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4.11 TRANSPORTATION

This section provides information regarding congestion along access roads, traffic delays, restricted access, increased traffic hazards, and damage to roadbeds resulting from construction of the Project. The section also discusses construction impacts resulting from inadequate parking for Project activities and impacts from heavy vehicles on roadways not designated as truck routes. To provide a basis for this evaluation, the setting section describes the regional roadway network and roadway segments potentially affected by Project activities. Existing peak hour and average daily traffic volume data for these segments is given. Potentially affected public transit routes are identified along with frequency of service on these routes.

IMPACTS EVALUATED IN OTHER SECTIONS

The following subjects are related to the Transportation Section, but are evaluated in other sections of this document:

- Transportation Noise. Noise increases as a result of Project traffic are evaluated in Section 4.13, Noise.
- Air Quality affected by Project traffic is evaluated in Section 4.12, Air Quality.

AFFECTED ENVIRONMENT (SETTING)

Jurisdictions potentially affected by the Project alternatives include the counties of Sonoma and Marin, the cities of Santa Rosa, Rohnert Park, Cotati, Sebastopol, and Petaluma and the Town of Windsor. Because the proposed alternatives encompass such an extensive geographic area, a number of different locations may potentially be affected throughout the Project area. The existing transportation system in the vicinity of the Project components could be directly affected by construction and operation of Project components. The existing regional transportation system is discussed in this section. Potentially affected major key roadways and reservoir access roadways in the regional transportation system are illustrated on Figures 4.11-1a, 4.11-1b, and 4.11-1c.

Existing Regional Transportation System

The regional transportation system includes the roadway network, public transit service, and bicycle and pedestrian routes. Within the Project area there are seven state and

federal highways and numerous arterial, collector, local, and rural streets. In addition, five different transit agencies provide service to local communities.

Regional Roadway Network

The regional roadway network includes roads ranging from freeways to rural roads. Outside of urban areas, most of the roadways are two-lane rural roads with relatively narrow lanes and shoulders, variable grades, and restricted opportunities for passing over much of their length. The traffic mix includes trucks and recreational and sightseeing vehicles.

The transportation network within the Project area includes six types of roadways, each of which serves a different function:

