	-	740	572	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3	48.5	13
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	179	-	1131	-	-	1098	-	-	463
HCM Lane V/C Ratio	0.566	-	0.007	-	-	0.162	-	-	0.024
HCM Control Delay (s)	48.5	0	8.2	-	-	8.9	-	-	13
HCM Lane LOS	E	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	3	-	0	-	-	0.6	-	-	0.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	86	137	107	103	171	100
Future Volume (vph)	86	137	107	103	171	100
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	108	171	134	129	214	125
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	171	134	129	214	125
Intersection Summary						

Intersection	
Int Delay, s/veh	6.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	86	137	107	103	171	100
Future Vol, veh/h	86	137	107	103	171	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	108	171	134	129	214	125

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	687	134	0	0	263	0
Stage 1	134	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	395	884	-	-	1235	-
Stage 1	864	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	327	884	-	-	1235	-
Mov Cap-2 Maneuver	327	-	-	-	-	-
Stage 1	715	-	-	-	-	-
Stage 2	553	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.4	0	5.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	327	884	1235	-
HCM Lane V/C Ratio	-	-	0.329	0.194	0.173	-
HCM Control Delay (s)	-	-	21.3	10	8.5	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.4	0.7	0.6	-

Lanes and Geometrics

TIOGA INN TIA

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

10/04/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.998				0.850		0.955	
Flt Protected	0.950			0.950				0.953			0.976	
Satd. Flow (prot)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Flt Permitted	0.950			0.950				0.953			0.976	
Satd. Flow (perm)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Volume

TIOGA INN TIA

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

10/04/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	4	299	72	104	206	3	75	1	157	3	1	2
Future Volume (vph)	4	299	72	104	206	3	75	1	157	3	1	2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	4	329	79	114	226	3	82	1	173	3	1	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	329	79	114	229	0	0	83	173	0	6	0

Intersection Summary

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑	↱	↰	↑↱			↰↑	↱		✣	
Traffic Vol, veh/h	4	299	72	104	206	3	75	1	157	3	1	2
Future Vol, veh/h	4	299	72	104	206	3	75	1	157	3	1	2
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	4	329	79	114	226	3	82	1	173	3	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	229	0	0	329	0	0	679	794	-	629	793	115
Stage 1	-	-	-	-	-	-	337	337	-	456	456	-
Stage 2	-	-	-	-	-	-	342	457	-	173	337	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1253	-	-	1145	-	-	315	297	0	343	298	879
Stage 1	-	-	-	-	-	-	619	611	0	523	537	-
Stage 2	-	-	-	-	-	-	614	537	0	778	611	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1253	-	-	1145	-	-	289	266	-	315	267	879
Mov Cap-2 Maneuver	-	-	-	-	-	-	289	266	-	315	267	-
Stage 1	-	-	-	-	-	-	617	609	-	521	483	-
Stage 2	-	-	-	-	-	-	550	483	-	774	609	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.8	22.4	14.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	289	-	1253	-	-	1145	-	-	386
HCM Lane V/C Ratio	0.289	-	0.004	-	-	0.1	-	-	0.017
HCM Control Delay (s)	22.4	0	7.9	-	-	8.5	-	-	14.5
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.2	-	0	-	-	0.3	-	-	0.1

2: TIOGA RD (SR-120) & PROJECT SITE ACCESS

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑	↱	↰	↑
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	63	127	164	116	136	75
Future Volume (vph)	63	127	164	116	136	75
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	75	151	195	138	162	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	151	195	138	162	89

Intersection Summary

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	127	164	116	136	75
Future Vol, veh/h	63	127	164	116	136	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	75	151	195	138	162	89

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	608	195	0	0	333	0
Stage 1	195	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	440	817	-	-	1162	-
Stage 1	810	-	-	-	-	-
Stage 2	643	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	379	817	-	-	1162	-
Mov Cap-2 Maneuver	379	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	643	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	5.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	379	817	1162	-
HCM Lane V/C Ratio	-	-	0.198	0.185	0.139	-
HCM Control Delay (s)	-	-	16.8	10.4	8.6	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.7	0.5	-

APPENDIX F
Forecast Opening Year (2023) With Project Conditions LOS Analysis Worksheets

Lanes and Geometrics

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.865	
Flt Protected	0.950			0.950				0.950				
Satd. Flow (prot)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1442	0
Flt Permitted	0.950			0.950				0.950				
Satd. Flow (perm)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1442	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Volume

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	172	97	155	259	2	67	0	102	0	0	3
Future Volume (vph)	1	172	97	155	259	2	67	0	102	0	0	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	195	110	176	294	2	76	0	116	0	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	195	110	176	296	0	0	76	116	0	3	0

Intersection Summary

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	172	97	155	259	2	67	0	102	0	0	3
Future Vol, veh/h	1	172	97	155	259	2	67	0	102	0	0	3
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	1	195	110	176	294	2	76	0	116	0	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	296	0	0	195	0	0	696	845	-	747	844	148
Stage 1	-	-	-	-	-	-	197	197	-	647	647	-
Stage 2	-	-	-	-	-	-	499	648	-	100	197	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1180	-	-	1292	-	-	306	277	0	280	277	835
Stage 1	-	-	-	-	-	-	753	708	0	398	436	-
Stage 2	-	-	-	-	-	-	492	436	0	861	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1180	-	-	1292	-	-	273	239	-	251	239	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	273	239	-	251	239	-
Stage 1	-	-	-	-	-	-	752	707	-	398	377	-
Stage 2	-	-	-	-	-	-	423	377	-	860	707	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.1	23.2	9.3
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	273	-	1180	-	-	1292	-	-	835
HCM Lane V/C Ratio	0.279	-	0.001	-	-	0.136	-	-	0.004
HCM Control Delay (s)	23.2	0	8.1	-	-	8.2	-	-	9.3
HCM Lane LOS	C	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1.1	-	0	-	-	0.5	-	-	0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	83	161	63	71	155	205
Future Volume (vph)	83	161	63	71	155	205
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	92	179	70	79	172	228
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	179	70	79	172	228

Intersection Summary

Intersection	
Int Delay, s/veh	5.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	83	161	63	71	155	205
Future Vol, veh/h	83	161	63	71	155	205
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	92	179	70	79	172	228

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	642	70	0	0	149	0
Stage 1	70	-	-	-	-	-
Stage 2	572	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	420	960	-	-	1362	-
Stage 1	923	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	367	960	-	-	1362	-
Mov Cap-2 Maneuver	367	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	542	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	3.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	367	960	1362	-
HCM Lane V/C Ratio	-	-	0.251	0.186	0.126	-
HCM Control Delay (s)	-	-	18.1	9.6	8	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	1	0.7	0.4	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850						0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1480	0
Flt Permitted	0.950			0.950				0.950			0.988	
Satd. Flow (perm)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1480	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	6	300	94	180	274	0	94	0	112	2	0	7
Future Volume (vph)	6	300	94	180	274	0	94	0	112	2	0	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	375	118	225	343	0	118	0	140	3	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	375	118	225	343	0	0	118	140	0	12	0

Intersection Summary

Intersection	
Int Delay, s/veh	10.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	300	94	180	274	0	94	0	112	2	0	7
Future Vol, veh/h	6	300	94	180	274	0	94	0	112	2	0	7
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	8	375	118	225	343	0	118	0	140	3	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	343	0	0	375	0	0	1013	1184	-	997	1184	172
Stage 1	-	-	-	-	-	-	391	391	-	793	793	-
Stage 2	-	-	-	-	-	-	622	793	-	204	391	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1131	-	-	1098	-	-	177	171	0	182	171	805
Stage 1	-	-	-	-	-	-	573	576	0	323	371	-
Stage 2	-	-	-	-	-	-	413	371	0	745	576	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1131	-	-	1098	-	-	147	135	-	153	135	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	135	-	153	135	-
Stage 1	-	-	-	-	-	-	569	572	-	321	295	-
Stage 2	-	-	-	-	-	-	325	295	-	740	572	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.6	88.5	14
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	147	-	1131	-	-	1098	-	-	413
HCM Lane V/C Ratio	0.799	-	0.007	-	-	0.205	-	-	0.027
HCM Control Delay (s)	88.5	0	8.2	-	-	9.1	-	-	14
HCM Lane LOS	F	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	5	-	0	-	-	0.8	-	-	0.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	96	176	107	114	227	100
Future Volume (vph)	96	176	107	114	227	100
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	120	220	134	143	284	125
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	220	134	143	284	125
Intersection Summary						

Intersection	
Int Delay, s/veh	8.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	96	176	107	114	227	100
Future Vol, veh/h	96	176	107	114	227	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	120	220	134	143	284	125

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	827	134	0	0	277	0
Stage 1	134	-	-	-	-	-
Stage 2	693	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	326	884	-	-	1220	-
Stage 1	864	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	250	884	-	-	1220	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	475	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18	0	6.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	250	884	1220	-
HCM Lane V/C Ratio	-	-	0.48	0.249	0.233	-
HCM Control Delay (s)	-	-	32	10.4	8.8	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	2.4	1	0.9	-

Lanes and Geometrics

TIOGA INN TIA

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

09/27/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.998				0.850		0.955	
Flt Protected	0.950			0.950				0.953			0.976	
Satd. Flow (prot)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Flt Permitted	0.950			0.950				0.953			0.976	
Satd. Flow (perm)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Volume

TIOGA INN TIA

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

09/27/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	4	299	90	142	206	3	88	1	183	3	1	2
Future Volume (vph)	4	299	90	142	206	3	88	1	183	3	1	2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	4	329	99	156	226	3	97	1	201	3	1	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	329	99	156	229	0	0	98	201	0	6	0

Intersection Summary

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	299	90	142	206	3	88	1	183	3	1	2
Future Vol, veh/h	4	299	90	142	206	3	88	1	183	3	1	2
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	4	329	99	156	226	3	97	1	201	3	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	229	0	0	329	0	0	763	878	-	713	877	115
Stage 1	-	-	-	-	-	-	337	337	-	540	540	-
Stage 2	-	-	-	-	-	-	426	541	-	173	337	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1253	-	-	1145	-	-	273	264	0	297	265	879
Stage 1	-	-	-	-	-	-	619	611	0	464	491	-
Stage 2	-	-	-	-	-	-	546	490	0	778	611	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1253	-	-	1145	-	-	242	227	-	264	228	879
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	227	-	264	228	-
Stage 1	-	-	-	-	-	-	617	609	-	463	424	-
Stage 2	-	-	-	-	-	-	469	423	-	774	609	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.5	29.6	16
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	242	-	1253	-	-	1145	-	-	333
HCM Lane V/C Ratio	0.404	-	0.004	-	-	0.136	-	-	0.02
HCM Control Delay (s)	29.6	0	7.9	-	-	8.6	-	-	16
HCM Lane LOS	D	A	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.8	-	0	-	-	0.5	-	-	0.1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		275	75	
Storage Lanes	1	1		1	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt		0.850		0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1583	1417	1667	1417	1583	1667
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1583	1417	1667	1417	1583	1667
Link Speed (mph)	30		30			30
Link Distance (ft)	624		1463			921
Travel Time (s)	14.2		33.3			20.9

Intersection Summary	
Area Type:	Other

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Traffic Volume (vph)	73	166	164	127	192	75
Future Volume (vph)	73	166	164	127	192	75
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	87	198	195	151	229	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	198	195	151	229	89

Intersection Summary

Intersection	
Int Delay, s/veh	6.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	73	166	164	127	192	75
Future Vol, veh/h	73	166	164	127	192	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	275	75	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	14	14	14	14	14	14
Mvmt Flow	87	198	195	151	229	89

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	742	195	0	0	346	0
Stage 1	195	-	-	-	-	-
Stage 2	547	-	-	-	-	-
Critical Hdwy	6.54	6.34	-	-	4.24	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.426	-	-	2.326	-
Pot Cap-1 Maneuver	366	817	-	-	1149	-
Stage 1	810	-	-	-	-	-
Stage 2	556	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	293	817	-	-	1149	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	649	-	-	-	-	-
Stage 2	556	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.3	0	6.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	293	817	1149	-
HCM Lane V/C Ratio	-	-	0.297	0.242	0.199	-
HCM Control Delay (s)	-	-	22.4	10.8	8.9	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.9	0.7	-

APPENDIX G
Forecast Opening Year (2023) With Project Conditions With Traffic Signal LOS Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.865	
Flt Protected	0.950			0.950				0.950				
Satd. Flow (prot)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1442	0
Flt Permitted	0.950			0.950				0.756				
Satd. Flow (perm)	1583	3034	1417	1583	3031	0	0	1260	1417	0	1442	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		1				191		555	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	1	172	97	155	259	2	67	0	102	0	0	3
Future Volume (vph)	1	172	97	155	259	2	67	0	102	0	0	3
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	195	110	176	294	2	76	0	116	0	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	195	110	176	296	0	0	76	116	0	3	0

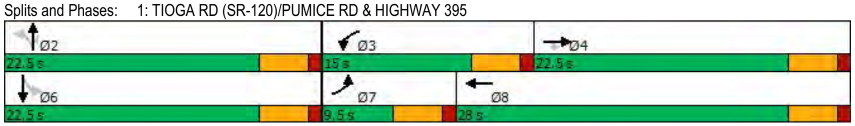
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Configurations									
Traffic Volume (vph)	1	172	97	155	259	67	0	102	0
Future Volume (vph)	1	172	97	155	259	67	0	102	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	NA
Protected Phases	7	4		3	8		2		6
Permitted Phases			4			2		2	
Detector Phase	7	4	4	3	8	2	2	2	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	9.5	22.5	22.5	15.0	28.0	22.5	22.5	22.5	22.5
Total Split (%)	15.8%	37.5%	37.5%	25.0%	46.7%	37.5%	37.5%	37.5%	37.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	Min	Min	Min	Min
Act Effct Green (s)	6.1	9.0	9.0	10.1	17.7		13.0	13.0	13.0
Actuated g/C Ratio	0.17	0.26	0.26	0.29	0.50		0.37	0.37	0.37
v/c Ratio	0.00	0.25	0.22	0.39	0.19		0.16	0.18	0.00
Control Delay	18.0	14.5	1.9	16.7	6.7		15.2	1.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	18.0	14.5	1.9	16.7	6.7		15.2	1.7	0.0
LOS	B	B	A	B	A		B	A	A
Approach Delay		10.0			10.4		7.1		
Approach LOS		A			B		A		

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 35.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.39
Intersection Signal Delay: 9.6 Intersection LOS: A
Intersection Capacity Utilization 35.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	1	195	110	176	296	76	116	3
v/c Ratio	0.00	0.25	0.22	0.39	0.19	0.16	0.18	0.00
Control Delay	18.0	14.5	1.9	16.7	6.7	15.2	1.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	14.5	1.9	16.7	6.7	15.2	1.7	0.0
Queue Length 50th (ft)	0	18	0	32	12	14	0	0
Queue Length 95th (ft)	3	42	8	85	49	42	10	0
Internal Link Dist (ft)		1473			1541	841		216
Turn Bay Length (ft)	400		400	270			50	
Base Capacity (vph)	272	1693	875	571	2027	703	875	1050
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.12	0.13	0.31	0.15	0.11	0.13	0.00

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	172	97	155	259	2	67	0	102	0	0	3
Future Volume (veh/h)	1	172	97	155	259	2	67	0	102	0	0	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), 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, veh/h/ln	1667	1597	1667	1667	1597	1900	1900	1667	1667	1900	1667	1900
Adj Flow Rate, veh/h	1	195	0	176	294	2	76	0	0	0	0	3
Adj No. of Lanes	1	2	1	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	14	19	14	14	19	19	14	14	14	14	14	14
Cap, veh/h	6	545	255	221	980	7	495	0	261	0	0	261
Arrive On Green	0.00	0.18	0.00	0.14	0.32	0.32	0.18	0.00	0.00	0.00	0.00	0.18
Sat Flow, veh/h	1587	3034	1417	1587	3090	21	1248	0	1417	0	0	1417
Grp Volume(v), veh/h	1	195	0	176	144	152	76	0	0	0	0	3
Grp Sat Flow(s),veh/h/ln	1587	1517	1417	1587	1517	1593	1248	0	1417	0	0	1417
Q Serve(g_s), s	0.0	1.5	0.0	2.9	1.9	2.0	1.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.5	0.0	2.9	1.9	2.0	1.5	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	6	545	255	221	481	505	495	0	261	0	0	261
V/C Ratio(X)	0.17	0.36	0.00	0.80	0.30	0.30	0.15	0.00	0.00	0.00	0.00	0.01
Avail Cap(c_a), veh/h	292	2011	939	614	1313	1379	1098	0	939	0	0	939
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)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	13.5	9.8	0.0	11.3	7.0	7.0	9.7	0.0	0.0	0.0	0.0	9.1
Incr Delay (d2), s/veh	13.3	0.4	0.0	6.5	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0
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
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	1.7	0.8	0.9	0.5	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	26.8	10.2	0.0	17.8	7.3	7.3	9.8	0.0	0.0	0.0	0.0	9.1
LnGrp LOS	C	B		B	A	A	A					A
Approach Vol, veh/h		196			472			76			3	
Approach Delay, s/veh		10.2			11.2			9.8			9.1	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.5	8.3	9.4		9.5	4.5	13.1
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.0	10.5	18.0		18.0	5.0	23.5
Max Q Clear Time (g_c+I1), s		3.5	4.9	3.5		2.0	2.0	4.0
Green Ext Time (p_c), s		0.2	0.2	1.0		0.0	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850						0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1583	3034	1417	1583	3034	0	0	1583	1417	0	1480	0
Flt Permitted	0.950			0.950				0.750			0.930	
Satd. Flow (perm)	1583	3034	1417	1583	3034	0	0	1250	1417	0	1393	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191						191		191	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	6	300	94	180	274	0	94	0	112	2	0	7
Future Volume (vph)	6	300	94	180	274	0	94	0	112	2	0	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	375	118	225	343	0	118	0	140	3	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	375	118	225	343	0	0	118	140	0	12	0

Intersection Summary

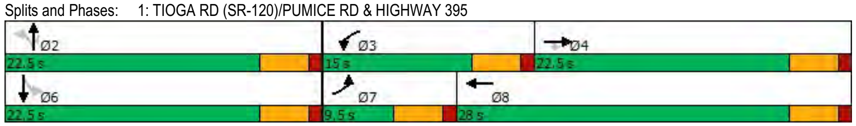
 TIOGA INN TIA
09/27/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	6	300	94	180	274	94	0	112	2	0
Future Volume (vph)	6	300	94	180	274	94	0	112	2	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8		2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	9.5	22.5	22.5	15.0	28.0	22.5	22.5	22.5	22.5	22.5
Total Split (%)	15.8%	37.5%	37.5%	25.0%	46.7%	37.5%	37.5%	37.5%	37.5%	37.5%
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)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effct Green (s)	5.1	11.6	11.6	10.3	25.0		9.8	9.8		9.8
Actuated g/C Ratio	0.11	0.25	0.25	0.23	0.55		0.21	0.21		0.21
v/c Ratio	0.04	0.49	0.23	0.63	0.21		0.44	0.31		0.03
Control Delay	22.8	17.2	2.0	29.9	7.2		21.9	3.4		0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	22.8	17.2	2.0	29.9	7.2		21.9	3.4		0.1
LOS	C	B	A	C	A		C	A		A
Approach Delay		13.7			16.2		11.9			0.1
Approach LOS		B			B		B			A

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 45.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 14.3 Intersection LOS: B
Intersection Capacity Utilization 41.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395



OPENING YEAR WITH PROJECT CONDITIONS - WITH TRAFFIC SIGNAL
MID-DAY PEAK HOUR
Synchro 10 Report

Queues

TIOGA INN TIA

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

09/27/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	8	375	118	225	343	118	140	12
v/c Ratio	0.04	0.49	0.23	0.63	0.21	0.44	0.31	0.03
Control Delay	22.8	17.2	2.0	29.9	7.2	21.9	3.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.8	17.2	2.0	29.9	7.2	21.9	3.4	0.1
Queue Length 50th (ft)	2	43	0	52	17	27	0	0
Queue Length 95th (ft)	12	75	4	#145	57	62	11	0
Internal Link Dist (ft)		1473			1541	841		216
Turn Bay Length (ft)	400		400	270			50	
Base Capacity (vph)	178	1231	688	374	1718	507	688	678
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.30	0.17	0.60	0.20	0.23	0.20	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM 2010 Signalized Intersection Summary

TIOGA INN TIA

1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395

09/27/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	300	94	180	274	0	94	0	112	2	0	7
Future Volume (veh/h)	6	300	94	180	274	0	94	0	112	2	0	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), 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, veh/h/ln	1667	1597	1667	1667	1597	1900	1900	1667	1667	1900	1667	1900
Adj Flow Rate, veh/h	8	375	0	225	342	0	118	0	0	2	0	9
Adj No. of Lanes	1	2	1	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	14	19	14	14	19	19	14	14	14	14	14	14
Cap, veh/h	17	707	330	283	1215	0	433	0	230	153	23	189
Arrive On Green	0.01	0.23	0.00	0.18	0.40	0.00	0.16	0.00	0.00	0.16	0.00	0.16
Sat Flow, veh/h	1587	3034	1417	1587	3113	0	1266	0	1417	115	144	1165
Grp Volume(v), veh/h	8	375	0	225	342	0	118	0	0	11	0	0
Grp Sat Flow(s),veh/h/ln	1587	1517	1417	1587	1517	0	1266	0	1417	1424	0	0
Q Serve(g_s), s	0.2	3.4	0.0	4.3	2.4	0.0	2.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.2	3.4	0.0	4.3	2.4	0.0	2.7	0.0	0.0	0.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.18		0.82
Lane Grp Cap(c), veh/h	17	707	330	283	1215	0	433	0	230	365	0	0
V/C Ratio(X)	0.47	0.53	0.00	0.80	0.28	0.00	0.27	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	251	1726	806	527	2254	0	943	0	806	929	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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	15.6	10.6	0.0	12.4	6.4	0.0	12.2	0.0	0.0	11.2	0.0	0.0
Incr Delay (d2), s/veh	18.8	0.6	0.0	5.1	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0
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
%ile BackOfQ(50%),veh/ln	0.2	1.5	0.0	2.3	1.0	0.0	1.0	0.0	0.0	0.1	0.0	0.0
LnGrp Delay(d),s/veh	34.3	11.2	0.0	17.5	6.5	0.0	12.5	0.0	0.0	11.2	0.0	0.0
LnGrp LOS	C	B		B	A		B			B		
Approach Vol, veh/h		383			567			118			11	
Approach Delay, s/veh		11.7			10.9			12.5			11.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.6	10.1	11.9		9.6	4.8	17.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.0	10.5	18.0		18.0	5.0	23.5
Max Q Clear Time (g_c+I1), s		4.7	6.3	5.4		2.2	2.2	4.4
Green Ext Time (p_c), s		0.4	0.3	2.0		0.0	0.0	2.1

Intersection Summary			
HCM 2010 Ctrl Delay			11.4
HCM 2010 LOS			B

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.998				0.850		0.955	
Flt Protected	0.950			0.950				0.953			0.976	
Satd. Flow (prot)	1583	3034	1417	1583	3029	0	0	1588	1417	0	1553	0
Flt Permitted	0.950			0.950				0.725			0.878	
Satd. Flow (perm)	1583	3034	1417	1583	3029	0	0	1208	1417	0	1397	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			191		3				201		2	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary

Area Type: Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	4	299	90	142	206	3	88	1	183	3	1	2
Future Volume (vph)	4	299	90	142	206	3	88	1	183	3	1	2
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	4	329	99	156	226	3	97	1	201	3	1	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	329	99	156	229	0	0	98	201	0	6	0

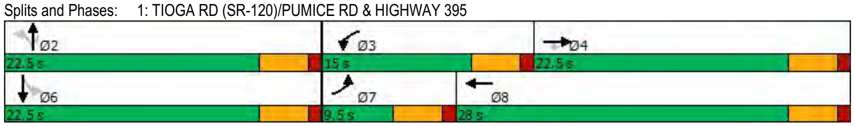
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	4	299	90	142	206	88	1	183	3	1
Future Volume (vph)	4	299	90	142	206	88	1	183	3	1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8		2			6
Permitted Phases			4			2		2	6	
Detector Phase	7	4	4	3	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	22.5	9.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	9.5	22.5	22.5	15.0	28.0	22.5	22.5	22.5	22.5	22.5
Total Split (%)	15.8%	37.5%	37.5%	25.0%	46.7%	37.5%	37.5%	37.5%	37.5%	37.5%
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)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	Min	Min	Min	Min	Min
Act Effct Green (s)	5.6	10.6	10.6	9.1	19.3		9.3	9.3		9.3
Actuated g/C Ratio	0.14	0.26	0.26	0.23	0.48		0.23	0.23		0.23
v/c Ratio	0.02	0.41	0.19	0.43	0.16		0.35	0.42		0.02
Control Delay	21.0	15.5	1.2	20.9	6.9		19.3	6.1		13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	21.0	15.5	1.2	20.9	6.9		19.3	6.1		13.0
LOS	C	B	A	C	A		B	A		B
Approach Delay		12.3			12.6		10.4			13.0
Approach LOS		B			B		B			B

Intersection Summary

Cycle Length: 60
Actuated Cycle Length: 40
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.43
Intersection Signal Delay: 11.9 Intersection LOS: B
Intersection Capacity Utilization 36.0% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: TIOGA RD (SR-120)/PUMICE RD & HIGHWAY 395



Lane Group	EBL	EBT	EBR	WBL	WBT	NBT	NBR	SBT
Lane Group Flow (vph)	4	329	99	156	229	98	201	6
v/c Ratio	0.02	0.41	0.19	0.43	0.16	0.35	0.42	0.02
Control Delay	21.0	15.5	1.2	20.9	6.9	19.3	6.1	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.0	15.5	1.2	20.9	6.9	19.3	6.1	13.0
Queue Length 50th (ft)	1	34	0	31	10	20	0	1
Queue Length 95th (ft)	9	73	4	94	43	59	40	8
Internal Link Dist (ft)		1473			1541	841		216
Turn Bay Length (ft)	400		400	270			50	
Base Capacity (vph)	220	1519	805	462	1954	605	810	700
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.22	0.12	0.34	0.12	0.16	0.25	0.01

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	299	90	142	206	3	88	1	183	3	1	2
Future Volume (veh/h)	4	299	90	142	206	3	88	1	183	3	1	2
Initial Q (Qb), 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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1618	1693	1693	1618	1618	1693	1693	1693	1693	1693	1693
Adj Flow Rate, veh/h	4	329	0	156	226	3	97	1	0	3	1	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	14	19	14	14	19	19	14	14	14	14	14	14
Cap, veh/h	9	683		201	1061	14	477	4		274	90	86
Arrive On Green	0.01	0.22	0.00	0.12	0.34	0.34	0.18	0.18	0.00	0.18	0.18	0.18
Sat Flow, veh/h	1612	3075	1434	1612	3107	41	1269	20	1434	472	508	490
Grp Volume(v), veh/h	4	329	0	156	112	117	98	0	0	6	0	0
Grp Sat Flow(s),veh/h/ln	1612	1537	1434	1612	1537	1611	1289	0	1434	1470	0	0
Q Serve(g_s), s	0.1	2.6	0.0	2.7	1.5	1.5	1.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	2.6	0.0	2.7	1.5	1.5	1.9	0.0	0.0	0.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	0.99		1.00	0.50		0.33
Lane Grp Cap(c), veh/h	9	683		201	525	550	480	0		450	0	0
V/C Ratio(X)	0.45	0.48		0.78	0.21	0.21	0.20	0.00		0.01	0.00	0.00
Avail Cap(c_a), veh/h	284	1954		597	1275	1336	1069	0		1086	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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	14.0	9.6	0.0	12.0	6.6	6.6	10.4	0.0	0.0	9.6	0.0	0.0
Incr Delay (d2), s/veh	32.4	0.5	0.0	6.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
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
%ile BackOfQ(50%),veh/ln	0.1	0.6	0.0	1.0	0.3	0.3	0.4	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.4	10.1	0.0	18.3	6.8	6.8	10.6	0.0	0.0	9.7	0.0	0.0
LnGrp LOS	D	B		B	A	A	B	A		A	A	A
Approach Vol, veh/h		333	A		385			98	A		6	
Approach Delay, s/veh		10.6			11.5			10.6			9.7	
Approach LOS		B			B			B			A	

Timer - Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		9.5	8.0	10.8		9.5	4.7	14.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		18.0	10.5	18.0		18.0	5.0	23.5
Max Q Clear Time (g_c+I1), s		3.9	4.7	4.6		2.1	2.1	3.5
Green Ext Time (p_c), s		0.3	0.2	1.7		0.0	0.0	1.2

Intersection Summary		
HCM 6th Ctrl Delay		11.0
HCM 6th LOS		B

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

APPENDIX H
Forecast Opening Year (2023) With Project Conditions With Single-Lane Roundabout LOS Analysis Worksheets

INTERSECTION SUMMARY

Site: OY+P (AM)

HIGHWAY 395 (NS) at TIOGA ROAD (SR-120) (EW)
Roundabout

Intersection Performance - Hourly Values

Performance Measure	Vehicles	Persons
Travel Speed (Average)	30.7 mph	30.7 mph
Travel Distance (Total)	612.0 veh-mi/h	734.4 pers-mi/h
Travel Time (Total)	19.9 veh-h/h	23.9 pers-h/h
Demand Flows (Total)	978 veh/h	1174 pers/h
Percent Heavy Vehicles (Demand)	16.5 %	
Degree of Saturation	0.536	
Practical Spare Capacity	58.7 %	
Effective Intersection Capacity	1826 veh/h	
Control Delay (Total)	2.70 veh-h/h	3.24 pers-h/h
Control Delay (Average)	9.9 sec	9.9 sec
Control Delay (Worst Lane)	11.4 sec	
Control Delay (Worst Movement)	11.4 sec	11.4 sec
Geometric Delay (Average)	0.0 sec	
Stop-Line Delay (Average)	9.9 sec	
Idling Time (Average)	8.2 sec	
Intersection Level of Service (LOS)	LOS A	
95% Back of Queue - Vehicles (Worst Lane)	2.6 veh	
95% Back of Queue - Distance (Worst Lane)	74.9 ft	
Queue Storage Ratio (Worst Lane)	0.06	
Total Effective Stops	241 veh/h	290 pers/h
Effective Stop Rate	0.25 per veh	0.25 per pers
Proportion Queued	0.36	0.36
Performance Index	31.5	31.5
Cost (Total)	411.60 $/h	411.60 $/h
Fuel Consumption (Total)	41.2 gal/h	
Carbon Dioxide (Total)	377.7 kg/h	
Hydrocarbons (Total)	0.029 kg/h	
Carbon Monoxide (Total)	0.372 kg/h	
NOx (Total)	1.670 kg/h	

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Intersection Performance - Annual Values

Performance Measure	Vehicles	Persons
Demand Flows (Total)	469,636 veh/y	563,564 pers/y
Delay	1,296 veh-h/y	1,555 pers-h/y
Effective Stops	115,916 veh/y	139,099 pers/y
Travel Distance	293,769 veh-mi/y	352,523 pers-mi/y
Travel Time	9,557 veh-h/y	11,468 pers-h/y
Cost	197,568 $/y	197,568 $/y
Fuel Consumption	19,757 gal/y	
Carbon Dioxide	181,293 kg/y	
Hydrocarbons	14 kg/y	
Carbon Monoxide	179 kg/y	
NOx	801 kg/y	

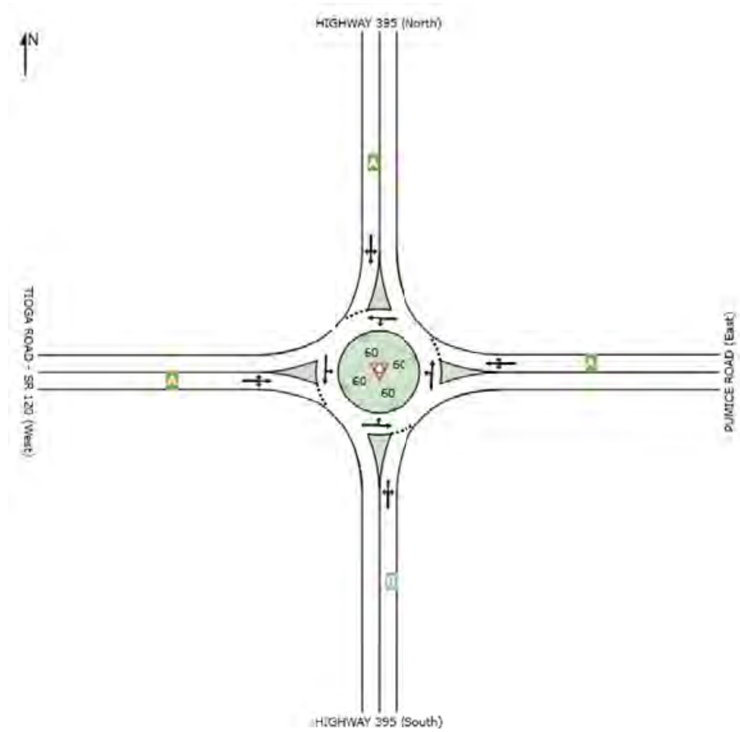
LEVEL OF SERVICE

Site: OY+P (AM)

HIGHWAY 395 (NS) at TIOGA ROAD (SR-120) (EW)
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	B	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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INTERSECTION SUMMARY

Site: OY+P (MD)

HIGHWAY 395 (NS) at TIOGA ROAD (SR-120) (EW)
Roundabout

Intersection Performance - Hourly Values		
Performance Measure	**Vehicles**	**Persons**
Travel Speed (Average)	28.4 mph	28.4 mph
Travel Distance (Total)	838.8 veh-mi/h	1006.6 pers-mi/h
Travel Time (Total)	29.5 veh-h/h	35.4 pers-h/h
Demand Flows (Total)	1340 veh/h	1608 pers/h
Percent Heavy Vehicles (Demand)	16.7 %	
Degree of Saturation	0.680	
Practical Spare Capacity	25.0 %	
Effective Intersection Capacity	1970 veh/h	
Control Delay (Total)	5.93 veh-h/h	7.11 pers-h/h
Control Delay (Average)	15.9 sec	15.9 sec
Control Delay (Worst Lane)	17.8 sec	
Control Delay (Worst Movement)	17.8 sec	17.8 sec
Geometric Delay (Average)	0.0 sec	
Stop-Line Delay (Average)	15.9 sec	
Idling Time (Average)	12.9 sec	
Intersection Level of Service (LOS)	LOS C	
95% Back of Queue - Vehicles (Worst Lane)	4.3 veh	
95% Back of Queue - Distance (Worst Lane)	121.8 ft	
Queue Storage Ratio (Worst Lane)	0.10	
Total Effective Stops	654 veh/h	785 pers/h
Effective Stop Rate	0.49 per veh	0.49 per pers
Proportion Queued	0.55	0.55
Performance Index	54.9	54.9
Cost (Total)	608.37 $/h	608.37 $/h
Fuel Consumption (Total)	58.4 gal/h	
Carbon Dioxide (Total)	536.1 kg/h	
Hydrocarbons (Total)	0.043 kg/h	
Carbon Monoxide (Total)	0.531 kg/h	
NOx (Total)	2.380 kg/h	

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Intersection Performance - Annual Values		
Performance Measure	**Vehicles**	**Persons**
Demand Flows (Total)	643,200 veh/y	771,840 pers/y
Delay	2,846 veh-h/y	3,415 pers-h/y
Effective Stops	314,125 veh/y	376,950 pers/y
Travel Distance	402,629 veh-mi/y	483,155 pers-mi/y
Travel Time	14,162 veh-h/y	16,995 pers-h/y
Cost	292,019 $/y	292,019 $/y
Fuel Consumption	28,048 gal/y	
Carbon Dioxide	257,348 kg/y	
Hydrocarbons	21 kg/y	
Carbon Monoxide	255 kg/y	
NOx	1,142 kg/y	

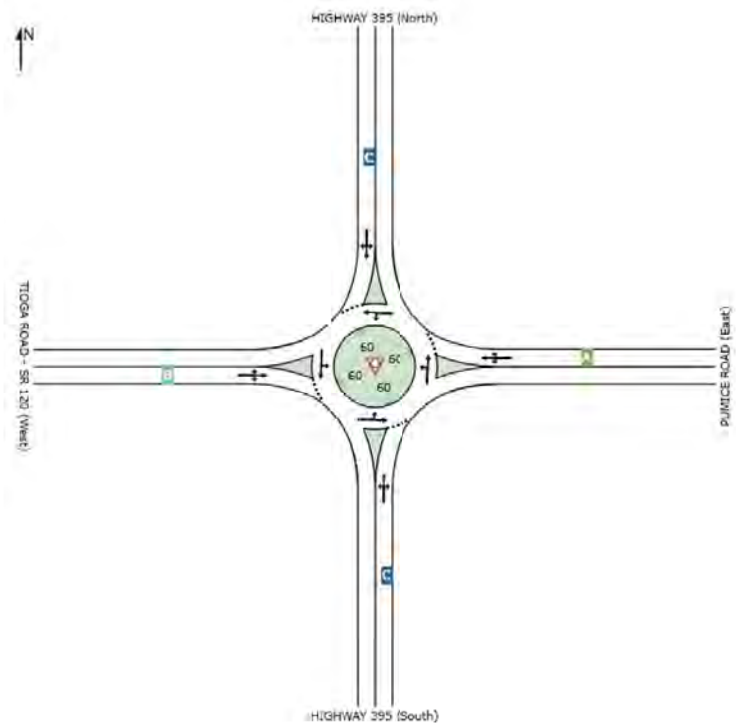
LEVEL OF SERVICE

Site: OY+P (MD)

HIGHWAY 395 (NS) at TIOGA ROAD (SR-120) (EW)
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	C	A	C	B	C



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

INTERSECTION SUMMARY

Site: OY+P (PM)

HIGHWAY 395 (NS) at TIOGA ROAD (SR-120) (EW)
Roundabout

Intersection Performance - Hourly Values		
Performance Measure	**Vehicles**	**Persons**
Travel Speed (Average)	30.2 mph	30.2 mph
Travel Distance (Total)	701.7 veh-mi/h	842.1 pers-mi/h
Travel Time (Total)	23.2 veh-h/h	27.9 pers-h/h
Demand Flows (Total)	1123 veh/h	1348 pers/h
Percent Heavy Vehicles (Demand)	16.5 %	
Degree of Saturation	0.541	
Practical Spare Capacity	57.2 %	
Effective Intersection Capacity	2078 veh/h	
Control Delay (Total)	3.54 veh-h/h	4.25 pers-h/h
Control Delay (Average)	11.4 sec	11.4 sec
Control Delay (Worst Lane)	12.4 sec	
Control Delay (Worst Movement)	12.4 sec	12.4 sec
Geometric Delay (Average)	0.0 sec	
Stop-Line Delay (Average)	11.4 sec	
Idling Time (Average)	9.2 sec	
Intersection Level of Service (LOS)	LOS B	
95% Back of Queue - Vehicles (Worst Lane)	2.5 veh	
95% Back of Queue - Distance (Worst Lane)	70.6 ft	
Queue Storage Ratio (Worst Lane)	0.06	
Total Effective Stops	402 veh/h	482 pers/h
Effective Stop Rate	0.36 per veh	0.36 per pers
Proportion Queued	0.44	0.44
Performance Index	38.6	38.6
Cost (Total)	480.15 $/h	480.15 $/h
Fuel Consumption (Total)	47.6 gal/h	
Carbon Dioxide (Total)	436.3 kg/h	
Hydrocarbons (Total)	0.034 kg/h	
Carbon Monoxide (Total)	0.431 kg/h	
NOx (Total)	1.929 kg/h	

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

Intersection Performance - Annual Values		
Performance Measure	**Vehicles**	**Persons**
Demand Flows (Total)	539,077 veh/y	646,892 pers/y
Delay	1,701 veh-h/y	2,041 pers-h/y
Effective Stops	192,747 veh/y	231,296 pers/y
Travel Distance	336,826 veh-mi/y	404,191 pers-mi/y
Travel Time	11,159 veh-h/y	13,390 pers-h/y
Cost	230,473 $/y	230,473 $/y
Fuel Consumption	22,828 gal/y	
Carbon Dioxide	209,444 kg/y	
Hydrocarbons	16 kg/y	
Carbon Monoxide	207 kg/y	
NOx	926 kg/y	

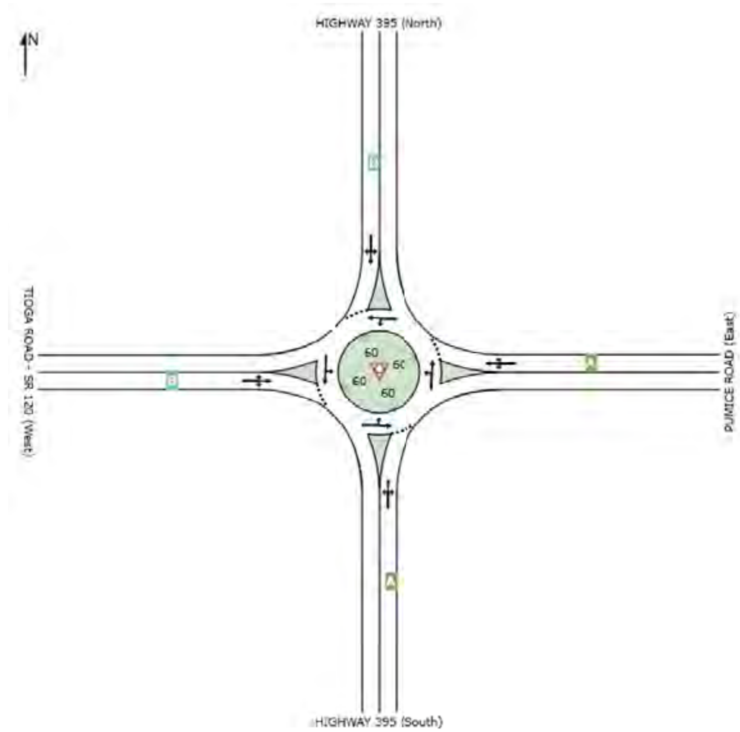
LEVEL OF SERVICE

Site: OY+P (PM)

HIGHWAY 395 (NS) at TIOGA ROAD (SR-120) (EW)
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	B	B	B



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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APPENDIX I
Non-Peak Season Mid-Day Conditions at the Highway 395 / Tioga Road (SR-120) LOS Analysis Worksheets

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.902	
Flt Protected	0.950			0.950				0.950			0.987	
Satd. Flow (prot)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1484	0
Flt Permitted	0.950			0.950				0.950			0.987	
Satd. Flow (perm)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1484	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	2	157	45	42	120	1	27	0	46	2	0	6
Future Volume (vph)	2	157	45	42	120	1	27	0	46	2	0	6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	196	56	53	150	1	34	0	58	3	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	196	56	53	151	0	0	34	58	0	11	0

Intersection Summary

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	157	45	42	120	1	27	0	46	2	0	6
Future Vol, veh/h	2	157	45	42	120	1	27	0	46	2	0	6
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	3	196	56	53	150	1	34	0	58	3	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	196	0	0	383	459	-	361	459	76
Stage 1	-	-	-	-	-	-	202	202	-	257	257	-
Stage 2	-	-	-	-	-	-	181	257	-	104	202	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1344	-	-	1291	-	-	521	471	0	541	471	932
Stage 1	-	-	-	-	-	-	747	705	0	692	665	-
Stage 2	-	-	-	-	-	-	770	665	0	857	705	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1344	-	-	1291	-	-	500	451	-	523	451	932
Mov Cap-2 Maneuver	-	-	-	-	-	-	500	451	-	523	451	-
Stage 1	-	-	-	-	-	-	746	704	-	691	638	-
Stage 2	-	-	-	-	-	-	732	638	-	855	704	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	2	12.7	9.7
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	500	-	1344	-	-	1291	-	-	780
HCM Lane V/C Ratio	0.068	-	0.002	-	-	0.041	-	-	0.013
HCM Control Delay (s)	12.7	0	7.7	-	-	7.9	-	-	9.7
HCM Lane LOS	B	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.1	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.902	
Flt Protected	0.950			0.950				0.950			0.987	
Satd. Flow (prot)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1484	0
Flt Permitted	0.950			0.950				0.950			0.987	
Satd. Flow (perm)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1484	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	2	157	63	80	120	1	40	0	72	2	0	6
Future Volume (vph)	2	157	63	80	120	1	40	0	72	2	0	6
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	196	79	100	150	1	50	0	90	3	0	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	196	79	100	151	0	0	50	90	0	11	0

Intersection Summary

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	157	63	80	120	1	40	0	72	2	0	6
Future Vol, veh/h	2	157	63	80	120	1	40	0	72	2	0	6
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	3	196	79	100	150	1	50	0	90	3	0	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	196	0	0	477	553	-	455	553	76
Stage 1	-	-	-	-	-	-	202	202	-	351	351	-
Stage 2	-	-	-	-	-	-	275	351	-	104	202	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1344	-	-	1291	-	-	445	415	0	462	415	932
Stage 1	-	-	-	-	-	-	747	705	0	607	602	-
Stage 2	-	-	-	-	-	-	675	602	0	857	705	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1344	-	-	1291	-	-	415	382	-	434	382	932
Mov Cap-2 Maneuver	-	-	-	-	-	-	415	382	-	434	382	-
Stage 1	-	-	-	-	-	-	746	704	-	606	556	-
Stage 2	-	-	-	-	-	-	618	556	-	855	704	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.2	14.9	10
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	415	-	1344	-	-	1291	-	-	724
HCM Lane V/C Ratio	0.12	-	0.002	-	-	0.077	-	-	0.014
HCM Control Delay (s)	14.9	0	7.7	-	-	8	-	-	10
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	-	0	-	-	0.3	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1480	0
Flt Permitted	0.950			0.950				0.950			0.988	
Satd. Flow (perm)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1480	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	2	173	70	92	132	1	47	0	92	2	0	7
Future Volume (vph)	2	173	70	92	132	1	47	0	92	2	0	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	216	88	115	165	1	59	0	115	3	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	216	88	115	166	0	0	59	115	0	12	0