Freeways

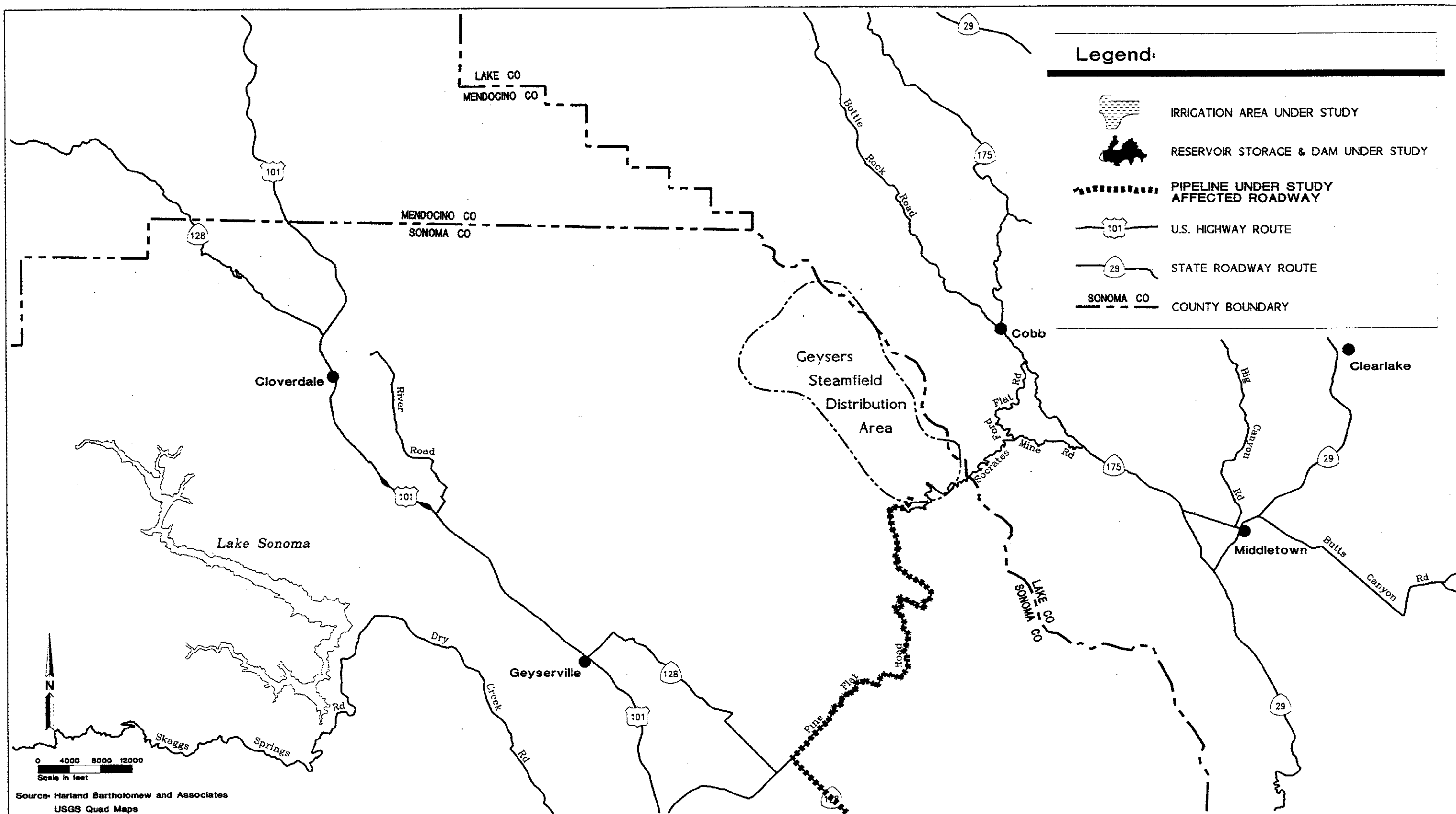
These are fed by collector and arterial streets, provide inter-city and intra-city travel, provide connections to other regional highways, and are capable of carrying heavy traffic volumes. U.S. Highway 101 serves regional and countywide travel as the major through-route for the North Coast region. It provides regional access to Mendocino County to the north and to Marin County and the San Francisco area to the south. This route is heavily used by commuters during peak travel periods. U.S. Highway 101 is a state-owned route of U.S. interest which does receive federal aid. Several improvements are being considered to U.S. Highway 101 including widening and rail options.

State Highways

These are primary routes for through traffic, commuters, and tourists. In addition, they carry the majority of local trips of any distance. State Highways 12, 37, and 121 connect Sonoma County with Napa County and are heavily congested during commute periods and due to tourism and recreational travel on weekends as well. In addition to the above routes, the Project area contains three other state highways: State Highways 1, 116, and 128, which are also congested during commute periods and on weekends.