Intersection Summary

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	173	70	92	132	1	47	0	92	2	0	7
Future Vol, veh/h	2	173	70	92	132	1	47	0	92	2	0	7
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	3	216	88	115	165	1	59	0	115	3	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	166	0	0	216	0	0	535	618	-	510	618	83
Stage 1	-	-	-	-	-	-	222	222	-	396	396	-
Stage 2	-	-	-	-	-	-	313	396	-	114	222	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1326	-	-	1268	-	-	403	379	0	420	379	922
Stage 1	-	-	-	-	-	-	727	690	0	569	573	-
Stage 2	-	-	-	-	-	-	640	573	0	845	690	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1326	-	-	1268	-	-	371	344	-	390	344	922
Mov Cap-2 Maneuver	-	-	-	-	-	-	371	344	-	390	344	-
Stage 1	-	-	-	-	-	-	726	689	-	568	521	-
Stage 2	-	-	-	-	-	-	576	521	-	843	689	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.3	16.5	10.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	371	-	1326	-	-	1268	-	-	708
HCM Lane V/C Ratio	0.158	-	0.002	-	-	0.091	-	-	0.016
HCM Control Delay (s)	16.5	0	7.7	-	-	8.1	-	-	10.2
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	-	0	-	-	0.3	-	-	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	400		400	270		0	0		50	0		0
Storage Lanes	1		1	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt			0.850		0.999				0.850		0.899	
Flt Protected	0.950			0.950				0.950			0.988	
Satd. Flow (prot)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1480	0
Flt Permitted	0.950			0.950				0.950			0.988	
Satd. Flow (perm)	1583	3034	1417	1583	3031	0	0	1583	1417	0	1480	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1553			1621			921			296	
Travel Time (s)		35.3			36.8			20.9			6.7	

Intersection Summary	
Area Type:	Other

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph)	2	173	88	130	132	1	60	0	118	2	0	7
Future Volume (vph)	2	173	88	130	132	1	60	0	118	2	0	7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	14%	19%	14%	14%	19%	14%	14%	14%	14%	14%	14%	14%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	216	110	163	165	1	75	0	148	3	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	216	110	163	166	0	0	75	148	0	12	0

Intersection Summary

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	173	88	130	132	1	60	0	118	2	0	7
Future Vol, veh/h	2	173	88	130	132	1	60	0	118	2	0	7
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
RT Channelized	-	-	Yield	-	-	None	-	-	Free	-	-	None
Storage Length	400	-	400	270	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	14	19	14	14	19	14	14	14	14	14	14	14
Mvmt Flow	3	216	110	163	165	1	75	0	148	3	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	166	0	0	216	0	0	631	714	-	606	714	83
Stage 1	-	-	-	-	-	-	222	222	-	492	492	-
Stage 2	-	-	-	-	-	-	409	492	-	114	222	-
Critical Hdwy	4.38	-	-	4.38	-	-	7.78	6.78	-	7.78	6.78	7.18
Critical Hdwy Stg 1	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.78	5.78	-	6.78	5.78	-
Follow-up Hdwy	2.34	-	-	2.34	-	-	3.64	4.14	-	3.64	4.14	3.44
Pot Cap-1 Maneuver	1326	-	-	1268	-	-	342	332	0	357	332	922
Stage 1	-	-	-	-	-	-	727	690	0	497	517	-
Stage 2	-	-	-	-	-	-	559	517	0	845	690	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1326	-	-	1268	-	-	305	289	-	321	289	922
Mov Cap-2 Maneuver	-	-	-	-	-	-	305	289	-	321	289	-
Stage 1	-	-	-	-	-	-	726	689	-	496	450	-
Stage 2	-	-	-	-	-	-	483	450	-	843	689	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	4.1	20.6	10.6
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	305	-	1326	-	-	1268	-	-	651
HCM Lane V/C Ratio	0.246	-	0.002	-	-	0.128	-	-	0.017
HCM Control Delay (s)	20.6	0	7.7	-	-	8.3	-	-	10.6
HCM Lane LOS	C	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	0	-	-	0.4	-	-	0.1

APPENDIX M

UPDATED AIR QUALITY ANALYSIS

Tioga Workforce Housing and Fueling Stations

Mono County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	100.00	Dwelling Unit	6.25	100,000.00	286
Convenience Market With Gas Pumps	4.00	Pump	0.01	564.70	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Grading: 20 days, Construction: 230 days, Paving: Separate Run

Vehicle Trips - 319 housing trips, 516 gas station trips

Construction Off-road Equipment Mitigation -

Area Mitigation -

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	230.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	ST_TR	7.16	3.19
tblVehicleTrips	ST_TR	204.47	129.00
tblVehicleTrips	SU_TR	6.07	3.19
tblVehicleTrips	SU_TR	166.88	129.00
tblVehicleTrips	WD_TR	6.59	3.19
tblVehicleTrips	WD_TR	542.60	129.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.8680	2.3415	2.6168	4.8600e-003	0.1537	0.1128	0.2665	0.0573	0.1065	0.1638	0.0000	424.6381	424.6381	0.0790	0.0000	426.6133
Maximum	**1.8680**	**2.3415**	**2.6168**	**4.8600e-003**	**0.1537**	**0.1128**	**0.2665**	**0.0573**	**0.1065**	**0.1638**	**0.0000**	**424.6381**	**424.6381**	**0.0790**	**0.0000**	**426.6133**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.8680	2.3415	2.6168	4.8600e-003	0.1177	0.1128	0.2304	0.0388	0.1065	0.1452	0.0000	424.6377	424.6377	0.0790	0.0000	426.6129
Maximum	**1.8680**	**2.3415**	**2.6168**	**4.8600e-003**	**0.1177**	**0.1128**	**0.2304**	**0.0388**	**0.1065**	**0.1452**	**0.0000**	**424.6377**	**424.6377**	**0.0790**	**0.0000**	**426.6129**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**23.45**	**0.00**	**13.52**	**32.33**	**0.00**	**11.31**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-3-2022	4-2-2022	1.0040	1.0040
2	4-3-2022	7-2-2022	1.1220	1.1220
3	7-3-2022	9-30-2022	1.1096	1.1096
		Highest	1.1220	1.1220

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	6.8468	0.1311	8.4881	0.0141		1.0901	1.0901		1.0901	1.0901	103.2958	44.5337	147.8295	0.0965	8.1200e-003	152.6630
Energy	5.8500e-003	0.0500	0.0213	3.2000e-004		4.0400e-003	4.0400e-003		4.0400e-003	4.0400e-003	0.0000	211.9141	211.9141	7.4700e-003	2.3800e-003	212.8090
Mobile	0.2502	1.5234	2.4272	7.0500e-003	0.4472	5.4400e-003	0.4526	0.1200	5.1000e-003	0.1251	0.0000	650.2431	650.2431	0.0397	0.0000	651.2355
Waste						0.0000	0.0000		0.0000	0.0000	9.3376	0.0000	9.3376	0.5518	0.0000	23.1335
Water						0.0000	0.0000		0.0000	0.0000	2.0803	15.9143	17.9946	0.2143	5.1800e-003	24.8967
Total	**7.1029**	**1.7044**	**10.9366**	**0.0214**	**0.4472**	**1.0996**	**1.5467**	**0.1200**	**1.0992**	**1.2192**	**114.7137**	**922.6052**	**1,037.3188**	**0.9098**	**0.0157**	**1,064.7376**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.5500	0.0698	0.7688	4.3000e-004		9.0600e-003	9.0600e-003		9.0600e-003	9.0600e-003	0.0000	72.1014	72.1014	2.5300e-003	1.3000e-003	72.5519
Energy	5.1500e-003	0.0440	0.0188	2.8000e-004		3.5600e-003	3.5600e-003		3.5600e-003	3.5600e-003	0.0000	201.4226	201.4226	7.1900e-003	2.2200e-003	202.2636
Mobile	0.2502	1.5234	2.4272	7.0500e-003	0.4472	5.4400e-003	0.4526	0.1200	5.1000e-003	0.1251	0.0000	650.2431	650.2431	0.0397	0.0000	651.2355
Waste						0.0000	0.0000		0.0000	0.0000	9.3376	0.0000	9.3376	0.5518	0.0000	23.1335
Water						0.0000	0.0000		0.0000	0.0000	1.6643	13.3721	15.0364	0.1715	4.1500e-003	20.5603
Total	**0.8053**	**1.6372**	**3.2147**	**7.7600e-003**	**0.4472**	**0.0181**	**0.4652**	**0.1200**	**0.0177**	**0.1377**	**11.0018**	**937.1392**	**948.1411**	**0.7727**	**7.6700e-003**	**969.7448**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**88.66**	**3.95**	**70.61**	**63.81**	**0.00**	**98.36**	**69.92**	**0.00**	**98.39**	**88.71**	**90.41**	**-1.58**	**8.60**	**15.07**	**51.08**	**8.92**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/3/2022	1/28/2022	5	20	
2	Building Construction	Building Construction	1/29/2022	12/16/2022	5	230	
3	Architectural Coating	Architectural Coating	1/29/2022	12/16/2022	5	230	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 202,500; Residential Outdoor: 67,500; Non-Residential Indoor: 847; Non-Residential Outdoor: 282; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	72.00	11.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	14.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0548	26.0548	8.4300e-003	0.0000	26.2654
Total	**0.0195**	**0.2086**	**0.1527**	**3.0000e-004**	**0.0655**	**9.4100e-003**	**0.0749**	**0.0337**	**8.6600e-003**	**0.0423**	**0.0000**	**26.0548**	**26.0548**	**8.4300e-003**	**0.0000**	**26.2654**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	5.6000e-004	4.9300e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9864	0.9864	4.0000e-005	0.0000	0.9873
Total	**7.7000e-004**	**5.6000e-004**	**4.9300e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9864**	**0.9864**	**4.0000e-005**	**0.0000**	**0.9873**

3.2 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0295	0.0000	0.0295	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0195	0.2086	0.1527	3.0000e-004		9.4100e-003	9.4100e-003		8.6600e-003	8.6600e-003	0.0000	26.0547	26.0547	8.4300e-003	0.0000	26.2654
Total	**0.0195**	**0.2086**	**0.1527**	**3.0000e-004**	**0.0295**	**9.4100e-003**	**0.0389**	**0.0152**	**8.6600e-003**	**0.0238**	**0.0000**	**26.0547**	**26.0547**	**8.4300e-003**	**0.0000**	**26.2654**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	5.6000e-004	4.9300e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.2000e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9864	0.9864	4.0000e-005	0.0000	0.9873
Total	**7.7000e-004**	**5.6000e-004**	**4.9300e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.2000e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9864**	**0.9864**	**4.0000e-005**	**0.0000**	**0.9873**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1962	1.7958	1.8818	3.1000e-003		0.0930	0.0930		0.0875	0.0875	0.0000	266.4840	266.4840	0.0638	0.0000	268.0801
Total	**0.1962**	**1.7958**	**1.8818**	**3.1000e-003**		**0.0930**	**0.0930**		**0.0875**	**0.0875**	**0.0000**	**266.4840**	**266.4840**	**0.0638**	**0.0000**	**268.0801**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2100e-003	0.1375	0.0435	3.9000e-004	8.3500e-003	3.4000e-004	8.6900e-003	2.4200e-003	3.2000e-004	2.7400e-003	0.0000	36.7164	36.7164	2.3300e-003	0.0000	36.7747
Worker	0.0427	0.0311	0.2723	6.0000e-004	0.0658	4.8000e-004	0.0663	0.0175	4.4000e-004	0.0180	0.0000	54.4471	54.4471	2.0600e-003	0.0000	54.4987
Total	**0.0489**	**0.1685**	**0.3158**	**9.9000e-004**	**0.0742**	**8.2000e-004**	**0.0750**	**0.0199**	**7.6000e-004**	**0.0207**	**0.0000**	**91.1636**	**91.1636**	**4.3900e-003**	**0.0000**	**91.2733**

3.3 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1962	1.7958	1.8818	3.1000e-003		0.0930	0.0930		0.0875	0.0875	0.0000	266.4837	266.4837	0.0638	0.0000	268.0798
Total	**0.1962**	**1.7958**	**1.8818**	**3.1000e-003**		**0.0930**	**0.0930**		**0.0875**	**0.0875**	**0.0000**	**266.4837**	**266.4837**	**0.0638**	**0.0000**	**268.0798**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.2100e-003	0.1375	0.0435	3.9000e-004	8.3500e-003	3.4000e-004	8.6900e-003	2.4200e-003	3.2000e-004	2.7400e-003	0.0000	36.7164	36.7164	2.3300e-003	0.0000	36.7747
Worker	0.0427	0.0311	0.2723	6.0000e-004	0.0658	4.8000e-004	0.0663	0.0175	4.4000e-004	0.0180	0.0000	54.4471	54.4471	2.0600e-003	0.0000	54.4987
Total	**0.0489**	**0.1685**	**0.3158**	**9.9000e-004**	**0.0742**	**8.2000e-004**	**0.0750**	**0.0199**	**7.6000e-004**	**0.0207**	**0.0000**	**91.1636**	**91.1636**	**4.3900e-003**	**0.0000**	**91.2733**

3.4 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5709					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0235	0.1620	0.2086	3.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	29.3624	29.3624	1.9100e-003	0.0000	29.4102
Total	**1.5944**	**0.1620**	**0.2086**	**3.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**29.3624**	**29.3624**	**1.9100e-003**	**0.0000**	**29.4102**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-003	6.0400e-003	0.0530	1.2000e-004	0.0128	9.0000e-005	0.0129	3.4000e-003	9.0000e-005	3.4900e-003	0.0000	10.5869	10.5869	4.0000e-004	0.0000	10.5970
Total	**8.3000e-003**	**6.0400e-003**	**0.0530**	**1.2000e-004**	**0.0128**	**9.0000e-005**	**0.0129**	**3.4000e-003**	**9.0000e-005**	**3.4900e-003**	**0.0000**	**10.5869**	**10.5869**	**4.0000e-004**	**0.0000**	**10.5970**

3.4 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.5709					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0235	0.1620	0.2086	3.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	29.3624	29.3624	1.9100e-003	0.0000	29.4102
Total	**1.5944**	**0.1620**	**0.2086**	**3.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**29.3624**	**29.3624**	**1.9100e-003**	**0.0000**	**29.4102**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.3000e-003	6.0400e-003	0.0530	1.2000e-004	0.0128	9.0000e-005	0.0129	3.4000e-003	9.0000e-005	3.4900e-003	0.0000	10.5869	10.5869	4.0000e-004	0.0000	10.5970
Total	**8.3000e-003**	**6.0400e-003**	**0.0530**	**1.2000e-004**	**0.0128**	**9.0000e-005**	**0.0129**	**3.4000e-003**	**9.0000e-005**	**3.4900e-003**	**0.0000**	**10.5869**	**10.5869**	**4.0000e-004**	**0.0000**	**10.5970**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2502	1.5234	2.4272	7.0500e-003	0.4472	5.4400e-003	0.4526	0.1200	5.1000e-003	0.1251	0.0000	650.2431	650.2431	0.0397	0.0000	651.2355
Unmitigated	0.2502	1.5234	2.4272	7.0500e-003	0.4472	5.4400e-003	0.4526	0.1200	5.1000e-003	0.1251	0.0000	650.2431	650.2431	0.0397	0.0000	651.2355

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	319.00	319.00	319.00	913,057	913,057
Convenience Market With Gas Pumps	516.00	516.00	516.00	276,785	276,785
Total	835.00	835.00	835.00	1,189,842	1,189,842

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.30	19.60	38.10	86	11	3
Convenience Market With Gas	9.50	7.30	7.30	0.80	80.20	19.00	14	21	65

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204
Convenience Market With Gas Pumps	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	150.4787	150.4787	6.2100e-003	1.2900e-003	151.0171
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	154.0661	154.0661	6.3600e-003	1.3200e-003	154.6173
NaturalGas Mitigated	5.1500e-003	0.0440	0.0188	2.8000e-004		3.5600e-003	3.5600e-003		3.5600e-003	3.5600e-003	0.0000	50.9438	50.9438	9.8000e-004	9.3000e-004	51.2466
NaturalGas Unmitigated	5.8500e-003	0.0500	0.0213	3.2000e-004		4.0400e-003	4.0400e-003		4.0400e-003	4.0400e-003	0.0000	57.8479	57.8479	1.1100e-003	1.0600e-003	58.1917

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	1.07996e+006	5.8200e-003	0.0498	0.0212	3.2000e-004		4.0200e-003	4.0200e-003		4.0200e-003	4.0200e-003	0.0000	57.6307	57.6307	1.1000e-003	1.0600e-003	57.9731
Convenience Market With Gas Pumps	4071.49	2.0000e-005	2.0000e-004	1.7000e-004	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.2173	0.2173	0.0000	0.0000	0.2186
Total		**5.8400e-003**	**0.0500**	**0.0214**	**3.2000e-004**		**4.0400e-003**	**4.0400e-003**		**4.0400e-003**	**4.0400e-003**	**0.0000**	**57.8479**	**57.8479**	**1.1000e-003**	**1.0600e-003**	**58.1917**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Low Rise	951150	5.1300e-003	0.0438	0.0187	2.8000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	50.7570	50.7570	9.7000e-004	9.3000e-004	51.0586
Convenience Market With Gas Pumps	3501.48	2.0000e-005	1.7000e-004	1.4000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1869	0.1869	0.0000	0.0000	0.1880
Total		**5.1500e-003**	**0.0440**	**0.0188**	**2.8000e-004**		**3.5500e-003**	**3.5500e-003**		**3.5500e-003**	**3.5500e-003**	**0.0000**	**50.9438**	**50.9438**	**9.7000e-004**	**9.3000e-004**	**51.2466**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	475905	151.6335	6.2600e-003	1.3000e-003	152.1760
Convenience Market With Gas Pumps	7634.74	2.4326	1.0000e-004	2.0000e-005	2.4413
Total		**154.0661**	**6.3600e-003**	**1.3200e-003**	**154.6173**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	465042	148.1723	6.1200e-003	1.2700e-003	148.7024
Convenience Market With Gas Pumps	7238.66	2.3064	1.0000e-004	2.0000e-005	2.3146
Total		**150.4787**	**6.2200e-003**	**1.2900e-003**	**151.0171**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.5500	0.0698	0.7688	4.3000e-004		9.0600e-003	9.0600e-003		9.0600e-003	9.0600e-003	0.0000	72.1014	72.1014	2.5300e-003	1.3000e-003	72.5519
Unmitigated	6.8468	0.1311	8.4881	0.0141		1.0901	1.0901		1.0901	1.0901	103.2958	44.5337	147.8295	0.0965	8.1200e-003	152.6630

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1571					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3928					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	6.2746	0.1225	7.7453	0.0140		1.0860	1.0860		1.0860	1.0860	103.2958	43.3207	146.6165	0.0953	8.1200e-003	151.4209
Landscaping	0.0224	8.5600e-003	0.7427	4.0000e-005		4.1100e-003	4.1100e-003		4.1100e-003	4.1100e-003	0.0000	1.2130	1.2130	1.1700e-003	0.0000	1.2421
Total	**6.8469**	**0.1311**	**8.4881**	**0.0141**		**1.0901**	**1.0901**		**1.0901**	**1.0901**	**103.2958**	**44.5337**	**147.8295**	**0.0965**	**8.1200e-003**	**152.6630**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1571					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.3634					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.1600e-003	0.0612	0.0261	3.9000e-004		4.9500e-003	4.9500e-003		4.9500e-003	4.9500e-003	0.0000	70.8885	70.8885	1.3600e-003	1.3000e-003	71.3097
Landscaping	0.0224	8.5600e-003	0.7427	4.0000e-005		4.1100e-003	4.1100e-003		4.1100e-003	4.1100e-003	0.0000	1.2130	1.2130	1.1700e-003	0.0000	1.2421
Total	**0.5500**	**0.0698**	**0.7688**	**4.3000e-004**		**9.0600e-003**	**9.0600e-003**		**9.0600e-003**	**9.0600e-003**	**0.0000**	**72.1014**	**72.1014**	**2.5300e-003**	**1.3000e-003**	**72.5519**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	15.0364	0.1715	4.1500e-003	20.5603
Unmitigated	17.9946	0.2143	5.1800e-003	24.8967

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	6.5154 / 4.10754	17.8806	0.2130	5.1500e-003	24.7387
Convenience Market With Gas Pumps	0.0418287 / 0.025637	0.1140	1.3700e-003	3.0000e-005	0.1580
Total		**17.9946**	**0.2143**	**5.1800e-003**	**24.8967**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	5.21232 / 3.85698	14.9412	0.1704	4.1200e-003	20.4299
Convenience Market With Gas Pumps	0.033463 / 0.0240731	0.0952	1.0900e-003	3.0000e-005	0.1304
Total		**15.0363**	**0.1715**	**4.1500e-003**	**20.5603**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	9.3376	0.5518	0.0000	23.1335
Unmitigated	9.3376	0.5518	0.0000	23.1335

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	46	9.3376	0.5518	0.0000	23.1335
Total		**9.3376**	**0.5518**	**0.0000**	**23.1335**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	46	9.3376	0.5518	0.0000	23.1335
Total		**9.3376**	**0.5518**	**0.0000**	**23.1335**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Workforce Septic

Mono County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.10	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Septic System

Construction Phase - Excavate: 2 weeks, Install: 1 week

Off-road Equipment - Excavate: 1 bobcat, 1 loader/backhoe

Off-road Equipment - Install: 1 crane, 1 loader/backhoe 1 welder, 1 forklift

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	5.00
tblConstructionPhase	NumDays	2.00	10.00
tblConstructionPhase	PhaseEndDate	7/7/2022	3/16/2022
tblConstructionPhase	PhaseEndDate	2/17/2022	3/1/2022
tblConstructionPhase	PhaseStartDate	2/18/2022	3/10/2022
tblLandUse	LotAcreage	0.00	0.10
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Grading

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	2.7500e-003	0.0241	0.0285	5.0000e-005	4.1600e-003	1.1600e-003	5.3200e-003	2.1700e-003	1.0800e-003	3.2500e-003	0.0000	3.9542	3.9542	1.1100e-003	0.0000	3.9820
Maximum	**2.7500e-003**	**0.0241**	**0.0285**	**5.0000e-005**	**4.1600e-003**	**1.1600e-003**	**5.3200e-003**	**2.1700e-003**	**1.0800e-003**	**3.2500e-003**	**0.0000**	**3.9542**	**3.9542**	**1.1100e-003**	**0.0000**	**3.9820**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	2.7500e-003	0.0179	0.0285	5.0000e-005	4.1600e-003	1.1600e-003	5.3200e-003	2.1700e-003	1.0800e-003	3.2500e-003	0.0000	3.9542	3.9542	1.1100e-003	0.0000	3.9820
Maximum	**2.7500e-003**	**0.0179**	**0.0285**	**5.0000e-005**	**4.1600e-003**	**1.1600e-003**	**5.3200e-003**	**2.1700e-003**	**1.0800e-003**	**3.2500e-003**	**0.0000**	**3.9542**	**3.9542**	**1.1100e-003**	**0.0000**	**3.9820**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**25.79**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**2-1-2022**	**4-30-2022**	0.0268	0.0206
		Highest	0.0268	0.0206

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	2/16/2022	3/1/2022	5	10	
2	Building Construction	Building Construction	3/10/2022	3/16/2022	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Skid Steer Loaders	1	6.00	65	0.37
Building Construction	Welders	1	6.00	46	0.45
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7600e-003	0.0000	3.7600e-003	2.0700e-003	0.0000	2.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8000e-004	9.7500e-003	0.0136	2.0000e-005		4.7000e-004	4.7000e-004		4.3000e-004	4.3000e-004	0.0000	1.7038	1.7038	5.5000e-004	0.0000	1.7175
Total	**8.8000e-004**	**9.7500e-003**	**0.0136**	**2.0000e-005**	**3.7600e-003**	**4.7000e-004**	**4.2300e-003**	**2.0700e-003**	**4.3000e-004**	**2.5000e-003**	**0.0000**	**1.7038**	**1.7038**	**5.5000e-004**	**0.0000**	**1.7175**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	1.6400e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3288	0.3288	1.0000e-005	0.0000	0.3291
Total	**2.6000e-004**	**1.9000e-004**	**1.6400e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3288**	**0.3288**	**1.0000e-005**	**0.0000**	**0.3291**

3.2 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.7600e-003	0.0000	3.7600e-003	2.0700e-003	0.0000	2.0700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.8000e-004	6.2800e-003	0.0136	2.0000e-005		4.7000e-004	4.7000e-004		4.3000e-004	4.3000e-004	0.0000	1.7038	1.7038	5.5000e-004	0.0000	1.7175
Total	**8.8000e-004**	**6.2800e-003**	**0.0136**	**2.0000e-005**	**3.7600e-003**	**4.7000e-004**	**4.2300e-003**	**2.0700e-003**	**4.3000e-004**	**2.5000e-003**	**0.0000**	**1.7038**	**1.7038**	**5.5000e-004**	**0.0000**	**1.7175**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	1.6400e-003	0.0000	4.0000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3288	0.3288	1.0000e-005	0.0000	0.3291
Total	**2.6000e-004**	**1.9000e-004**	**1.6400e-003**	**0.0000**	**4.0000e-004**	**0.0000**	**4.0000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3288**	**0.3288**	**1.0000e-005**	**0.0000**	**0.3291**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6100e-003	0.0141	0.0133	2.0000e-005		6.9000e-004	6.9000e-004		6.5000e-004	6.5000e-004	0.0000	1.9216	1.9216	5.5000e-004	0.0000	1.9354
Total	**1.6100e-003**	**0.0141**	**0.0133**	**2.0000e-005**		**6.9000e-004**	**6.9000e-004**		**6.5000e-004**	**6.5000e-004**	**0.0000**	**1.9216**	**1.9216**	**5.5000e-004**	**0.0000**	**1.9354**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6100e-003	0.0114	0.0133	2.0000e-005		6.9000e-004	6.9000e-004		6.5000e-004	6.5000e-004	0.0000	1.9216	1.9216	5.5000e-004	0.0000	1.9354
Total	**1.6100e-003**	**0.0114**	**0.0133**	**2.0000e-005**		**6.9000e-004**	**6.9000e-004**		**6.5000e-004**	**6.5000e-004**	**0.0000**	**1.9216**	**1.9216**	**5.5000e-004**	**0.0000**	**1.9354**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Workforce Propane Tank and Water Storage

Mono County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.10	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2022
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Propane or Water Storage Tank

Construction Phase - Excavate: 1 week, Concrete Pad: 1 week, Install: 1 week

Off-road Equipment - Excavate: 1 bobcat, 1 loader/backhoe

Off-road Equipment - Concrete Pad, 1 mixer, 1 pump, 1 roller,

Off-road Equipment - Install: 1 crane, 1 forklift, 1 welder

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	5.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	PhaseEndDate	6/8/2022	2/25/2022
tblConstructionPhase	PhaseEndDate	1/19/2022	1/24/2022
tblConstructionPhase	PhaseEndDate	6/15/2022	2/7/2022
tblConstructionPhase	PhaseStartDate	1/20/2022	2/20/2022
tblConstructionPhase	PhaseStartDate	6/9/2022	2/1/2022
tblLandUse	LotAcreage	0.00	0.10
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Building Construction
tblTripsAndVMT	WorkerTripNumber	10.00	5.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	2.9400e-003	0.0250	0.0272	5.0000e-005	2.1400e-003	1.2400e-003	3.3800e-003	1.1000e-003	1.1800e-003	2.2800e-003	0.0000	3.9553	3.9553	8.4000e-004	0.0000	3.9763
Maximum	**2.9400e-003**	**0.0250**	**0.0272**	**5.0000e-005**	**2.1400e-003**	**1.2400e-003**	**3.3800e-003**	**1.1000e-003**	**1.1800e-003**	**2.2800e-003**	**0.0000**	**3.9553**	**3.9553**	**8.4000e-004**	**0.0000**	**3.9763**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	2.9400e-003	0.0250	0.0272	5.0000e-005	2.1400e-003	1.2400e-003	3.3800e-003	1.1000e-003	1.1800e-003	2.2800e-003	0.0000	3.9553	3.9553	8.4000e-004	0.0000	3.9763
Maximum	**2.9400e-003**	**0.0250**	**0.0272**	**5.0000e-005**	**2.1400e-003**	**1.2400e-003**	**3.3800e-003**	**1.1000e-003**	**1.1800e-003**	**2.2800e-003**	**0.0000**	**3.9553**	**3.9553**	**8.4000e-004**	**0.0000**	**3.9763**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-3-2022**	**4-2-2022**	0.0263	0.0263
		Highest	0.0263	0.0263

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/18/2022	1/24/2022	5	5	
2	Building Construction	Building Construction	2/20/2022	2/25/2022	5	5	
3	Paving	Paving	2/1/2022	2/7/2022	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Skid Steer Loaders	1	6.00	65	0.37
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pumps	1	6.00	84	0.74
Building Construction	Welders	1	6.00	46	0.45
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Paving	Rollers	1	7.00	80	0.38
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.8800e-003	0.0000	1.8800e-003	1.0300e-003	0.0000	1.0300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.4000e-004	4.8800e-003	6.8000e-003	1.0000e-005		2.3000e-004	2.3000e-004		2.1000e-004	2.1000e-004	0.0000	0.8533	0.8533	2.8000e-004	0.0000	0.8602
Total	**4.4000e-004**	**4.8800e-003**	**6.8000e-003**	**1.0000e-005**	**1.8800e-003**	**2.3000e-004**	**2.1100e-003**	**1.0300e-003**	**2.1000e-004**	**1.2400e-003**	**0.0000**	**0.8533**	**0.8533**	**2.8000e-004**	**0.0000**	**0.8602**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	5.0000e-005	4.1000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0822	0.0822	0.0000	0.0000	0.0823
Total	**6.0000e-005**	**5.0000e-005**	**4.1000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0822**	**0.0822**	**0.0000**	**0.0000**	**0.0823**

3.2 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.8800e-003	0.0000	1.8800e-003	1.0300e-003	0.0000	1.0300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.4000e-004	4.8800e-003	6.8000e-003	1.0000e-005		2.3000e-004	2.3000e-004		2.1000e-004	2.1000e-004	0.0000	0.8533	0.8533	2.8000e-004	0.0000	0.8602
Total	**4.4000e-004**	**4.8800e-003**	**6.8000e-003**	**1.0000e-005**	**1.8800e-003**	**2.3000e-004**	**2.1100e-003**	**1.0300e-003**	**2.1000e-004**	**1.2400e-003**	**0.0000**	**0.8533**	**0.8533**	**2.8000e-004**	**0.0000**	**0.8602**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	5.0000e-005	4.1000e-004	0.0000	1.0000e-004	0.0000	1.0000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0822	0.0822	0.0000	0.0000	0.0823
Total	**6.0000e-005**	**5.0000e-005**	**4.1000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.0822**	**0.0822**	**0.0000**	**0.0000**	**0.0823**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-003	9.9500e-003	7.7100e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.4000e-004	4.4000e-004	0.0000	1.2384	1.2384	3.3000e-004	0.0000	1.2466
Total	**1.2000e-003**	**9.9500e-003**	**7.7100e-003**	**1.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**1.2384**	**1.2384**	**3.3000e-004**	**0.0000**	**1.2466**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-003	9.9500e-003	7.7100e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.4000e-004	4.4000e-004	0.0000	1.2384	1.2384	3.3000e-004	0.0000	1.2466
Total	**1.2000e-003**	**9.9500e-003**	**7.7100e-003**	**1.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.4000e-004**	**4.4000e-004**	**0.0000**	**1.2384**	**1.2384**	**3.3000e-004**	**0.0000**	**1.2466**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1300e-003	0.0100	0.0117	2.0000e-005		5.4000e-004	5.4000e-004		5.2000e-004	5.2000e-004	0.0000	1.6500	1.6500	2.3000e-004	0.0000	1.6556
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1300e-003**	**0.0100**	**0.0117**	**2.0000e-005**		**5.4000e-004**	**5.4000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**1.6500**	**1.6500**	**2.3000e-004**	**0.0000**	**1.6556**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	6.6000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1315	0.1315	0.0000	0.0000	0.1316
Total	**1.0000e-004**	**8.0000e-005**	**6.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1315**	**0.1315**	**0.0000**	**0.0000**	**0.1316**

3.4 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1300e-003	0.0100	0.0117	2.0000e-005		5.4000e-004	5.4000e-004		5.2000e-004	5.2000e-004	0.0000	1.6500	1.6500	2.3000e-004	0.0000	1.6556
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.1300e-003**	**0.0100**	**0.0117**	**2.0000e-005**		**5.4000e-004**	**5.4000e-004**		**5.2000e-004**	**5.2000e-004**	**0.0000**	**1.6500**	**1.6500**	**2.3000e-004**	**0.0000**	**1.6556**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	8.0000e-005	6.6000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1315	0.1315	0.0000	0.0000	0.1316
Total	**1.0000e-004**	**8.0000e-005**	**6.6000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1315**	**0.1315**	**0.0000**	**0.0000**	**0.1316**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.523641	0.038063	0.196890	0.123669	0.027642	0.006698	0.008481	0.059043	0.006730	0.001326	0.005527	0.000980	0.001310

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Work Force Hotel and Restaurant Cumulative Emissions

Mono County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High Turnover (Sit Down Restaurant)	10.00	1000sqft	0.23	10,000.00	0
Hotel	120.00	Room	4.00	174,240.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - 8 days grading, 230 days construction, 18 days pave

Vehicle Trips - trip rates per traffic engineer

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation - 50%

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	18.00	230.00
tblConstructionPhase	PhaseEndDate	2/22/2024	12/1/2023
tblConstructionPhase	PhaseEndDate	1/3/2024	12/1/2023
tblConstructionPhase	PhaseEndDate	2/15/2023	1/11/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	12/27/2023
tblConstructionPhase	PhaseStartDate	1/30/2024	1/15/2023
tblConstructionPhase	PhaseStartDate	2/16/2023	1/15/2023
tblConstructionPhase	PhaseStartDate	2/4/2023	1/1/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	12/2/2023
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	ST_TR	158.37	84.10
tblVehicleTrips	ST_TR	8.19	6.27
tblVehicleTrips	SU_TR	131.84	84.10
tblVehicleTrips	SU_TR	5.95	6.27
tblVehicleTrips	WD_TR	127.15	84.10
tblVehicleTrips	WD_TR	8.17	6.27

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	2.4409	2.3107	2.7918	5.8700e-003	0.1806	0.0970	0.2775	0.0550	0.0916	0.1466	0.0000	518.7116	518.7116	0.0813	0.0000	520.7446
Maximum	**2.4409**	**2.3107**	**2.7918**	**5.8700e-003**	**0.1806**	**0.0970**	**0.2775**	**0.0550**	**0.0916**	**0.1466**	**0.0000**	**518.7116**	**518.7116**	**0.0813**	**0.0000**	**520.7446**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	2.4409	2.3107	2.7918	5.8700e-003	0.1646	0.0970	0.2616	0.0468	0.0916	0.1384	0.0000	518.7112	518.7112	0.0813	0.0000	520.7442
Maximum	**2.4409**	**2.3107**	**2.7918**	**5.8700e-003**	**0.1646**	**0.0970**	**0.2616**	**0.0468**	**0.0916**	**0.1384**	**0.0000**	**518.7112**	**518.7112**	**0.0813**	**0.0000**	**520.7442**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**8.85**	**0.00**	**5.76**	**14.95**	**0.00**	**5.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Tioga Work Force Hotel and Restaurant Cumulative Emissions - Mono County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2023	3-31-2023	1.1591	1.1591
2	4-1-2023	6-30-2023	1.2909	1.2909
3	7-1-2023	9-30-2023	1.3051	1.3051
		Highest	1.3051	1.3051

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9332	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3200e-003	2.3200e-003	1.0000e-005	0.0000	2.4800e-003
Energy	0.0258	0.2343	0.1968	1.4100e-003		0.0178	0.0178		0.0178	0.0178	0.0000	747.4766	747.4766	0.0252	8.8800e-003	750.7539
Mobile	0.4867	2.9785	4.8335	0.0143	0.9252	0.0111	0.9363	0.2483	0.0104	0.2586	0.0000	1,317.6032	1,317.6032	0.0779	0.0000	1,319.5496
Waste						0.0000	0.0000		0.0000	0.0000	37.4924	0.0000	37.4924	2.2157	0.0000	92.8859
Water						0.0000	0.0000		0.0000	0.0000	1.9287	11.0744	13.0031	0.1986	4.7700e-003	19.3890
Total	**1.4457**	**3.2128**	**5.0315**	**0.0157**	**0.9252**	**0.0289**	**0.9541**	**0.2483**	**0.0282**	**0.2764**	**39.4211**	**2,076.1565**	**2,115.5777**	**2.5174**	**0.0137**	**2,182.5809**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8794	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3200e-003	2.3200e-003	1.0000e-005	0.0000	2.4800e-003
Energy	0.0258	0.2343	0.1968	1.4100e-003		0.0178	0.0178		0.0178	0.0178	0.0000	501.2571	501.2571	0.0151	6.7800e-003	503.6535
Mobile	0.4867	2.9785	4.8335	0.0143	0.9252	0.0111	0.9363	0.2483	0.0104	0.2586	0.0000	1,317.6032	1,317.6032	0.0779	0.0000	1,319.5496
Waste						0.0000	0.0000		0.0000	0.0000	37.4924	0.0000	37.4924	2.2157	0.0000	92.8859
Water						0.0000	0.0000		0.0000	0.0000	1.5430	8.9420	10.4849	0.1589	3.8200e-003	15.5940
Total	**1.3919**	**3.2128**	**5.0315**	**0.0157**	**0.9252**	**0.0289**	**0.9541**	**0.2483**	**0.0282**	**0.2764**	**39.0354**	**1,827.8046**	**1,866.8400**	**2.4675**	**0.0106**	**1,931.6854**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**3.72**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.98**	**11.96**	**11.76**	**1.98**	**22.34**	**11.50**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2023	1/11/2023	5	8	
2	Building Construction	Building Construction	1/15/2023	12/1/2023	5	230	
3	Paving	Paving	12/2/2023	12/27/2023	5	18	
4	Architectural Coating	Architectural Coating	1/15/2023	12/1/2023	5	230	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 276,360; Non-Residential Outdoor: 92,120; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	77.00	30.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0262	0.0000	0.0262	0.0135	0.0000	0.0135	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0717	0.0590	1.2000e-004		3.1000e-003	3.1000e-003		2.8500e-003	2.8500e-003	0.0000	10.4243	10.4243	3.3700e-003	0.0000	10.5085
Total	**6.8400e-003**	**0.0717**	**0.0590**	**1.2000e-004**	**0.0262**	**3.1000e-003**	**0.0293**	**0.0135**	**2.8500e-003**	**0.0163**	**0.0000**	**10.4243**	**10.4243**	**3.3700e-003**	**0.0000**	**10.5085**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.0000e-004	2.4800e-003	1.0000e-005	7.4000e-004	1.0000e-005	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.5847	0.5847	2.0000e-005	0.0000	0.5852
Total	**4.1000e-004**	**3.0000e-004**	**2.4800e-003**	**1.0000e-005**	**7.4000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5847**	**0.5847**	**2.0000e-005**	**0.0000**	**0.5852**

3.2 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0102	0.0000	0.0102	5.2500e-003	0.0000	5.2500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8400e-003	0.0717	0.0590	1.2000e-004		3.1000e-003	3.1000e-003		2.8500e-003	2.8500e-003	0.0000	10.4242	10.4242	3.3700e-003	0.0000	10.5085
Total	**6.8400e-003**	**0.0717**	**0.0590**	**1.2000e-004**	**0.0102**	**3.1000e-003**	**0.0133**	**5.2500e-003**	**2.8500e-003**	**8.1000e-003**	**0.0000**	**10.4242**	**10.4242**	**3.3700e-003**	**0.0000**	**10.5085**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.0000e-004	2.4800e-003	1.0000e-005	7.4000e-004	1.0000e-005	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.5847	0.5847	2.0000e-005	0.0000	0.5852
Total	**4.1000e-004**	**3.0000e-004**	**2.4800e-003**	**1.0000e-005**	**7.4000e-004**	**1.0000e-005**	**7.5000e-004**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.5847**	**0.5847**	**2.0000e-005**	**0.0000**	**0.5852**

3.3 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1809	1.6543	1.8681	3.1000e-003		0.0805	0.0805		0.0757	0.0757	0.0000	266.5755	266.5755	0.0634	0.0000	268.1608
Total	**0.1809**	**1.6543**	**1.8681**	**3.1000e-003**		**0.0805**	**0.0805**		**0.0757**	**0.0757**	**0.0000**	**266.5755**	**266.5755**	**0.0634**	**0.0000**	**268.1608**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0132	0.3023	0.0998	9.7000e-004	0.0206	4.3000e-004	0.0210	5.9600e-003	4.1000e-004	6.3700e-003	0.0000	92.1613	92.1613	4.6800e-003	0.0000	92.2782
Worker	0.0612	0.0438	0.3658	9.6000e-004	0.1095	7.4000e-004	0.1102	0.0291	6.8000e-004	0.0298	0.0000	86.2974	86.2974	2.8400e-003	0.0000	86.3683
Total	**0.0744**	**0.3460**	**0.4656**	**1.9300e-003**	**0.1301**	**1.1700e-003**	**0.1313**	**0.0351**	**1.0900e-003**	**0.0362**	**0.0000**	**178.4586**	**178.4586**	**7.5200e-003**	**0.0000**	**178.6465**

3.3 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1809	1.6543	1.8681	3.1000e-003		0.0805	0.0805		0.0757	0.0757	0.0000	266.5751	266.5751	0.0634	0.0000	268.1605
Total	**0.1809**	**1.6543**	**1.8681**	**3.1000e-003**		**0.0805**	**0.0805**		**0.0757**	**0.0757**	**0.0000**	**266.5751**	**266.5751**	**0.0634**	**0.0000**	**268.1605**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0132	0.3023	0.0998	9.7000e-004	0.0206	4.3000e-004	0.0210	5.9600e-003	4.1000e-004	6.3700e-003	0.0000	92.1613	92.1613	4.6800e-003	0.0000	92.2782
Worker	0.0612	0.0438	0.3658	9.6000e-004	0.1095	7.4000e-004	0.1102	0.0291	6.8000e-004	0.0298	0.0000	86.2974	86.2974	2.8400e-003	0.0000	86.3683
Total	**0.0744**	**0.3460**	**0.4656**	**1.9300e-003**	**0.1301**	**1.1700e-003**	**0.1313**	**0.0351**	**1.0900e-003**	**0.0362**	**0.0000**	**178.4586**	**178.4586**	**7.5200e-003**	**0.0000**	**178.6465**

3.4 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.2600e-003**	**0.0791**	**0.1097**	**1.7000e-004**		**3.9200e-003**	**3.9200e-003**		**3.6200e-003**	**3.6200e-003**	**0.0000**	**14.7407**	**14.7407**	**4.6300e-003**	**0.0000**	**14.8565**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.9000e-004	7.4300e-003	2.0000e-005	2.2300e-003	2.0000e-005	2.2400e-003	5.9000e-004	1.0000e-005	6.1000e-004	0.0000	1.7542	1.7542	6.0000e-005	0.0000	1.7557
Total	**1.2400e-003**	**8.9000e-004**	**7.4300e-003**	**2.0000e-005**	**2.2300e-003**	**2.0000e-005**	**2.2400e-003**	**5.9000e-004**	**1.0000e-005**	**6.1000e-004**	**0.0000**	**1.7542**	**1.7542**	**6.0000e-005**	**0.0000**	**1.7557**

3.4 Paving - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.2600e-003	0.0791	0.1097	1.7000e-004		3.9200e-003	3.9200e-003		3.6200e-003	3.6200e-003	0.0000	14.7407	14.7407	4.6300e-003	0.0000	14.8565
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.2600e-003**	**0.0791**	**0.1097**	**1.7000e-004**		**3.9200e-003**	**3.9200e-003**		**3.6200e-003**	**3.6200e-003**	**0.0000**	**14.7407**	**14.7407**	**4.6300e-003**	**0.0000**	**14.8565**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2400e-003	8.9000e-004	7.4300e-003	2.0000e-005	2.2300e-003	2.0000e-005	2.2400e-003	5.9000e-004	1.0000e-005	6.1000e-004	0.0000	1.7542	1.7542	6.0000e-005	0.0000	1.7557
Total	**1.2400e-003**	**8.9000e-004**	**7.4300e-003**	**2.0000e-005**	**2.2300e-003**	**2.0000e-005**	**2.2400e-003**	**5.9000e-004**	**1.0000e-005**	**6.1000e-004**	**0.0000**	**1.7542**	**1.7542**	**6.0000e-005**	**0.0000**	**1.7557**

3.5 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.1349					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0220	0.1498	0.2083	3.4000e-004		8.1400e-003	8.1400e-003		8.1400e-003	8.1400e-003	0.0000	29.3624	29.3624	1.7600e-003	0.0000	29.4063
Total	**2.1569**	**0.1498**	**0.2083**	**3.4000e-004**		**8.1400e-003**	**8.1400e-003**		**8.1400e-003**	**8.1400e-003**	**0.0000**	**29.3624**	**29.3624**	**1.7600e-003**	**0.0000**	**29.4063**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0119	8.5300e-003	0.0713	1.9000e-004	0.0213	1.4000e-004	0.0215	5.6700e-003	1.3000e-004	5.8000e-003	0.0000	16.8112	16.8112	5.5000e-004	0.0000	16.8250
Total	**0.0119**	**8.5300e-003**	**0.0713**	**1.9000e-004**	**0.0213**	**1.4000e-004**	**0.0215**	**5.6700e-003**	**1.3000e-004**	**5.8000e-003**	**0.0000**	**16.8112**	**16.8112**	**5.5000e-004**	**0.0000**	**16.8250**

3.5 Architectural Coating - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.1349					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0220	0.1498	0.2083	3.4000e-004		8.1400e-003	8.1400e-003		8.1400e-003	8.1400e-003	0.0000	29.3624	29.3624	1.7600e-003	0.0000	29.4063
Total	**2.1569**	**0.1498**	**0.2083**	**3.4000e-004**		**8.1400e-003**	**8.1400e-003**		**8.1400e-003**	**8.1400e-003**	**0.0000**	**29.3624**	**29.3624**	**1.7600e-003**	**0.0000**	**29.4063**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0119	8.5300e-003	0.0713	1.9000e-004	0.0213	1.4000e-004	0.0215	5.6700e-003	1.3000e-004	5.8000e-003	0.0000	16.8112	16.8112	5.5000e-004	0.0000	16.8250
Total	**0.0119**	**8.5300e-003**	**0.0713**	**1.9000e-004**	**0.0213**	**1.4000e-004**	**0.0215**	**5.6700e-003**	**1.3000e-004**	**5.8000e-003**	**0.0000**	**16.8112**	**16.8112**	**5.5000e-004**	**0.0000**	**16.8250**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4867	2.9785	4.8335	0.0143	0.9252	0.0111	0.9363	0.2483	0.0104	0.2586	0.0000	1,317.6032	1,317.6032	0.0779	0.0000	1,319.5496
Unmitigated	0.4867	2.9785	4.8335	0.0143	0.9252	0.0111	0.9363	0.2483	0.0104	0.2586	0.0000	1,317.6032	1,317.6032	0.0779	0.0000	1,319.5496

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High Turnover (Sit Down Restaurant)	841.00	841.00	841.00	950,261	950,261
Hotel	752.40	752.40	752.40	1,511,699	1,511,699
Total	1,593.40	1,593.40	1,593.40	2,461,960	2,461,960

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High Turnover (Sit Down	14.70	6.60	6.60	8.50	72.50	19.00	37	20	43
Hotel	14.70	6.60	6.60	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High Turnover (Sit Down Restaurant)	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204
Hotel	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	246.2196	246.2196	0.0102	2.1000e-003	247.1004
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	492.4391	492.4391	0.0203	4.2100e-003	494.2008
NaturalGas Mitigated	0.0258	0.2343	0.1968	1.4100e-003		0.0178	0.0178		0.0178	0.0178	0.0000	255.0375	255.0375	4.8900e-003	4.6800e-003	256.5531
NaturalGas Unmitigated	0.0258	0.2343	0.1968	1.4100e-003		0.0178	0.0178		0.0178	0.0178	0.0000	255.0375	255.0375	4.8900e-003	4.6800e-003	256.5531

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High Turnover (Sit Down Restaurant)	1.162e +006	6.2700e-003	0.0570	0.0479	3.4000e-004		4.3300e-003	4.3300e-003		4.3300e-003	4.3300e-003	0.0000	62.0088	62.0088	1.1900e-003	1.1400e-003	62.3772
Hotel	3.61722e +006	0.0195	0.1773	0.1489	1.0600e-003		0.0135	0.0135		0.0135	0.0135	0.0000	193.0288	193.0288	3.7000e-003	3.5400e-003	194.1758
Total		**0.0258**	**0.2343**	**0.1968**	**1.4000e-003**		**0.0178**	**0.0178**		**0.0178**	**0.0178**	**0.0000**	**255.0375**	**255.0375**	**4.8900e-003**	**4.6800e-003**	**256.5531**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
High Turnover (Sit Down Restaurant)	1.162e +006	6.2700e-003	0.0570	0.0479	3.4000e-004		4.3300e-003	4.3300e-003		4.3300e-003	4.3300e-003	0.0000	62.0088	62.0088	1.1900e-003	1.1400e-003	62.3772
Hotel	3.61722e +006	0.0195	0.1773	0.1489	1.0600e-003		0.0135	0.0135		0.0135	0.0135	0.0000	193.0288	193.0288	3.7000e-003	3.5400e-003	194.1758
Total		**0.0258**	**0.2343**	**0.1968**	**1.4000e-003**		**0.0178**	**0.0178**		**0.0178**	**0.0178**	**0.0000**	**255.0375**	**255.0375**	**4.8900e-003**	**4.6800e-003**	**256.5531**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High Turnover (Sit Down Restaurant)	245700	78.2853	3.2300e-003	6.7000e-004	78.5654
Hotel	1.29983e+006	414.1538	0.0171	3.5400e-003	415.6355
Total		**492.4391**	**0.0203**	**4.2100e-003**	**494.2008**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
High Turnover (Sit Down Restaurant)	122850	39.1426	1.6200e-003	3.3000e-004	39.2827
Hotel	649915	207.0769	8.5500e-003	1.7700e-003	207.8177
Total		**246.2196**	**0.0102**	**2.1000e-003**	**247.1004**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8794	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3200e-003	2.3200e-003	1.0000e-005	0.0000	2.4800e-003
Unmitigated	0.9332	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3200e-003	2.3200e-003	1.0000e-005	0.0000	2.4800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2135					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7196					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3200e-003	2.3200e-003	1.0000e-005	0.0000	2.4800e-003
Total	**0.9332**	**1.0000e-005**	**1.1900e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.3200e-003**	**2.3200e-003**	**1.0000e-005**	**0.0000**	**2.4800e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2135					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6658					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1900e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.3200e-003	2.3200e-003	1.0000e-005	0.0000	2.4800e-003
Total	**0.8794**	**1.0000e-005**	**1.1900e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.3200e-003**	**2.3200e-003**	**1.0000e-005**	**0.0000**	**2.4800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.4849	0.1589	3.8200e-003	15.5940
Unmitigated	13.0031	0.1986	4.7700e-003	19.3890

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High Turnover (Sit Down Restaurant)	3.03534 / 0.193745	6.4121	0.0991	2.3800e-003	9.6002
Hotel	3.04401 / 0.338224	6.5910	0.0994	2.3900e-003	9.7888
Total		**13.0031**	**0.1986**	**4.7700e-003**	**19.3890**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
High Turnover (Sit Down Restaurant)	2.42827 / 0.181926	5.1597	0.0793	1.9100e-003	7.7103
Hotel	2.43521 / 0.317592	5.3252	0.0795	1.9100e-003	7.8836
Total		**10.4849**	**0.1589**	**3.8200e-003**	**15.5940**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	37.4924	2.2157	0.0000	92.8859
Unmitigated	37.4924	2.2157	0.0000	92.8859

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High Turnover (Sit Down Restaurant)	119	24.1559	1.4276	0.0000	59.8453
Hotel	65.7	13.3365	0.7882	0.0000	33.0406
Total		**37.4924**	**2.2157**	**0.0000**	**92.8859**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
High Turnover (Sit Down Restaurant)	119	24.1559	1.4276	0.0000	59.8453
Hotel	65.7	13.3365	0.7882	0.0000	33.0406
Total		**37.4924**	**2.2157**	**0.0000**	**92.8859**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Work Force Hotel and Restaurant Cumulative Emissions

Mono County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
High Turnover (Sit Down Restaurant)	10.00	1000sqft	0.23	10,000.00	0
Hotel	120.00	Room	4.00	174,240.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - 8 days grading, 230 days construction, 18 days pave

Vehicle Trips - trip rates per traffic engineer

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation - 50%

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstructionPhase	NumDays	18.00	230.00
tblConstructionPhase	PhaseEndDate	2/22/2024	12/1/2023
tblConstructionPhase	PhaseEndDate	1/3/2024	12/1/2023
tblConstructionPhase	PhaseEndDate	2/15/2023	1/11/2023
tblConstructionPhase	PhaseEndDate	1/29/2024	12/27/2023
tblConstructionPhase	PhaseStartDate	1/30/2024	1/15/2023
tblConstructionPhase	PhaseStartDate	2/16/2023	1/15/2023
tblConstructionPhase	PhaseStartDate	2/4/2023	1/1/2023
tblConstructionPhase	PhaseStartDate	1/4/2024	12/2/2023
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	ST_TR	158.37	84.10
tblVehicleTrips	ST_TR	8.19	6.27
tblVehicleTrips	SU_TR	131.84	84.10
tblVehicleTrips	SU_TR	5.95	6.27
tblVehicleTrips	WD_TR	127.15	84.10
tblVehicleTrips	WD_TR	8.17	6.27

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	21.0276	18.6916	22.3066	0.0485	6.7439	0.7819	7.5201	3.4183	0.7398	4.1324	0.0000	4,728.869 9	4,728.869 9	0.9344	0.0000	4,746.346 6
Maximum	**21.0276**	**18.6916**	**22.3066**	**0.0485**	**6.7439**	**0.7819**	**7.5201**	**3.4183**	**0.7398**	**4.1324**	**0.0000**	**4,728.869 9**	**4,728.869 9**	**0.9344**	**0.0000**	**4,746.346 6**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	21.0276	18.6916	22.3066	0.0485	2.7470	0.7819	3.5232	1.3641	0.7398	2.0782	0.0000	4,728.869 9	4,728.869 9	0.9344	0.0000	4,746.346 6
Maximum	**21.0276**	**18.6916**	**22.3066**	**0.0485**	**2.7470**	**0.7819**	**3.5232**	**1.3641**	**0.7398**	**2.0782**	**0.0000**	**4,728.869 9**	**4,728.869 9**	**0.9344**	**0.0000**	**4,746.346 6**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**59.27**	**0.00**	**53.15**	**60.09**	**0.00**	**49.71**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.1138	1.2000e-004	0.0133	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0285	0.0285	7.0000e-005		0.0303
Energy	0.1412	1.2837	1.0783	7.7000e-003		0.0976	0.0976		0.0976	0.0976		1,540.4424	1,540.4424	0.0295	0.0282	1,549.5964
Mobile	2.6416	16.0629	22.8370	0.0797	5.2489	0.0603	5.3092	1.4047	0.0564	1.4612		8,110.2250	8,110.2250	0.4426		8,121.2909
Total	**7.8966**	**17.3467**	**23.9286**	**0.0874**	**5.2489**	**0.1579**	**5.4068**	**1.4047**	**0.1540**	**1.5588**		**9,650.6958**	**9,650.6958**	**0.4722**	**0.0282**	**9,670.9177**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.8190	1.2000e-004	0.0133	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0285	0.0285	7.0000e-005		0.0303
Energy	0.1412	1.2837	1.0783	7.7000e-003		0.0976	0.0976		0.0976	0.0976		1,540.4424	1,540.4424	0.0295	0.0282	1,549.5964
Mobile	2.6416	16.0629	22.8370	0.0797	5.2489	0.0603	5.3092	1.4047	0.0564	1.4612		8,110.2250	8,110.2250	0.4426		8,121.2909
Total	**7.6018**	**17.3467**	**23.9286**	**0.0874**	**5.2489**	**0.1579**	**5.4068**	**1.4047**	**0.1540**	**1.5588**		**9,650.6958**	**9,650.6958**	**0.4722**	**0.0282**	**9,670.9177**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**3.73**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/1/2023	1/11/2023	5	8	
2	Building Construction	Building Construction	1/15/2023	12/1/2023	5	230	
3	Paving	Paving	12/2/2023	12/27/2023	5	18	
4	Architectural Coating	Architectural Coating	1/15/2023	12/1/2023	5	230	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 276,360; Non-Residential Outdoor: 92,120; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	77.00	30.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**6.5523**	**0.7749**	**7.3273**	**3.3675**	**0.7129**	**4.0804**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0962	0.0618	0.5717	1.6200e-003	0.1916	1.2500e-003	0.1929	0.0508	1.1500e-003	0.0520		161.7596	161.7596	5.2600e-003		161.8912
Total	**0.0962**	**0.0618**	**0.5717**	**1.6200e-003**	**0.1916**	**1.2500e-003**	**0.1929**	**0.0508**	**1.1500e-003**	**0.0520**		**161.7596**	**161.7596**	**5.2600e-003**		**161.8912**

3.2 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.5554	0.0000	2.5554	1.3133	0.0000	1.3133			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.691 0	2,872.691 0	0.9291		2,895.918 2
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**2.5554**	**0.7749**	**3.3303**	**1.3133**	**0.7129**	**2.0263**	**0.0000**	**2,872.691 0**	**2,872.691 0**	**0.9291**		**2,895.918 2**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0962	0.0618	0.5717	1.6200e-003	0.1916	1.2500e-003	0.1929	0.0508	1.1500e-003	0.0520		161.7596	161.7596	5.2600e-003		161.8912
Total	**0.0962**	**0.0618**	**0.5717**	**1.6200e-003**	**0.1916**	**1.2500e-003**	**0.1929**	**0.0508**	**1.1500e-003**	**0.0520**		**161.7596**	**161.7596**	**5.2600e-003**		**161.8912**

3.3 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1089	2.6247	0.7453	8.6300e-003	0.1840	3.6700e-003	0.1877	0.0530	3.5100e-003	0.0565		900.0865	900.0865	0.0421		901.1388
Worker	0.4938	0.3172	2.9345	8.3400e-003	0.9835	6.4300e-003	0.9900	0.2608	5.9200e-003	0.2667		830.3658	830.3658	0.0270		831.0415
Total	**0.6028**	**2.9419**	**3.6798**	**0.0170**	**1.1675**	**0.0101**	**1.1776**	**0.3138**	**9.4300e-003**	**0.3233**		**1,730.4523**	**1,730.4523**	**0.0691**		**1,732.1803**

3.3 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1089	2.6247	0.7453	8.6300e-003	0.1840	3.6700e-003	0.1877	0.0530	3.5100e-003	0.0565		900.0865	900.0865	0.0421		901.1388
Worker	0.4938	0.3172	2.9345	8.3400e-003	0.9835	6.4300e-003	0.9900	0.2608	5.9200e-003	0.2667		830.3658	830.3658	0.0270		831.0415
Total	**0.6028**	**2.9419**	**3.6798**	**0.0170**	**1.1675**	**0.0101**	**1.1776**	**0.3138**	**9.4300e-003**	**0.3233**		**1,730.4523**	**1,730.4523**	**0.0691**		**1,732.1803**

3.4 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025		1,805.430 4	1,805.430 4	0.5673		1,819.612 2
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9181**	**8.7903**	**12.1905**	**0.0189**		**0.4357**	**0.4357**		**0.4025**	**0.4025**		**1,805.430 4**	**1,805.430 4**	**0.5673**		**1,819.612 2**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1283	0.0824	0.7622	2.1700e-003	0.2555	1.6700e-003	0.2571	0.0678	1.5400e-003	0.0693		215.6794	215.6794	7.0200e-003		215.8549
Total	**0.1283**	**0.0824**	**0.7622**	**2.1700e-003**	**0.2555**	**1.6700e-003**	**0.2571**	**0.0678**	**1.5400e-003**	**0.0693**		**215.6794**	**215.6794**	**7.0200e-003**		**215.8549**

3.4 Paving - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9181	8.7903	12.1905	0.0189		0.4357	0.4357		0.4025	0.4025	0.0000	1,805.4304	1,805.4304	0.5673		1,819.6122
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9181**	**8.7903**	**12.1905**	**0.0189**		**0.4357**	**0.4357**		**0.4025**	**0.4025**	**0.0000**	**1,805.4304**	**1,805.4304**	**0.5673**		**1,819.6122**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1283	0.0824	0.7622	2.1700e-003	0.2555	1.6700e-003	0.2571	0.0678	1.5400e-003	0.0693		215.6794	215.6794	7.0200e-003		215.8549
Total	**0.1283**	**0.0824**	**0.7622**	**2.1700e-003**	**0.2555**	**1.6700e-003**	**0.2571**	**0.0678**	**1.5400e-003**	**0.0693**		**215.6794**	**215.6794**	**7.0200e-003**		**215.8549**

3.5 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	18.5642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**18.7558**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0962	0.0618	0.5717	1.6200e-003	0.1916	1.2500e-003	0.1929	0.0508	1.1500e-003	0.0520		161.7596	161.7596	5.2600e-003		161.8912
Total	**0.0962**	**0.0618**	**0.5717**	**1.6200e-003**	**0.1916**	**1.2500e-003**	**0.1929**	**0.0508**	**1.1500e-003**	**0.0520**		**161.7596**	**161.7596**	**5.2600e-003**		**161.8912**

3.5 Architectural Coating - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	18.5642					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**18.7558**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0962	0.0618	0.5717	1.6200e-003	0.1916	1.2500e-003	0.1929	0.0508	1.1500e-003	0.0520		161.7596	161.7596	5.2600e-003		161.8912
Total	**0.0962**	**0.0618**	**0.5717**	**1.6200e-003**	**0.1916**	**1.2500e-003**	**0.1929**	**0.0508**	**1.1500e-003**	**0.0520**		**161.7596**	**161.7596**	**5.2600e-003**		**161.8912**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.6416	16.0629	22.8370	0.0797	5.2489	0.0603	5.3092	1.4047	0.0564	1.4612		8,110.2250	8,110.2250	0.4426		8,121.2909
Unmitigated	2.6416	16.0629	22.8370	0.0797	5.2489	0.0603	5.3092	1.4047	0.0564	1.4612		8,110.2250	8,110.2250	0.4426		8,121.2909

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
High Turnover (Sit Down Restaurant)	841.00	841.00	841.00	950,261	950,261
Hotel	752.40	752.40	752.40	1,511,699	1,511,699
Total	1,593.40	1,593.40	1,593.40	2,461,960	2,461,960

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
High Turnover (Sit Down	14.70	6.60	6.60	8.50	72.50	19.00	37	20	43
Hotel	14.70	6.60	6.60	19.40	61.60	19.00	58	38	4

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
High Turnover (Sit Down Restaurant)	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204
Hotel	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1412	1.2837	1.0783	7.7000e-003		0.0976	0.0976		0.0976	0.0976		1,540.4424	1,540.4424	0.0295	0.0282	1,549.5964
NaturalGas Unmitigated	0.1412	1.2837	1.0783	7.7000e-003		0.0976	0.0976		0.0976	0.0976		1,540.4424	1,540.4424	0.0295	0.0282	1,549.5964

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	3183.56	0.0343	0.3121	0.2622	1.8700e-003		0.0237	0.0237		0.0237	0.0237		374.5367	374.5367	7.1800e-003	6.8700e-003	376.7624
Hotel	9910.2	0.1069	0.9716	0.8161	5.8300e-003		0.0738	0.0738		0.0738	0.0738		1,165.9057	1,165.9057	0.0224	0.0214	1,172.8341
Total		**0.1412**	**1.2837**	**1.0783**	**7.7000e-003**		**0.0976**	**0.0976**		**0.0976**	**0.0976**		**1,540.4424**	**1,540.4424**	**0.0295**	**0.0282**	**1,549.5964**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
High Turnover (Sit Down Restaurant)	3.18356	0.0343	0.3121	0.2622	1.8700e-003		0.0237	0.0237		0.0237	0.0237		374.5367	374.5367	7.1800e-003	6.8700e-003	376.7624
Hotel	9.9102	0.1069	0.9716	0.8161	5.8300e-003		0.0738	0.0738		0.0738	0.0738		1,165.9057	1,165.9057	0.0224	0.0214	1,172.8341
Total		**0.1412**	**1.2837**	**1.0783**	**7.7000e-003**		**0.0976**	**0.0976**		**0.0976**	**0.0976**		**1,540.4424**	**1,540.4424**	**0.0295**	**0.0282**	**1,549.5964**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.8190	1.2000e-004	0.0133	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0285	0.0285	7.0000e-005		0.0303
Unmitigated	5.1138	1.2000e-004	0.0133	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0285	0.0285	7.0000e-005		0.0303

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1698					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.9427					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.2300e-003	1.2000e-004	0.0133	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0285	0.0285	7.0000e-005		0.0303
Total	**5.1138**	**1.2000e-004**	**0.0133**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**		**0.0285**	**0.0285**	**7.0000e-005**		**0.0303**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1698					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.6480					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.2300e-003	1.2000e-004	0.0133	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0285	0.0285	7.0000e-005		0.0303
Total	**4.8190**	**1.2000e-004**	**0.0133**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**		**0.0285**	**0.0285**	**7.0000e-005**		**0.0303**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Workforce Housing and Fueling Stations

Mono County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments Low Rise	100.00	Dwelling Unit	6.25	100,000.00	286
Convenience Market With Gas Pumps	4.00	Pump	0.01	564.70	0

1.2 Other Project Characteristics

Urbanization Rural **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 54

Climate Zone 1 **Operational Year** 2023

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 702.44 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Grading: 20 days, Construction: 230 days, Paving: Separate Run

Vehicle Trips - 319 housing trips, 516 gas station trips

Construction Off-road Equipment Mitigation -

Area Mitigation -

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	230.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblVehicleTrips	ST_TR	7.16	3.19
tblVehicleTrips	ST_TR	204.47	129.00
tblVehicleTrips	SU_TR	6.07	3.19
tblVehicleTrips	SU_TR	166.88	129.00
tblVehicleTrips	WD_TR	6.59	3.19
tblVehicleTrips	WD_TR	542.60	129.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	16.0368	20.9021	21.0488	0.0396	6.6756	0.9417	7.6173	3.4002	0.8664	4.2666	0.0000	3,819.6366	3,819.6366	0.9329	0.0000	3,836.4919
Maximum	**16.0368**	**20.9021**	**21.0488**	**0.0396**	**6.6756**	**0.9417**	**7.6173**	**3.4002**	**0.8664**	**4.2666**	**0.0000**	**3,819.6366**	**3,819.6366**	**0.9329**	**0.0000**	**3,836.4919**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	16.0368	20.9021	21.0488	0.0396	3.0718	0.9417	4.0135	1.5481	0.8664	2.4144	0.0000	3,819.6366	3,819.6366	0.9329	0.0000	3,836.4919
Maximum	**16.0368**	**20.9021**	**21.0488**	**0.0396**	**3.0718**	**0.9417**	**4.0135**	**1.5481**	**0.8664**	**2.4144**	**0.0000**	**3,819.6366**	**3,819.6366**	**0.9329**	**0.0000**	**3,836.4919**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.98**	**0.00**	**47.31**	**54.47**	**0.00**	**43.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	156.3010	3.0838	197.1630	0.3427		26.5328	26.5328		26.5328	26.5328	2,777.1731	1,179.5620	3,956.7351	2.5772	0.2185	4,086.2608
Energy	0.0320	0.2738	0.1170	1.7500e-003		0.0221	0.0221		0.0221	0.0221		349.4052	349.4052	6.7000e-003	6.4100e-003	351.4815
Mobile	1.3579	8.2266	11.4133	0.0394	2.5368	0.0296	2.5664	0.6789	0.0277	0.7066		4,005.4829	4,005.4829	0.2253		4,011.1140
Total	**157.6909**	**11.5842**	**208.6932**	**0.3838**	**2.5368**	**26.5845**	**29.1213**	**0.6789**	**26.5826**	**27.2615**	**2,777.1731**	**5,534.4500**	**8,311.6231**	**2.8091**	**0.2249**	**8,448.8563**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	3.2753	1.5881	8.8877	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7385	1,920.7385	0.0508	0.0349	1,932.4214
Energy	0.0282	0.2411	0.1030	1.5400e-003		0.0195	0.0195		0.0195	0.0195		307.7039	307.7039	5.9000e-003	5.6400e-003	309.5324
Mobile	1.3579	8.2266	11.4133	0.0394	2.5368	0.0296	2.5664	0.6789	0.0277	0.7066		4,005.4829	4,005.4829	0.2253		4,011.1140
Total	**4.6614**	**10.0558**	**20.4039**	**0.0509**	**2.5368**	**0.2155**	**2.7522**	**0.6789**	**0.2136**	**0.8925**	**0.0000**	**6,233.9252**	**6,233.9252**	**0.2820**	**0.0406**	**6,253.0678**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	97.04	13.19	90.22	86.75	0.00	99.19	90.55	0.00	99.20	96.73	100.00	-12.64	25.00	89.96	81.95	25.99

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/3/2022	1/28/2022	5	20	
2	Building Construction	Building Construction	1/29/2022	12/16/2022	5	230	
3	Architectural Coating	Architectural Coating	1/29/2022	12/16/2022	5	230	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 202,500; Residential Outdoor: 67,500; Non-Residential Indoor: 847; Non-Residential Outdoor: 282; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	72.00	11.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	14.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656		2,872.046 4	2,872.046 4	0.9289		2,895.268 4
Total	**1.9486**	**20.8551**	**15.2727**	**0.0297**	**6.5523**	**0.9409**	**7.4932**	**3.3675**	**0.8656**	**4.2331**		**2,872.046 4**	**2,872.046 4**	**0.9289**		**2,895.268 4**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0724	0.0470	0.4441	1.1000e-003	0.1232	8.7000e-004	0.1241	0.0327	8.0000e-004	0.0335		109.1425	109.1425	4.0100e-003		109.2427
Total	**0.0724**	**0.0470**	**0.4441**	**1.1000e-003**	**0.1232**	**8.7000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**109.1425**	**109.1425**	**4.0100e-003**		**109.2427**

3.2 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	1.9486	20.8551	15.2727	0.0297		0.9409	0.9409		0.8656	0.8656	0.0000	2,872.046 4	2,872.046 4	0.9289		2,895.268 4
Total	**1.9486**	**20.8551**	**15.2727**	**0.0297**	**2.9486**	**0.9409**	**3.8894**	**1.5154**	**0.8656**	**2.3810**	**0.0000**	**2,872.046 4**	**2,872.046 4**	**0.9289**		**2,895.268 4**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0724	0.0470	0.4441	1.1000e-003	0.1232	8.7000e-004	0.1241	0.0327	8.0000e-004	0.0335		109.1425	109.1425	4.0100e-003		109.2427
Total	**0.0724**	**0.0470**	**0.4441**	**1.1000e-003**	**0.1232**	**8.7000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**109.1425**	**109.1425**	**4.0100e-003**		**109.2427**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0514	1.1920	0.3256	3.4300e-003	0.0746	2.8800e-003	0.0775	0.0215	2.7600e-003	0.0242		358.1045	358.1045	0.0210		358.6288
Worker	0.3475	0.2256	2.1317	5.2600e-003	0.5915	4.1800e-003	0.5956	0.1569	3.8500e-003	0.1607		523.8841	523.8841	0.0192		524.3649
Total	**0.3989**	**1.4175**	**2.4573**	**8.6900e-003**	**0.6661**	**7.0600e-003**	**0.6731**	**0.1784**	**6.6100e-003**	**0.1850**		**881.9887**	**881.9887**	**0.0402**		**882.9937**

3.3 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0514	1.1920	0.3256	3.4300e-003	0.0746	2.8800e-003	0.0775	0.0215	2.7600e-003	0.0242		358.1045	358.1045	0.0210		358.6288
Worker	0.3475	0.2256	2.1317	5.2600e-003	0.5915	4.1800e-003	0.5956	0.1569	3.8500e-003	0.1607		523.8841	523.8841	0.0192		524.3649
Total	**0.3989**	**1.4175**	**2.4573**	**8.6900e-003**	**0.6661**	**7.0600e-003**	**0.6731**	**0.1784**	**6.6100e-003**	**0.1850**		**881.9887**	**881.9887**	**0.0402**		**882.9937**

3.4 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	13.6596					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**13.8641**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0676	0.0439	0.4145	1.0200e-003	0.1150	8.1000e-004	0.1158	0.0305	7.5000e-004	0.0313		101.8664	101.8664	3.7400e-003		101.9599
Total	**0.0676**	**0.0439**	**0.4145**	**1.0200e-003**	**0.1150**	**8.1000e-004**	**0.1158**	**0.0305**	**7.5000e-004**	**0.0313**		**101.8664**	**101.8664**	**3.7400e-003**		**101.9599**

3.4 Architectural Coating - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	13.6596					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**13.8641**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0676	0.0439	0.4145	1.0200e-003	0.1150	8.1000e-004	0.1158	0.0305	7.5000e-004	0.0313		101.8664	101.8664	3.7400e-003		101.9599
Total	**0.0676**	**0.0439**	**0.4145**	**1.0200e-003**	**0.1150**	**8.1000e-004**	**0.1158**	**0.0305**	**7.5000e-004**	**0.0313**		**101.8664**	**101.8664**	**3.7400e-003**		**101.9599**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.3579	8.2266	11.4133	0.0394	2.5368	0.0296	2.5664	0.6789	0.0277	0.7066		4,005.4829	4,005.4829	0.2253		4,011.1140
Unmitigated	1.3579	8.2266	11.4133	0.0394	2.5368	0.0296	2.5664	0.6789	0.0277	0.7066		4,005.4829	4,005.4829	0.2253		4,011.1140

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	319.00	319.00	319.00	913,057	913,057
Convenience Market With Gas Pumps	516.00	516.00	516.00	276,785	276,785
Total	835.00	835.00	835.00	1,189,842	1,189,842

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	10.80	7.30	7.50	42.30	19.60	38.10	86	11	3
Convenience Market With Gas	9.50	7.30	7.30	0.80	80.20	19.00	14	21	65

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Low Rise	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204
Convenience Market With Gas Pumps	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0282	0.2411	0.1030	1.5400e-003		0.0195	0.0195		0.0195	0.0195		307.7039	307.7039	5.9000e-003	5.6400e-003	309.5324
NaturalGas Unmitigated	0.0320	0.2738	0.1170	1.7500e-003		0.0221	0.0221		0.0221	0.0221		349.4052	349.4052	6.7000e-003	6.4100e-003	351.4815

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	2958.79	0.0319	0.2727	0.1160	1.7400e-003		0.0221	0.0221		0.0221	0.0221		348.0928	348.0928	6.6700e-003	6.3800e-003	350.1614
Convenience Market With Gas Pumps	11.1548	1.2000e-004	1.0900e-003	9.2000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005		1.3123	1.3123	3.0000e-005	2.0000e-005	1.3201
Total		**0.0320**	**0.2738**	**0.1170**	**1.7500e-003**		**0.0221**	**0.0221**		**0.0221**	**0.0221**		**349.4052**	**349.4052**	**6.7000e-003**	**6.4000e-003**	**351.4815**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Low Rise	2.60589	0.0281	0.2402	0.1022	1.5300e-003		0.0194	0.0194		0.0194	0.0194		306.5753	306.5753	5.8800e-003	5.6200e-003	308.3971
Convenience Market With Gas Pumps	0.00959309	1.0000e-004	9.4000e-004	7.9000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		1.1286	1.1286	2.0000e-005	2.0000e-005	1.1353
Total		**0.0282**	**0.2411**	**0.1030**	**1.5400e-003**		**0.0195**	**0.0195**		**0.0195**	**0.0195**		**307.7039**	**307.7039**	**5.9000e-003**	**5.6400e-003**	**309.5324**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.2753	1.5881	8.8877	9.9700e-003		0.1664	0.1664		0.1664	0.1664	0.0000	1,920.7385	1,920.7385	0.0508	0.0349	1,932.4214
Unmitigated	156.3010	3.0838	197.1630	0.3427		26.5328	26.5328		26.5328	26.5328	2,777.1731	1,179.5620	3,956.7351	2.5772	0.2185	4,086.2608

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8607					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.1521					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	153.0395	2.9887	188.9106	0.3423		26.4871	26.4871		26.4871	26.4871	2,777.173 1	1,164.705 9	3,941.879 0	2.5629	0.2185	4,071.047 5
Landscaping	0.2486	0.0951	8.2524	4.4000e-004		0.0457	0.0457		0.0457	0.0457		14.8561	14.8561	0.0143		15.2133
Total	**156.3010**	**3.0838**	**197.1630**	**0.3427**		**26.5328**	**26.5328**		**26.5328**	**26.5328**	**2,777.173 1**	**1,179.562 0**	**3,956.735 1**	**2.5772**	**0.2185**	**4,086.260 8**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8607					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.9912					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1747	1.4929	0.6353	9.5300e-003		0.1207	0.1207		0.1207	0.1207	0.0000	1,905.8824	1,905.8824	0.0365	0.0349	1,917.2081
Landscaping	0.2486	0.0951	8.2524	4.4000e-004		0.0457	0.0457		0.0457	0.0457		14.8561	14.8561	0.0143		15.2133
Total	**3.2753**	**1.5881**	**8.8877**	**9.9700e-003**		**0.1664**	**0.1664**		**0.1664**	**0.1664**	**0.0000**	**1,920.7385**	**1,920.7385**	**0.0508**	**0.0349**	**1,932.4214**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Workforce Septic

Mono County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.10	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Septic System

Construction Phase - Excavate: 2 weeks, Install: 1 week

Off-road Equipment - Excavate: 1 bobcat, 1 loader/backhoe

Off-road Equipment - Install: 1 crane, 1 loader/backhoe 1 welder, 1 forklift

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	5.00
tblConstructionPhase	NumDays	2.00	10.00
tblConstructionPhase	PhaseEndDate	7/7/2022	3/16/2022
tblConstructionPhase	PhaseEndDate	2/17/2022	3/1/2022
tblConstructionPhase	PhaseStartDate	2/18/2022	3/10/2022
tblLandUse	LotAcreage	0.00	0.10
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Grading

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6440	5.6561	5.3213	9.0600e-003	0.8349	0.2773	0.9289	0.4356	0.2590	0.5220	0.0000	847.2855	847.2855	0.2423	0.0000	853.3436
Maximum	**0.6440**	**5.6561**	**5.3213**	**9.0600e-003**	**0.8349**	**0.2773**	**0.9289**	**0.4356**	**0.2590**	**0.5220**	**0.0000**	**847.2855**	**847.2855**	**0.2423**	**0.0000**	**853.3436**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6440	4.5590	5.3213	9.0600e-003	0.8349	0.2773	0.9289	0.4356	0.2590	0.5220	0.0000	847.2855	847.2855	0.2423	0.0000	853.3436
Maximum	**0.6440**	**4.5590**	**5.3213**	**9.0600e-003**	**0.8349**	**0.2773**	**0.9289**	**0.4356**	**0.2590**	**0.5220**	**0.0000**	**847.2855**	**847.2855**	**0.2423**	**0.0000**	**853.3436**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**19.40**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	2/16/2022	3/1/2022	5	10	
2	Building Construction	Building Construction	3/10/2022	3/16/2022	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Skid Steer Loaders	1	6.00	65	0.37
Building Construction	Welders	1	6.00	46	0.45
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	0.1755	1.9504	2.7146	3.8800e-003		0.0934	0.0934		0.0859	0.0859		375.6134	375.6134	0.1215		378.6504
Total	**0.1755**	**1.9504**	**2.7146**	**3.8800e-003**	**0.7528**	**0.0934**	**0.8461**	**0.4138**	**0.0859**	**0.4997**		**375.6134**	**375.6134**	**0.1215**		**378.6504**

3.2 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0483	0.0313	0.2961	7.3000e-004	0.0822	5.8000e-004	0.0827	0.0218	5.3000e-004	0.0223		72.7617	72.7617	2.6700e-003		72.8285
Total	**0.0483**	**0.0313**	**0.2961**	**7.3000e-004**	**0.0822**	**5.8000e-004**	**0.0827**	**0.0218**	**5.3000e-004**	**0.0223**		**72.7617**	**72.7617**	**2.6700e-003**		**72.8285**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	0.1755	1.2567	2.7146	3.8800e-003		0.0934	0.0934		0.0859	0.0859	0.0000	375.6134	375.6134	0.1215		378.6504
Total	**0.1755**	**1.2567**	**2.7146**	**3.8800e-003**	**0.7528**	**0.0934**	**0.8461**	**0.4138**	**0.0859**	**0.4997**	**0.0000**	**375.6134**	**375.6134**	**0.1215**		**378.6504**

3.2 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0483	0.0313	0.2961	7.3000e-004	0.0822	5.8000e-004	0.0827	0.0218	5.3000e-004	0.0223		72.7617	72.7617	2.6700e-003		72.8285
Total	**0.0483**	**0.0313**	**0.2961**	**7.3000e-004**	**0.0822**	**5.8000e-004**	**0.0827**	**0.0218**	**5.3000e-004**	**0.0223**		**72.7617**	**72.7617**	**2.6700e-003**		**72.8285**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6440	5.6561	5.3213	9.0600e-003		0.2773	0.2773		0.2590	0.2590		847.2855	847.2855	0.2423		853.3436
Total	**0.6440**	**5.6561**	**5.3213**	**9.0600e-003**		**0.2773**	**0.2773**		**0.2590**	**0.2590**		**847.2855**	**847.2855**	**0.2423**		**853.3436**

3.3 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6440	4.5590	5.3213	9.0600e-003		0.2773	0.2773		0.2590	0.2590	0.0000	847.2855	847.2855	0.2423		853.3436
Total	**0.6440**	**4.5590**	**5.3213**	**9.0600e-003**		**0.2773**	**0.2773**		**0.2590**	**0.2590**	**0.0000**	**847.2855**	**847.2855**	**0.2423**		**853.3436**

3.3 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Workforce Propane Tank and Water Storage

Mono County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.10	0.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Precipitation Freq (Days)** 54

Climate Zone 1 **Operational Year** 2022

Utility Company Southern California Edison

CO2 Intensity (lb/MWhr) 702.44 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Propane or Water Storage Tank

Construction Phase - Excavate: 1 week, Concrete Pad: 1 week, Install: 1 week

Off-road Equipment - Excavate: 1 bobcat, 1 loader/backhoe

Off-road Equipment - Concrete Pad, 1 mixer, 1 pump, 1 roller,

Off-road Equipment - Install: 1 crane, 1 forklift, 1 welder

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	5.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	PhaseEndDate	6/8/2022	2/25/2022
tblConstructionPhase	PhaseEndDate	1/19/2022	1/24/2022
tblConstructionPhase	PhaseEndDate	6/15/2022	2/7/2022
tblConstructionPhase	PhaseStartDate	1/20/2022	2/20/2022
tblConstructionPhase	PhaseStartDate	6/9/2022	2/1/2022
tblLandUse	LotAcreage	0.00	0.10
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Building Construction
tblTripsAndVMT	WorkerTripNumber	10.00	5.00
tblTripsAndVMT	WorkerTripNumber	13.00	8.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.4921	4.0380	4.8949	8.3400e-003	0.7938	0.2150	0.8876	0.4247	0.2080	0.5109	0.0000	785.7134	785.7134	0.1449	0.0000	788.2590
Maximum	**0.4921**	**4.0380**	**4.8949**	**8.3400e-003**	**0.7938**	**0.2150**	**0.8876**	**0.4247**	**0.2080**	**0.5109**	**0.0000**	**785.7134**	**785.7134**	**0.1449**	**0.0000**	**788.2590**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.4921	4.0380	4.8949	8.3400e-003	0.7938	0.2150	0.8876	0.4247	0.2080	0.5109	0.0000	785.7134	785.7134	0.1449	0.0000	788.2590
Maximum	**0.4921**	**4.0380**	**4.8949**	**8.3400e-003**	**0.7938**	**0.2150**	**0.8876**	**0.4247**	**0.2080**	**0.5109**	**0.0000**	**785.7134**	**785.7134**	**0.1449**	**0.0000**	**788.2590**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	1/18/2022	1/24/2022	5	5	
2	Building Construction	Building Construction	2/20/2022	2/25/2022	5	5	
3	Paving	Paving	2/1/2022	2/7/2022	5	5	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Skid Steer Loaders	1	6.00	65	0.37
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pumps	1	6.00	84	0.74
Building Construction	Welders	1	6.00	46	0.45
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Paving	Rollers	1	7.00	80	0.38
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	5	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	0.1757	1.9532	2.7189	3.8900e-003		0.0935	0.0935		0.0860	0.0860		376.2227	376.2227	0.1217		379.2646
Total	**0.1757**	**1.9532**	**2.7189**	**3.8900e-003**	**0.7528**	**0.0935**	**0.8462**	**0.4138**	**0.0860**	**0.4998**		**376.2227**	**376.2227**	**0.1217**		**379.2646**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0241	0.0157	0.1480	3.7000e-004	0.0411	2.9000e-004	0.0414	0.0109	2.7000e-004	0.0112		36.3808	36.3808	1.3400e-003		36.4142
Total	**0.0241**	**0.0157**	**0.1480**	**3.7000e-004**	**0.0411**	**2.9000e-004**	**0.0414**	**0.0109**	**2.7000e-004**	**0.0112**		**36.3808**	**36.3808**	**1.3400e-003**		**36.4142**

3.2 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	0.1757	1.9532	2.7189	3.8900e-003		0.0935	0.0935		0.0860	0.0860	0.0000	376.2227	376.2227	0.1217		379.2646
Total	**0.1757**	**1.9532**	**2.7189**	**3.8900e-003**	**0.7528**	**0.0935**	**0.8462**	**0.4138**	**0.0860**	**0.4998**	**0.0000**	**376.2227**	**376.2227**	**0.1217**		**379.2646**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0241	0.0157	0.1480	3.7000e-004	0.0411	2.9000e-004	0.0414	0.0109	2.7000e-004	0.0112		36.3808	36.3808	1.3400e-003		36.4142
Total	**0.0241**	**0.0157**	**0.1480**	**3.7000e-004**	**0.0411**	**2.9000e-004**	**0.0414**	**0.0109**	**2.7000e-004**	**0.0112**		**36.3808**	**36.3808**	**1.3400e-003**		**36.4142**

3.3 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4792	3.9805	3.0834	5.9500e-003		0.1872	0.1872		0.1761	0.1761		546.0466	546.0466	0.1449		549.6690
Total	**0.4792**	**3.9805**	**3.0834**	**5.9500e-003**		**0.1872**	**0.1872**		**0.1761**	**0.1761**		**546.0466**	**546.0466**	**0.1449**		**549.6690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.3 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4792	3.9805	3.0834	5.9500e-003		0.1872	0.1872		0.1761	0.1761	0.0000	546.0466	546.0466	0.1449		549.6690
Total	**0.4792**	**3.9805**	**3.0834**	**5.9500e-003**		**0.1872**	**0.1872**		**0.1761**	**0.1761**	**0.0000**	**546.0466**	**546.0466**	**0.1449**		**549.6690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4535	4.0129	4.6580	7.7600e-003		0.2145	0.2145		0.2076	0.2076		727.5040	727.5040	0.0997		729.9962
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4535**	**4.0129**	**4.6580**	**7.7600e-003**		**0.2145**	**0.2145**		**0.2076**	**0.2076**		**727.5040**	**727.5040**	**0.0997**		**729.9962**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0386	0.0251	0.2369	5.8000e-004	0.0657	4.6000e-004	0.0662	0.0174	4.3000e-004	0.0179		58.2094	58.2094	2.1400e-003		58.2628
Total	**0.0386**	**0.0251**	**0.2369**	**5.8000e-004**	**0.0657**	**4.6000e-004**	**0.0662**	**0.0174**	**4.3000e-004**	**0.0179**		**58.2094**	**58.2094**	**2.1400e-003**		**58.2628**

3.4 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.4535	4.0129	4.6580	7.7600e-003		0.2145	0.2145		0.2076	0.2076	0.0000	727.5040	727.5040	0.0997		729.9962
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4535**	**4.0129**	**4.6580**	**7.7600e-003**		**0.2145**	**0.2145**		**0.2076**	**0.2076**	**0.0000**	**727.5040**	**727.5040**	**0.0997**		**729.9962**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0386	0.0251	0.2369	5.8000e-004	0.0657	4.6000e-004	0.0662	0.0174	4.3000e-004	0.0179		58.2094	58.2094	2.1400e-003		58.2628
Total	**0.0386**	**0.0251**	**0.2369**	**5.8000e-004**	**0.0657**	**4.6000e-004**	**0.0662**	**0.0174**	**4.3000e-004**	**0.0179**		**58.2094**	**58.2094**	**2.1400e-003**		**58.2628**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.523641	0.038063	0.196890	0.123669	0.027642	0.006698	0.008481	0.059043	0.006730	0.001326	0.005527	0.000980	0.001310

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Workforce Roadway and Parking

Mono County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00		2.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 2 acres of roadways and parking

Construction Phase - 10 days demo, 20 days grade, 40 days pave

Off-road Equipment - demo: 1 concrete saw, 1 dozer, 1 loader/backhoe

Off-road Equipment - grading: 1 grader, 1 dozer, 1 loader/backhoe

Off-road Equipment - paving: 1 mixer, 1 paver, 1 paving equipment, 1 roller, 1 loader/backhoe

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	4.00	20.00
tblConstructionPhase	NumDays	10.00	40.00
tblConstructionPhase	PhaseEndDate	1/28/2022	1/14/2022
tblConstructionPhase	PhaseEndDate	2/7/2022	3/1/2022
tblConstructionPhase	PhaseEndDate	11/28/2022	5/26/2022
tblConstructionPhase	PhaseStartDate	11/15/2022	4/1/2022
tblGrading	AcresOfGrading	10.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblTripsAndVMT	WorkerTripNumber	8.00	13.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0413	0.3754	0.3321	6.1000e-004	0.0650	0.0177	0.0827	0.0342	0.0164	0.0506	0.0000	52.9850	52.9850	0.0153	0.0000	53.3685
Maximum	**0.0413**	**0.3754**	**0.3321**	**6.1000e-004**	**0.0650**	**0.0177**	**0.0827**	**0.0342**	**0.0164**	**0.0506**	**0.0000**	**52.9850**	**52.9850**	**0.0153**	**0.0000**	**53.3685**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0413	0.3754	0.3321	6.1000e-004	0.0313	0.0177	0.0490	0.0159	0.0164	0.0323	0.0000	52.9849	52.9849	0.0153	0.0000	53.3684
Maximum	**0.0413**	**0.3754**	**0.3321**	**6.1000e-004**	**0.0313**	**0.0177**	**0.0490**	**0.0159**	**0.0164**	**0.0323**	**0.0000**	**52.9849**	**52.9849**	**0.0153**	**0.0000**	**53.3684**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**51.88**	**0.00**	**40.76**	**53.42**	**0.00**	**36.12**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-3-2022	4-2-2022	0.2394	0.2394
2	4-3-2022	7-2-2022	0.1665	0.1665
		Highest	0.2394	0.2394

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/14/2022	5	10	
2	Grading	Grading	2/2/2022	3/1/2022	5	20	
3	Paving	Paving	4/1/2022	5/26/2022	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2

Acres of Paving: 2

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	1	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.8000e-003	0.0664	0.0474	9.0000e-005		3.2900e-003	3.2900e-003		3.0900e-003	3.0900e-003	0.0000	7.8061	7.8061	1.8000e-003	0.0000	7.8511
Total	**6.8000e-003**	**0.0664**	**0.0474**	**9.0000e-005**		**3.2900e-003**	**3.2900e-003**		**3.0900e-003**	**3.0900e-003**	**0.0000**	**7.8061**	**7.8061**	**1.8000e-003**	**0.0000**	**7.8511**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.4000e-004	2.1400e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4274	0.4274	2.0000e-005	0.0000	0.4278
Total	**3.3000e-004**	**2.4000e-004**	**2.1400e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4274**	**0.4274**	**2.0000e-005**	**0.0000**	**0.4278**

3.2 Demolition - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.8000e-003	0.0664	0.0474	9.0000e-005		3.2900e-003	3.2900e-003		3.0900e-003	3.0900e-003	0.0000	7.8060	7.8060	1.8000e-003	0.0000	7.8511
Total	**6.8000e-003**	**0.0664**	**0.0474**	**9.0000e-005**		**3.2900e-003**	**3.2900e-003**		**3.0900e-003**	**3.0900e-003**	**0.0000**	**7.8060**	**7.8060**	**1.8000e-003**	**0.0000**	**7.8511**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3000e-004	2.4000e-004	2.1400e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4274	0.4274	2.0000e-005	0.0000	0.4278
Total	**3.3000e-004**	**2.4000e-004**	**2.1400e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4274**	**0.4274**	**2.0000e-005**	**0.0000**	**0.4278**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0613	0.0000	0.0613	0.0332	0.0000	0.0332	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0140	0.1552	0.0726	1.8000e-004		6.6300e-003	6.6300e-003		6.1000e-003	6.1000e-003	0.0000	15.7115	15.7115	5.0800e-003	0.0000	15.8386
Total	**0.0140**	**0.1552**	**0.0726**	**1.8000e-004**	**0.0613**	**6.6300e-003**	**0.0679**	**0.0332**	**6.1000e-003**	**0.0393**	**0.0000**	**15.7115**	**15.7115**	**5.0800e-003**	**0.0000**	**15.8386**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.2900e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.0000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.6576	0.6576	2.0000e-005	0.0000	0.6582
Total	**5.2000e-004**	**3.8000e-004**	**3.2900e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.0000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.6576**	**0.6576**	**2.0000e-005**	**0.0000**	**0.6582**

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0276	0.0000	0.0276	0.0150	0.0000	0.0150	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0140	0.1552	0.0726	1.8000e-004		6.6300e-003	6.6300e-003		6.1000e-003	6.1000e-003	0.0000	15.7115	15.7115	5.0800e-003	0.0000	15.8385
Total	**0.0140**	**0.1552**	**0.0726**	**1.8000e-004**	**0.0276**	**6.6300e-003**	**0.0342**	**0.0150**	**6.1000e-003**	**0.0211**	**0.0000**	**15.7115**	**15.7115**	**5.0800e-003**	**0.0000**	**15.8385**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.2900e-003	1.0000e-005	8.0000e-004	1.0000e-005	8.0000e-004	2.1000e-004	1.0000e-005	2.2000e-004	0.0000	0.6576	0.6576	2.0000e-005	0.0000	0.6582
Total	**5.2000e-004**	**3.8000e-004**	**3.2900e-003**	**1.0000e-005**	**8.0000e-004**	**1.0000e-005**	**8.0000e-004**	**2.1000e-004**	**1.0000e-005**	**2.2000e-004**	**0.0000**	**0.6576**	**0.6576**	**2.0000e-005**	**0.0000**	**0.6582**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0155	0.1521	0.1967	3.0000e-004		7.7700e-003	7.7700e-003		7.1700e-003	7.1700e-003	0.0000	26.4097	26.4097	8.3400e-003	0.0000	26.6182
Paving	2.6200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0181**	**0.1521**	**0.1967**	**3.0000e-004**		**7.7700e-003**	**7.7700e-003**		**7.1700e-003**	**7.1700e-003**	**0.0000**	**26.4097**	**26.4097**	**8.3400e-003**	**0.0000**	**26.6182**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.1300e-003	9.8700e-003	2.0000e-005	2.3900e-003	2.0000e-005	2.4000e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	1.9727	1.9727	7.0000e-005	0.0000	1.9746
Total	**1.5500e-003**	**1.1300e-003**	**9.8700e-003**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4000e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**1.9727**	**1.9727**	**7.0000e-005**	**0.0000**	**1.9746**

3.4 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0155	0.1521	0.1967	3.0000e-004		7.7700e-003	7.7700e-003		7.1700e-003	7.1700e-003	0.0000	26.4097	26.4097	8.3400e-003	0.0000	26.6182
Paving	2.6200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0181**	**0.1521**	**0.1967**	**3.0000e-004**		**7.7700e-003**	**7.7700e-003**		**7.1700e-003**	**7.1700e-003**	**0.0000**	**26.4097**	**26.4097**	**8.3400e-003**	**0.0000**	**26.6182**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5500e-003	1.1300e-003	9.8700e-003	2.0000e-005	2.3900e-003	2.0000e-005	2.4000e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	1.9727	1.9727	7.0000e-005	0.0000	1.9746
Total	**1.5500e-003**	**1.1300e-003**	**9.8700e-003**	**2.0000e-005**	**2.3900e-003**	**2.0000e-005**	**2.4000e-003**	**6.3000e-004**	**2.0000e-005**	**6.5000e-004**	**0.0000**	**1.9727**	**1.9727**	**7.0000e-005**	**0.0000**	**1.9746**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Tioga Workforce Roadway and Parking

Mono County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.00		2.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	54
Climate Zone	1			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 2 acres of roadways and parking

Construction Phase - 10 days demo, 20 days grade, 40 days pave

Off-road Equipment - demo: 1 concrete saw, 1 dozer, 1 loader/backhoe

Off-road Equipment - grading: 1 grader, 1 dozer, 1 loader/backhoe

Off-road Equipment - paving: 1 mixer, 1 paver, 1 paving equipment, 1 roller, 1 loader/backhoe

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	4.00	20.00
tblConstructionPhase	NumDays	10.00	40.00
tblConstructionPhase	PhaseEndDate	1/28/2022	1/14/2022
tblConstructionPhase	PhaseEndDate	2/7/2022	3/1/2022
tblConstructionPhase	PhaseEndDate	11/28/2022	5/26/2022
tblConstructionPhase	PhaseStartDate	11/15/2022	4/1/2022
tblGrading	AcresOfGrading	10.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblTripsAndVMT	WorkerTripNumber	8.00	13.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00
tblTripsAndVMT	WorkerTripNumber	13.00	15.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	1.4445	15.5488	10.2807	0.0189	6.2103	0.6640	6.8743	3.3435	0.6178	3.9544	0.0000	1,815.529 1	1,815.529 1	0.5628	0.0000	1,825.546 8
Maximum	**1.4445**	**15.5488**	**10.2807**	**0.0189**	**6.2103**	**0.6640**	**6.8743**	**3.3435**	**0.6178**	**3.9544**	**0.0000**	**1,815.529 1**	**1,815.529 1**	**0.5628**	**0.0000**	**1,825.546 8**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	1.4445	15.5488	10.2807	0.0189	2.8398	0.6640	3.5038	1.5166	0.6178	2.1274	0.0000	1,815.529 1	1,815.529 1	0.5628	0.0000	1,825.546 8
Maximum	**1.4445**	**15.5488**	**10.2807**	**0.0189**	**2.8398**	**0.6640**	**3.5038**	**1.5166**	**0.6178**	**2.1274**	**0.0000**	**1,815.529 1**	**1,815.529 1**	**0.5628**	**0.0000**	**1,825.546 8**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**54.27**	**0.00**	**49.03**	**54.64**	**0.00**	**46.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/14/2022	5	10	
2	Grading	Grading	2/2/2022	3/1/2022	5	20	
3	Paving	Paving	4/1/2022	5/26/2022	5	40	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 2

Acres of Paving: 2

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	1	8.00	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	1	8.00	132	0.36

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3595	13.2705	9.4846	0.0179		0.6577	0.6577		0.6171	0.6171		1,720.938 9	1,720.938 9	0.3972		1,730.869 8
Total	**1.3595**	**13.2705**	**9.4846**	**0.0179**		**0.6577**	**0.6577**		**0.6171**	**0.6171**		**1,720.938 9**	**1,720.938 9**	**0.3972**		**1,730.869 8**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0627	0.0407	0.3849	9.5000e-004	0.1068	7.5000e-004	0.1076	0.0283	7.0000e-004	0.0290		94.5902	94.5902	3.4700e-003		94.6770
Total	**0.0627**	**0.0407**	**0.3849**	**9.5000e-004**	**0.1068**	**7.5000e-004**	**0.1076**	**0.0283**	**7.0000e-004**	**0.0290**		**94.5902**	**94.5902**	**3.4700e-003**		**94.6770**

3.2 Demolition - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3595	13.2705	9.4846	0.0179		0.6577	0.6577		0.6171	0.6171	0.0000	1,720.938 9	1,720.938 9	0.3972		1,730.869 8
Total	**1.3595**	**13.2705**	**9.4846**	**0.0179**		**0.6577**	**0.6577**		**0.6171**	**0.6171**	**0.0000**	**1,720.938 9**	**1,720.938 9**	**0.3972**		**1,730.869 8**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0627	0.0407	0.3849	9.5000e-004	0.1068	7.5000e-004	0.1076	0.0283	7.0000e-004	0.0290		94.5902	94.5902	3.4700e-003		94.6770
Total	**0.0627**	**0.0407**	**0.3849**	**9.5000e-004**	**0.1068**	**7.5000e-004**	**0.1076**	**0.0283**	**7.0000e-004**	**0.0290**		**94.5902**	**94.5902**	**3.4700e-003**		**94.6770**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1281	0.0000	6.1281	3.3217	0.0000	3.3217			0.0000			0.0000
Off-Road	1.3962	15.5174	7.2620	0.0179		0.6634	0.6634		0.6104	0.6104		1,731.898 4	1,731.898 4	0.5601		1,745.901 7
Total	**1.3962**	**15.5174**	**7.2620**	**0.0179**	**6.1281**	**0.6634**	**6.7916**	**3.3217**	**0.6104**	**3.9320**		**1,731.898 4**	**1,731.898 4**	**0.5601**		**1,745.901 7**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0483	0.0313	0.2961	7.3000e-004	0.0822	5.8000e-004	0.0827	0.0218	5.3000e-004	0.0223		72.7617	72.7617	2.6700e-003		72.8285
Total	**0.0483**	**0.0313**	**0.2961**	**7.3000e-004**	**0.0822**	**5.8000e-004**	**0.0827**	**0.0218**	**5.3000e-004**	**0.0223**		**72.7617**	**72.7617**	**2.6700e-003**		**72.8285**

3.3 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Fugitive Dust					2.7577	0.0000	2.7577	1.4948	0.0000	1.4948			0.0000			0.0000
Off-Road	1.3962	15.5174	7.2620	0.0179		0.6634	0.6634		0.6104	0.6104	0.0000	1,731.898 4	1,731.898 4	0.5601		1,745.901 6
Total	**1.3962**	**15.5174**	**7.2620**	**0.0179**	**2.7577**	**0.6634**	**3.4211**	**1.4948**	**0.6104**	**2.1051**	**0.0000**	**1,731.898 4**	**1,731.898 4**	**0.5601**		**1,745.901 6**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category						lb/day							lb/day			
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0483	0.0313	0.2961	7.3000e-004	0.0822	5.8000e-004	0.0827	0.0218	5.3000e-004	0.0223		72.7617	72.7617	2.6700e-003		72.8285
Total	**0.0483**	**0.0313**	**0.2961**	**7.3000e-004**	**0.0822**	**5.8000e-004**	**0.0827**	**0.0218**	**5.3000e-004**	**0.0223**		**72.7617**	**72.7617**	**2.6700e-003**		**72.8285**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7749	7.6063	9.8366	0.0152		0.3884	0.3884		0.3585	0.3585		1,455.585 4	1,455.585 4	0.4597		1,467.077 2
Paving	0.1310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9059**	**7.6063**	**9.8366**	**0.0152**		**0.3884**	**0.3884**		**0.3585**	**0.3585**		**1,455.585 4**	**1,455.585 4**	**0.4597**		**1,467.077 2**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0724	0.0470	0.4441	1.1000e-003	0.1232	8.7000e-004	0.1241	0.0327	8.0000e-004	0.0335		109.1425	109.1425	4.0100e-003		109.2427
Total	**0.0724**	**0.0470**	**0.4441**	**1.1000e-003**	**0.1232**	**8.7000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**109.1425**	**109.1425**	**4.0100e-003**		**109.2427**

3.4 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7749	7.6063	9.8366	0.0152		0.3884	0.3884		0.3585	0.3585	0.0000	1,455.585 4	1,455.585 4	0.4597		1,467.077 2
Paving	0.1310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9059**	**7.6063**	**9.8366**	**0.0152**		**0.3884**	**0.3884**		**0.3585**	**0.3585**	**0.0000**	**1,455.585 4**	**1,455.585 4**	**0.4597**		**1,467.077 2**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0724	0.0470	0.4441	1.1000e-003	0.1232	8.7000e-004	0.1241	0.0327	8.0000e-004	0.0335		109.1425	109.1425	4.0100e-003		109.2427
Total	**0.0724**	**0.0470**	**0.4441**	**1.1000e-003**	**0.1232**	**8.7000e-004**	**0.1241**	**0.0327**	**8.0000e-004**	**0.0335**		**109.1425**	**109.1425**	**4.0100e-003**		**109.2427**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Total					

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.530267	0.037148	0.196347	0.120186	0.025624	0.006375	0.008580	0.059610	0.006951	0.001307	0.005436	0.000965	0.001204

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

N

NOISE IMPACT ANALYSIS

TIOGA INN WORKFORCE HOUSING PROJECT

MONO COUNTY, CALIFORNIA

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Date:

December 7, 2018

Project No.: P18-023 AQ

NOISE SETTING

BACKGROUND

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The decibel (dB) scale is used to quantify sound intensity. Zero on the decibel scale is the faintest sound detectable by a person with good auditory acuity. The decibel scale is a logarithmic progression designed to allow for comparisons of widely varying sound pressure within an easily manageable range.

Humans perceive each increase of ten decibels to be a doubling of apparent loudness. The perceived loudness between a rural setting at 30 dBA versus near a rock concert at 100 dBA is a 100+-fold increase. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, human response is factored into sound descriptions by weighting sounds within the range of human sensitivity more heavily (middle A and its higher harmonics) in a process called "A-weighting" written as dB(A). Any further reference to "dB" in this report should be understood to be A-weighted.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or alternately, as a statistical description of the sound level that is exceeded over some stated fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dBA increment be added to quiet time noise levels in a 24-hour noise metric called the Community Noise Equivalent Level (CNEL).

An interior CNEL of 45 dBA CNEL standard be expanded to include all habitable rooms in residential use, included single-family dwelling units. Since normal noise attenuation within residential structures with closed windows is about 20 dB, an exterior noise exposure of 65 dB CNEL allows the interior standard to be met without any specialized structural attenuation (dual paned windows, etc.). A noise level of 65 dBA is also the level at which ambient noise begins to intrude into the ability to have a quiet conversation. Exterior levels of 65 dB CNEL is therefore the most common noise standard for usable outdoor space in California.

While a moderately loud 65 dBA CNEL level might be acceptable in urbanized areas of California, a 65 dB CNEL noise exposure would likely be considered unacceptable in a semi-rural environment such as the Lee Vining community near the project site. The desirable maximum exterior noise level in rural areas of the state is generally 60 dBA CNEL. Traffic noise increases of more than +3 dBA CNEL are typically considered a significant impact.

BASELINE NOISE LEVELS

In order to establish an ambient noise level, short term area noise measurements were conducted on Tuesday October 18, 2016 from 11:30 a.m. – 12:30 p.m. at four locations. Measurement locations are shown in **Figure 1** and the monitoring results are summarized below.

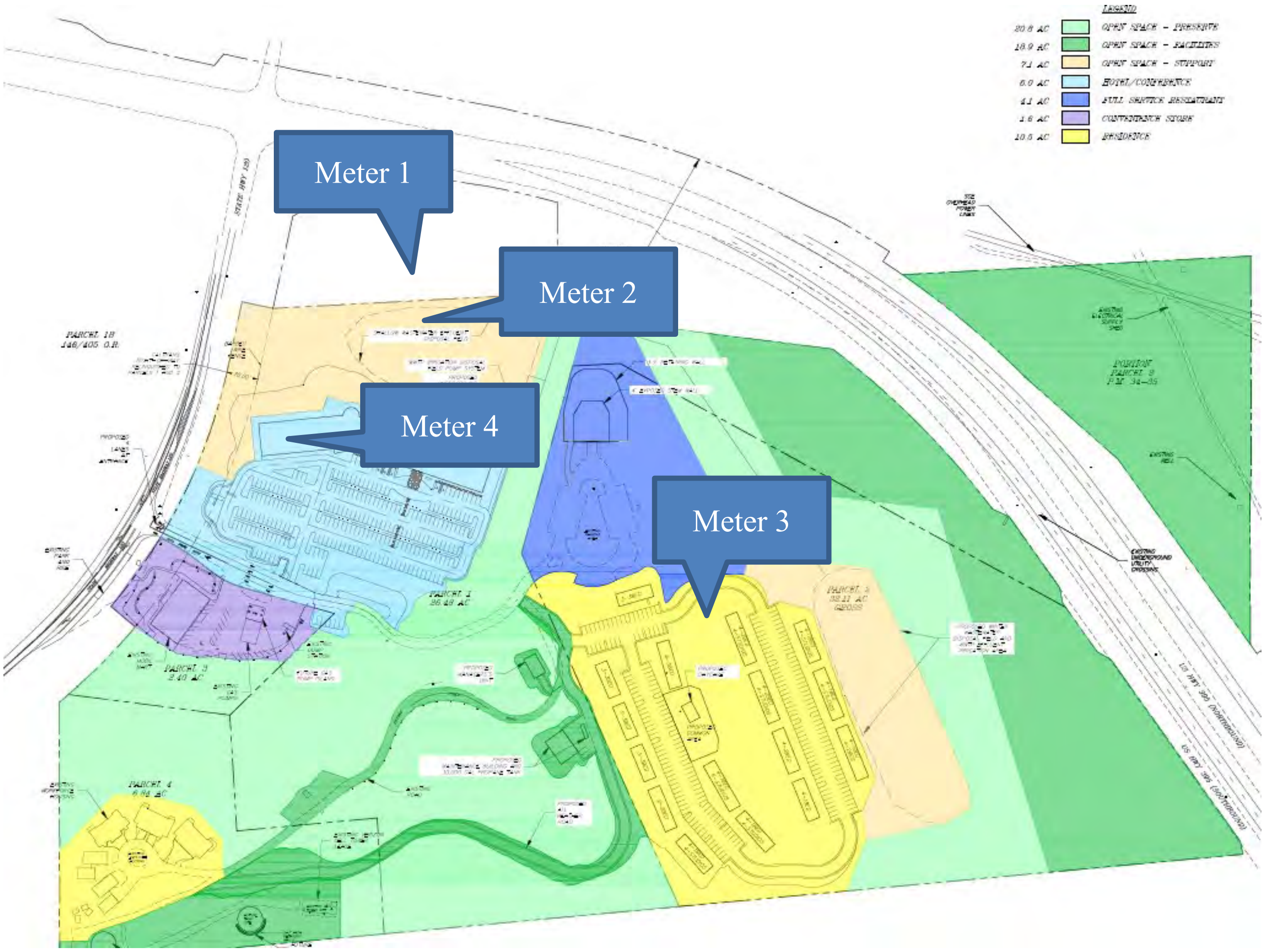
Measured Noise Levels (dBA)

	Leq	Lmax	Lmin	L10	L33	L50	L90
Meter 1	57	84	40	54	48	46	42
Meter 2	47	57	41	49	47	46	43
Meter 3	44	48	39	46	44	42	42
Meter 4	57	68	48	62	55	53	50

Meter 1 was located on the hill adjacent to Highway 395 and Meter 2 was placed in the existing parking lot. Meter 3 was placed at the location of the proposed housing and Meter 4 was sited near the proposed future hotel.

Monitoring experience shows that 24-hour weighted CNELs can be reasonably well estimated from mid-day noise readings. CNELs are approximately equal to afternoon hour Leq plus 2-3 dB (Caltrans Technical Noise Supplement, 2009). The observed Leqs of 44-57 dBA would translate into CNELs of 46-60 dBA.

Figure 1
Noise Monitoring Locations



NOISE IMPACTS

Sensitive uses will be subject to incremental increased noise levels from project related traffic and operations. Short-term construction activities may be audible. Because construction is more likely to be performed during warmer months rather than in winter, people are more likely to be outside or to have their windows open when construction is in progress.

The closest residences to the site are the existing hilltop residential units. The closest activities that may impact these uses is construction of the new water tank and paving the new access roadway. The closest off-site sensitive use to the project site, a residence, is in Lee Vining and is approximately 0.5 miles to the northwest with access from Lee Vining Avenue.

THRESHOLDS OF SIGNIFICANCE

Noise impacts are significant if they create a substantial temporary or permanent increase in noise levels, or if they cause a violation of adopted noise/land use compatibility standards in general plans or noise ordinances. Noise from one land use crossing the property line of an adjacent property, are regulated by Section 10.16.060 of the Mono County Code as shown below.

Maximum Allowable Exterior Noise Levels (excluding construction noise)

Land Use	Allowable Time	Noise Level (dBA)
Residential Single Family	Daytime (7 a.m.-10 p.m.)	55
	Nighttime (10 p.m.-7 a.m.)	50
Residential Multi-Family	Daytime (7 a.m.-10 p.m.)	55
	Nighttime (10 p.m.-7 a.m.)	50
Public Uses-Schools, Libraries, Hospitals	Daytime (7 a.m.-10 p.m.)	55
	Nighttime (10 p.m.-7 a.m.)	50
Passive Recreational Areas	Daytime (7 a.m.-10 p.m.)	55
	Nighttime (10 p.m.-7 a.m.)	50
Community Parks and Athletic Fields	Daytime (7 a.m.-10 p.m.)	55
	Nighttime (10 p.m.-7 a.m.)	50

These noise limits apply to activities occurring on private property. Mono County is pre-empted from regulating on-road traffic noise because such sources are exempt from local ordinance control. However, for new construction, when traffic noise exceeds the planning standard for an affected land use the County can use discretion regarding compatibility of that use.

Transportation noise impacts may be significant if they create either a substantial permanent or temporary increase. The term "substantial" is not quantified in CEQA guidelines. In most environmental analyses, "substantial" is taken to mean a level that is clearly perceptible to humans. In practice, this is at least a +3 dBA increase. Under ambient conditions, people generally do not perceive that noise has clearly changed until there is a 3 dBA difference.

Some agencies, such as Caltrans, require substantial increases to be +10 dBA. For purposes of this analysis, a +3 dBA increase is considered a substantial. For reference, a +3 dBA increase requires a doubling of traffic volumes because of the logarithmic nature of the decibel scale.

CONSTRUCTION NOISE SIGNIFICANCE

Mono County limits construction noise to daytime hours of lesser noise sensitivity. In addition, the County Code calls out maximum noise levels that are not to be exceeded at the nearest residence. Construction may not exceed the noise levels in the following schedule (Section 10.16.060 Mono County Code):

a. Mobile Equipment. Maximum noise levels from non-scheduled, intermittent, and short-term operation (less than 10 days) of mobile equipment:

	Single-family Residential (dBA)	**Multi-family Residential (dBA)**	**Semi-residential/ Commercial (dBA)**
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75	80	85
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays.	60	65	70

b. Stationary Equipment Maximum noise level for repetitively scheduled and relatively long-term operation (period of 10 days or more) of stationary equipment:

	Single-family Residential (dBA)	**Multi-family Residential (dBA)**	**Semi-residential/ Commercial (dBA)**
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	60	65	70
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays.	50	55	60

Construction activities are limited by conditions on grading permits to daytime hours of lesser noise sensitivity. Construction noise generation is temporary, and is prohibited when people are sleeping or most likely to be recreating outside. However, an inability to meet the construction noise standards at the closest sensitive use could create a significant noise impact.

CONSTRUCTION ANALYSIS

Noise levels of construction equipment anticipated for use in this project were analyzed. In 2006, the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model that includes a national database of construction equipment reference noise emissions levels. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power during a construction phase. The usage factor is a key input variable that is used to calculate the average Leq noise levels.

Table 1 identifies highest (L_{max}) noise levels associated with each type of equipment identified for use, then adjusts this noise level for distance to the closest sensitive receptor and the extent of equipment usage (usage factor), which is represented as L_{eq}. The table is organized by activity and associated equipment.

Quantitatively, the primary noise prediction equation is expressed as follows for the hourly average noise level (Leq) at distance D between the source and receiver (dBA):

Leq = Lmax @ 50' – 20 log (D/50') + 10log (U.F%/100) – I.L.(bar)

Where:

Lmax @ 50' is the published reference noise level at 50 feet
U.F.% is the usage factor for full power operation per hour
I.L.(bar) is the insertion loss for intervening barriers

For the proposed project, the construction fleet could include equipment such as shown in **Table 1** which describes the noise level for each individual piece of equipment.

Table 1
Noise Levels at 50 foot reference

Activity/Equipment		Usage Factor[1]	Hours of Operation[2]	Published Noise @ 50 feet (dBA)	Actual Measured Noise @ 50 feet (dBA)	Cumulative Noise Level @ 50 feet (dBA)
Water Tank						
Excavate	Bobcat	40%	3.2	80	79	75
	Loader/Backhoe	37%	3.0	80	78	74
Pour Concrete Pad	Mixer	40%	3.2	80	80	76
	Pump	20%	1.6	82	81	74
	Roller	38%	3.0	85	80	76
Install Tank	Crane	16%	1.3	85	81	73
	Forklift	20%	1.6	75	75	68
	Welder	46%	3.7	73	74	71
Propane Tank						
Excavate	Bobcat	40%	3.2	80	79	75
	Loader/Backhoe	37%	3.0	80	78	74
Pour Concrete Pad	Mixer	40%	3.2	80	80	76
	Pump	20%	1.6	82	81	74
	Roller	38%	3.0	85	80	76
Install Tank	Crane	16%	1.3	85	81	73
	Forklift	20%	1.6	75	75	68
	Welder	46%	3.7	73	74	71
Workforce Housing and Fueling Pumps						
Grade	Excavator	40%	3.2	85	81	78
	Grader	40%	3.2	85	85	81
	Dozer	40%	3.2	85	82	78
	Loader/Backhoe	37%	3.0	80	78	74
Construction	Crane	16%	1.3	85	81	73
	Forklift	20%	1.6	75	75	68
	Loader/Backhoe	37%	3.0	80	78	74
	Welder	46%	3.7	73	74	71
Roadway and Parking Lot Construction						
Demolition	Concrete Saw	20%	1.6	90	90	84
	Loader/Backhoe	37%	3.0	80	78	74
	Dozer	40%	3.2	85	82	78
Grade	Grader	40%	3.2	85	85	81
	Dozer	40%	3.2	85	82	78
	Loader/Backhoe	37%	3.0	80	78	74
Pave	Mixer	40%	3.2	80	80	76
	Roller	38%	3.0	85	80	76
	Pump	20%	1.6	82	81	74
	Loader/Backhoe	37%	3.0	80	78	74
Septic System						
Excavate	Bobcat	40%	3.2	80	79	75
	Loader/Backhoe	37%	3.0	80	78	74
Install	Crane	16%	1.3	85	81	73
	Loader/Backhoe	37%	3.0	80	78	74
	Welder	46%	3.7	73	74	71
	Forklift	20%	1.6	75	75	68

Source: FHWA's Roadway Construction Noise Model, 2006
1. Estimates the fraction of time each piece of equipment is operating at full power during a construction operation
2. Represents the actual hours of peak construction equipment activity out of a typical 8 hour day

Construction generated noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor. **Table 2** shows the distance from each proposed project component to the nearest residential uses on-site and in Lee Vining and the associated attenuation.

Table 2
Distances to Construction Activity and Associated Noise Attenuation

	On-Site Homes		**Lee Vining Homes**	
Element	**Distance (feet)**	**Distance Attenuation (dBA)**	**Distance (miles)**	**Distance Attenuation (dBA)**
Housing and Gas Pumps	500-900	-20 to -25	0.5	-34
Roadways and Parking	100	-6	0.4	-33
New Water Tank	170	-11	0.6	-36
New Propane Tank	800	-24	0.5	-34
Septic System	1,000	-26	0.6	-36

Table 3 shows the attenuated construction equipment noise level that would be experienced at the closest residence after adjusting for distance.

Table 3
Construction Equipment Noise Level at Closest Residences (dBA)

		On-Site Homes	Lee Vining Homes
Water Tank			
Excavate	Bobcat	64	39
	Loader/Backhoe	63	38
Pour Concrete Pad	Mixer	65	40
	Pump	63	38
	Roller	65	40
Install Tank	Crane	62	37
	Forklift	57	32
	Welder	60	35
Propane Tank			
Excavate	Bobcat	59	41
	Loader/Backhoe	58	40
Pour Concrete Pad	Mixer	60	42
	Pump	58	40
	Roller	60	42
Install Tank	Crane	57	39
	Forklift	52	34
	Welder	55	37
Workforce Housing			
Grade	Excavator	58	44
	Grader	61	47
	Dozer	58	44
	Loader/Backhoe	54	40
Construction	Crane	53	39
	Forklift	48	34
	Loader/Backhoe	54	40
	Welder	51	37
Roadway and Parking Lot			
Demolition	Concrete Saw	-	51
	Loader/Backhoe	68	41
	Dozer	72	45
Grade	Grader	75	48
	Dozer	72	45
	Loader/Backhoe	68	41
Pave	Mixer	70	43
	Roller	70	43
	Pump	68	41
	Loader/Backhoe	68	41
Septic			
Excavate	Bobcat	49	39
	Loader/Backhoe	48	38
Install	Crane	47	37
	Loader/Backhoe	48	38
	Welder	45	35
	Forklift	42	32

The anticipated construction fleet is mobile and not stationary and will move about the construction area. The construction noise standard for mobile equipment near an affected residence between 7 a.m. and 8 p.m., Monday through Saturday, is 75 dBA. As shown in **Table 3**, the most impacted residences are those on-site during construction of the new access roadway. A concrete saw will not be used for the new access roadway because it is a new road and no demolition of existing asphalt is necessary. All other equipment for other construction components is less than the 75 dBA threshold. In addition, equipment for the access roadway will only be near the homes for a short period of time as it moves down the alignment traveling away from the homes.

Homes in Lee Vining have enough distance separation to render all construction equipment less-than-significant. Noise thresholds will not be exceeded for any construction activity because of distance between the noise source and the receptors.

TRAFFIC NOISE IMPACTS

The project is expected to generate 724 additional daily vehicular trips. However, not all these vehicles will enter and leave the site on the same roadway. Vehicles disperse to travel east or west on Tioga Road and north or south on Highway 395. The roadway segment that will impact existing on-site homes is Tioga Road west of the site. The roadway segment that will impact residential uses in Lee Vining is Highway 395 north of Tioga Road.

Traffic noise was modeled using the California specific vehicle noise curves (CALVENO) in the federal roadway noise model (the FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108).

The traffic report provided traffic data for both the existing time frame and opening year (2023). Year 2023 data includes cumulative area development such as the proposed hotel and restaurant. The results are shown in **Table 4**.

Table 4
Traffic Noise Impact Analysis
(dBA CNEL at 50 feet from centerline)

Roadway Segment	Existing No Project	Existing W Project	2023 No Project	2023 W Project
Highway 395 South of SR 120	64.9	65.3	65.9	66.1
Highway 395 North of SR 120	64.1	64.3	64.8	65.0
SR 120 West of Highway 395	60.2	61.8	62.9	63.8
SR 120 West of Project Access	60.2	60.9	62.0	62.4

Project-Related Noise Impact
(CNEL in dBA at 50 feet from Centerline)

Roadway Segment	Project Only Existing	Project Only 2023
Highway 395 South of SR 120	0.4	0.2

Highway 395 North of SR 120	0.2	0.2
SR 120 West of Highway 395	1.6	0.9
SR 120 West of Project Access	0.7	0.4

Because traffic volumes are lower on Tioga Road, any project impact is more pronounced than impacts on Highway 395 which are more diluted.

At the closest on-site sensitive use, the traffic noise increase is +1.6 dBA CNEL at 50 feet from the roadway centerline. The closest hilltop residence is more than 350 feet from the roadway centerline which would render the increase undetectable. In addition, the increase is less than the +3 dBA CNEL threshold.

At the closest sensitive use in Lee Vining, the traffic noise increase is calculated to be +0.2 dBA CNEL at 50 feet from roadway centerline. The closest Lee Vining residence is more than 150 feet from the roadway centerline. Regardless, this impact is less than the +3 dBA CNEL significance threshold and will not be audible at the residence.

Therefore, the project related traffic noise increases are considered to be less-than-significant.

BIO-HABITAT NOISE IMPACTS

The on-site housing will be located closer to existing off-site wildlife habitats. The additional fueling stations are in the same vicinity as the existing gas station and are not anticipated to create more noise than currently. Residential use is generally passive with little change to the noise environment. Every species has varying noise sensitivity that can also change from day to day or season to season. It is very difficult to generalize potential noise stress impacts. The USFWS employs a general noise protection standard of 60 dBA Leq in habitats of threatened or endangered avian species during nesting/breeding seasons. Noise from residential housing within the immediate vicinity of the activity itself is typically less than 60 dBA. Using the USFWS standard as a guideline, bio-habitats away from the proposed uses are not anticipated to be significantly noise-impacted.

WASTEWATER TREATMENT PACKAGE PLANT

The new package treatment plant will be installed underground at the northeast corner of the hotel. The entire system will be built inside an insulated fiberglass tank and installed underground.

There are several mechanical components of a package treatment plant. The potentially noisiest component is the motor and blower unit. The blower is the piece of equipment which provides air to the system and the motor drives the blower. Because the system is enclosed and underground the only potential source of noise above ground is the fan at the blower vent.

Fan noise for small industrial fans can have a sound pressure level as high as 85 dBA. The existing on-site residences are about 1,000 feet from the proposed package plant. With that setback blower noise would be reduced to 25-35 dBA and would be lower than the ambient noise level. It would also be less than the 50-55 dBA noise standard. Noise from the wastewater treatment plant is therefore less-than-significant.

CONCERT NOISE

The on-site Deli hosts live outdoor music events during Thursday evenings throughout the summer months. The frequency or location of these events is not expected to change as a result of project implementation. During one such concert the noise level was observed for 15 minutes at the Epic Cafe in Lee Vining. This café was selected to be most representative of residual noise in Lee Vining because it has the most direct exposure for any Lee Vining land use. No concert noise was observed. Concerts are an existing feature and future events will be held in the same location with the same frequency as in the past.

As a reference, measured amplified music noise from social events such as young participant weddings tend
to be 80 dBA directly in front of the state of DJ booth. Side lobe noise is around 70 dBA and 60-65 dBA to the rear. Human response to various noise levels is somewhat as follows:

Background noise levels (Lee Vining)	50 dBA
On-set of conversation interference	65 dBA
Conversation becomes difficult	75 dBA
OSHA requires hearing protection	85 dBA
On-set of hearing loss (OSHA)	90 dBA

The deli concerts tend to be "mellow" music, but a worst-case noise generation of 80 dBA at 20 feet from the speakers has been assumed. Over irregular terrain, the distance drop-off is -7.5 dBA per distance doubling. The resulting deli concert noise is as follows:

Distance	Front	Side	Rear
20'	80 dBA	70 dBA	65 dBA
80'	65 dBA	55 dBA	50 dBA
320'	50 dBA	40 dBA	35 dBA

At worst, noise levels will decay to background conditions with 320 feet of the music source. Except directly facing the music source, levels will be well below the ambient background even be well below the ambient background even faster. Deli concert noise impacts to any off-site receivers will be far less than significant.

SUMMARY AND MITIGATION

Noise impact mitigation recommendations include:

- Performing construction activities during times of lesser noise sensitivity regulated by ordinance.

With adherence to these the time of day guidelines, construction noise at on and off-site uses is not expected to exceed the Mono County noise thresholds.

Project-related traffic noise changes on existing roadways are less than significant.

Operational noise from the proposed package treatment plan will be undetectable at on and off-site sensitive uses.

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MINOR LEVEL VISUAL IMPACT ASSESSMENT

Tioga Workforce Housing Project

Prepared by:
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Date Prepared:
14 June 2018

PURPOSE OF STUDY AND ASSESSMENT METHOD

The purpose of this visual impact assessment (VIA) is to document potential visual impacts caused by the proposed project and propose measures to lessen any detrimental impacts that are identified. Visual impacts are demonstrated by identifying visual resources in the project area, measuring the amount of change that would occur as a result of the project, and predicting how the affected public would respond to or perceive those changes. This visual impact assessment follows the guidance outlined in the publication *Visual Impact Assessment for Highway Projects* published by the Federal Highway Administration (FHWA) in March 1981.

PROJECT DESCRIPTION

The Tioga Inn project proposal encompasses multiple elements, many of which were analyzed in a Final EIR and Specific Plan that was certified by the Mono County Board of Supervisors in 1993. The original concept, as reflected in the 1993 documents, was to provide a full range of services and facilities (hotel, full service restaurant, deli, convenience store, gas station, picnic area, oversize parking, air and water, public restrooms etc.) for tourists, and meeting facilities, jobs and employee housing opportunities for area residents.

The current proposal retains the goals and concepts developed in 1993, with several newly added elements. Most significantly, the current proposal would provide up to 150 new workforce housing bedrooms. The current proposal also provides for a third gas pump island and overhead canopy, expands the existing onsite septic system to increase capacity and incorporate a greywater reclamation system, replaces an existing water storage tank with a new and slightly larger tank on a nearby site, increases the number and capacity of the onsite propane tanks, modifies the acreage and boundaries of designated open space, and modifies the acreage and boundaries of project parcels.

Several of the uses approved in 1993 were constructed and placed into operation during the late 1990s. Construction of the hotel and restaurant elements was postponed due to a general economic downturn and other factors. The purpose of the current project proposal is to incorporate modifications and new elements to the approved Specific Plan to better respond to evolving trends in tourism, resource conservation and employment.

The proposed project elements are expected to have limited visibility or no visibility from surrounding scenic highways (including US 395-a State Scenic Highway, and SR120-a County Scenic Highway). The proposed workforce housing (including preparatory grading and permanent lighting and vegetation) will be visible from a short segment of US395 south of the project site, and the new water storage tank will be visible from SR 120, though less visible than the existing water storage tank (which is about 100' closer to SR120 and will be demolished). Other proposed new elements will be location out of the view from (or only nominally visible from) US395 and SR120, including the third gas pump island and overhead canopy, the expanded septic and greywater reclamation system, the new 30,000 gallon propane tank, and the open space and parcel boundary modifications.

The existing Mobile Mart and Whoa Nellie Deli development is widely acknowledged for its quality of food and views[1] and the proposed Specific Plan amendments will retain all but 2 project design guidelines: landscaping standards will be updated to reflect results of a recent biological survey of the site and incorporate enhanced habitat conservation features; and the specific measures to reduce glare will be replaced by compliance with all applicable standards from the Mono County Scenic Combining Element and Dark Skies Ordinance.

Project features designed to avoid or minimize adverse effects include the proposed graywater system (developed to provide a nonpotable source of irrigation supply for landscaping), use of solar panels on south-facing roofing slopes (to offset new energy demands from the workforce housing component), excavation of the workforce housing pad to lower the pad elevation reduce housing visibility), an updated landscape plan that requires use of native or native-compatible species and optimizes bitterbrush habitat to offset prior (unrelated) sage scrub habitat losses from fire, retention of the existing Specific Plan requirement for an earthtone color palette and use of wood and stone materials (to echo the form and color and materials of the natural environment), landscape screening (to minimize visibility and enhance blending of project element with the surroundings, and limited signage consistent with Specific Plan provisions.

PROJECT LOCATION AND SETTING

The project is located on the land directly southwest of the intersection of US395 and SR120, about 1 mile from the community of Lee Vining in Mono County. Site access is taken from SR 120 (SR 120 is the sole eastern access into Yosemite) about 600' south of the US395/SR120 intersection. Site elevations vary, but the existing project features (gas station, deli, convenience store) are about 200' higher than the Mono Lake level.

Mono Lake is a soda saline lake with strongly alkaline waters and high concentrations of carbonate salts, sodium chloride and other dissolved salts. Soda saline environments are among the most extreme of aquatic environments on earth, supporting highly productive ecosystems. Soda lakes are found in arid and semi-arid areas around the world, often associated with tectonic rifts such as occur in the East African and in Owens Valley which supports two soda saline lakes (Mono Lake and Owens Dry Lake).[2] [3] These natural conditions frequently result in highly unique, expansive and generally austere aesthetic conditions, such as occur in the largely undeveloped Mono basin. In combination with the dramatic Sierra escarpment leading into Yosemite National Park, the otherworldly beauty of Mono Lake is among the outstanding scenic vistas of the world. Tourism is highest during summer months, when SR120 (the only eastern access into Yosemite National Park) is open. Both highways that serve the project site are designated scenic highways: US395 is a State Scenic Highway, and sr120 is a County Scenic Highway (eligible for designation as a State Scenic Highway).

VISUAL RESOURCES AND RESOURCE CHANGE

Visual resources of the project setting are defined and identified below by assessing *visual character* and *visual quality* in the project corridor. *Resource change* is assessed by evaluating the visual character and the visual quality of the visual resources that comprise the project corridor before and after the construction of the proposed project.

The visual character of the proposed project will be compatible with the existing visual character of the corridor. The proposed project elements will conform to the style, color palette, building materials, and character of the existing project elements, with very limited visibility from off-site populated areas. The workforce housing development will be the most prominent of the newly proposed elements. Located on the land 'saddle' directly south of the existing 'flagpole,' this development will be higher than the adjoining slopes to the north and south. To minimize visibility, the workforce housing pad will be excavated near the ridgeline from its present elevation of

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[1] http://www.latimes.com/travel/la-tr-california-bucket-list-updates-1502840908-htmlstory.html (LA Times, August 2017); https://www.cntraveler.com/stories/2016-02-01/gas-stations-where-youll-want-to-fill-up-on-food (Conde Nast, February 2016) http://www.sacbee.com/entertainment/living/travel/sam-mcmanis/article2578395.html (Sacramento Bee, August 2013).

[2] USGS, Geologic Map of Long Valley Caldera, E. California, Roy Bailey: https://pubs.usgs.gov/dds/dds-81/GeologicalMaps/ScannedMap/Bailey_1989.pdf

[3] Wikipedia: https://en.wikipedia.org/wiki/Soda_lake.

approximately 6,950-6,955' to a future elevation of 6,936'-6945', removing an estimated 60,800 cubic yards of material; a majority of the excess cut materials will be used as fill during construction of the hotel. The excavation, in combination with screening landscape materials (ornamental landscaping along the housing perimeter, and native landscaping on the slopes), will minimize the visual profile of the workforce housing structures. Intervening landforms will further reduce visibility of the area within which the workforce housing will be visible, with the result that direct proximate views of the new housing will be visible from roughly ¼-mile segment of US 395 extending south and north of the Picnic Grounds Road turnoff. The visual change in this location is depicted in Schematic Rendering 5.12-6. The housing will not be visible from any part of SR120 due to intervening ridgelines that exceed 7,200' in elevation and are higher than both the housing and SR 120 in this area.

VIEWERS AND VIEWER RESPONSE

As described above, the visual impact of project development on highway motorists will be limited to the southern-most workforce housing units which will be visible from a roughly ¼ mile segment of US395. The housing area will also be directly visible from South Tufa Beach, and also from Panum Crater. However, the site is a very minor element when seen from these locations due to distance (the site is about 4 miles from Panum Crater, and 5 miles from South Tufa Beach) and due to the dominant Sierra Nevada backdrop, as shown in Exhibit 5.12-5.

Due to intervening topography, none of the newly proposed elements will be visible from Lee Vining or from County Park, or from the Epic Cafe (as shown in Exhibit 5.12-7), and none would be visible from SR120. It is anticipated that the average response of all viewer groups will be moderate to low.

VISUAL IMPACT

Visual impacts will include construction of project elements. The workforce housing development will involve the most extensive earthwork due to its size (the 150-bedroom complex will cover an area of roughly 30 acres), and due to the amount of excavation planned in order to minimize visibility (about 60,800 cy). Associated with the workforce housing new construction will be the demolition of 6 small housing units currently located south of the flagpole (the occupants will be relocated to the new units when completed). Other project elements that will involve varying degrees of earthwork include the hotel (with an estimated 6,100 cy of cut and 45,030 cy of fill, relocated from the housing excavation), and the restaurant (with an estimated 40 cubic yards of cut and 1,370 cy of fill). Minimal earthwork will be required for the addition of a third gas pump island, installation of the new wastewater treatment plan and construction of a new subsurface irrigation system, installation of the new propane tank, and demolition/replacement of the existing water tank. Most construction tasks will be completed during the low season (November to mid-May), with exclusions as needed for protection of sensitive and migrating species. Construction during the low season will minimize the loss of business and also minimize the visual impact of construction on a primary viewer group (tourists).

Changes proposed as part of Specific Plan Amendment #3 include replacement of the existing measures to reduce light and glare with a new requirement that the project will comply fully with the Mono County Scenic Combining Element and the Dark Sky Ordinance. This change is expected to reduce unwanted light and glare more effectively than the current Specific Plan provisions, even with the planned addition of solar panels on south-facing building roofs.

AVOIDANCE AND MINIMIZATION MEASURES

All visual impact avoidance and minimization measures to date have taken the form of design modifications and proposed changes to the Specific Plan implementation measures. Project features designed to avoid or minimize adverse effects include the proposed subsurface irrigation system (developed to provide a nonpotable source of irrigation supply for landscaping), use of solar panels on southfacing roofing slopes (to offset new energy demands from the workforce housing component), excavation of the workforce housing pad (to reduce housing visibility), an updated landscape plan that requires use of native or native-compatible species to offset prior (unrelated) sage scrub habitat losses from fire, use of the existing Specific Plan color palette and materials, landscape screening (to minimize visibility and enhance blending of project element with the surroundings), and limited signage consistent with Specific Plan provisions. Mono County Community Development Department and the project applicant also intend to collaborate on submittal of a grant application to support construction of a safe access between the site and Lee Vining, as well as a new wildlife passageway under US 395 for migratory species, and improvements at the SR120/US395 intersection to reduce significant turning movement hazards; it is intended that this grant, if successful, will be used to augment future recommendations of Caltrans' ongoing traffic calming studies for US 395 in Lee Vining and environs.

CONCLUSIONS

The considerations outlined in this Minor Level Visual Impact Assessment, in combination with additional information provided in the Caltrans Visual Impact Assessment Questionnaire and Responses, provided in SEIR §5.12, indicate that visual impacts of the proposed Tioga Workforce Housing project will be noticeable and the average response of all viewer groups will be moderate to low.