Arterials

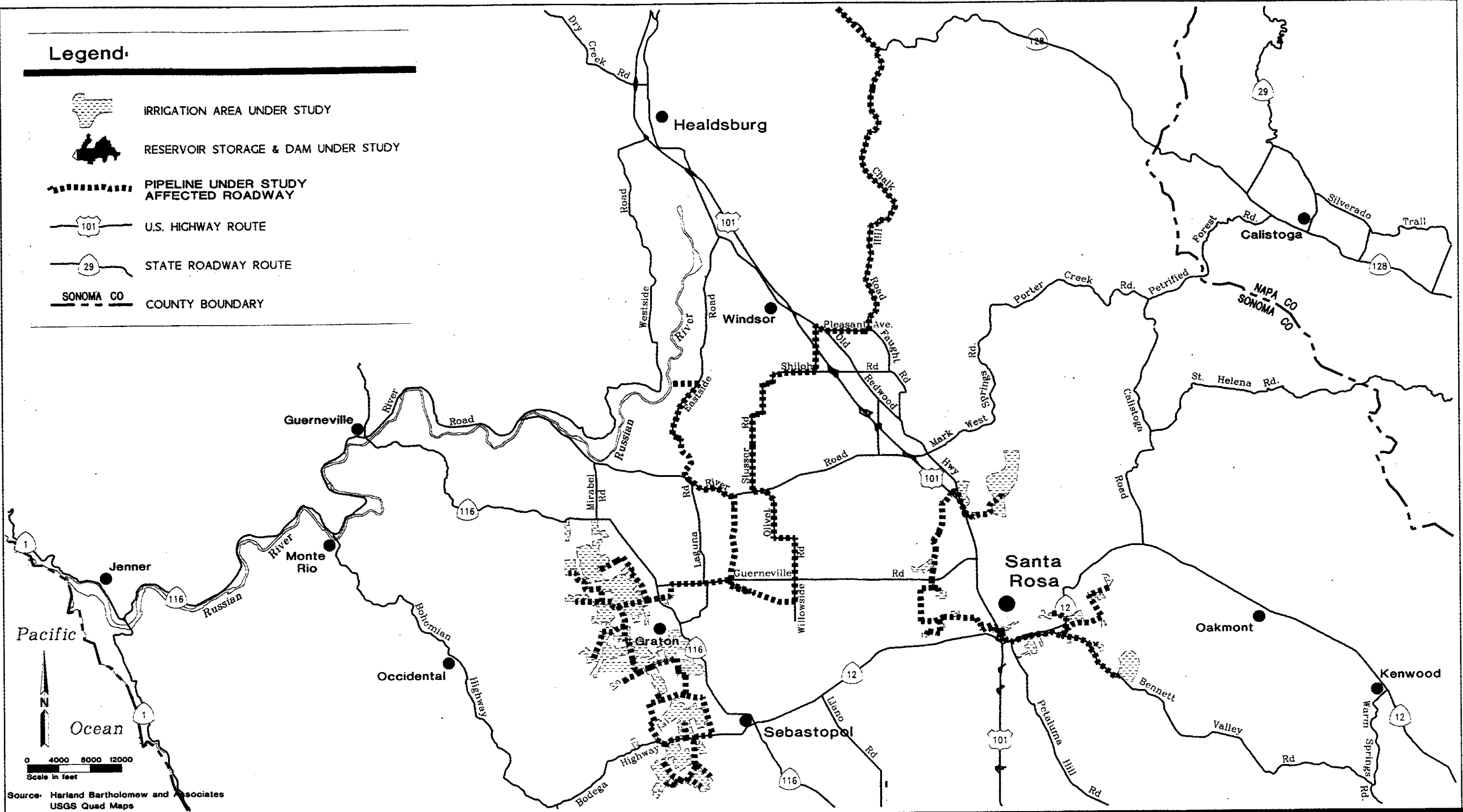
These are relatively high speed/high capacity roads that provide access to regional transportation facilities and serve relatively long trips. They are also medium speed/medium capacity roads for intra-community travel and provide access to the rest of the countywide highway system. Access to arterials is usually by local and collector streets, with some direct access from abutting properties.



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Legend:

-  IRRIGATION AREA UNDER STUDY
-  RESERVOIR STORAGE & DAM UNDER STUDY
-  PIPELINE UNDER STUDY
-  AFFECTED ROADWAY
-  U.S. HIGHWAY ROUTE
-  STATE ROADWAY ROUTE
-  SONOMA CO COUNTY BOUNDARY



Source: Harland Bartholomew and Associates
USGS Quad Maps

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Collectors

These are relatively low speed/low volume streets, typically two lanes, for circulation within and between neighborhoods. These roads serve relatively short trips and are meant to collect trips from local streets and distribute them to the arterial network.

Local Streets

These are low speed/low volume roadways that provide direct access to abutting land uses. Driveways to individual parcels, on-street parking, and pedestrian access are allowed. Local streets are further classified as residential streets, hillside streets, or light industrial streets and are likely to be discontinuous in alignment. Many provide access to residential neighborhoods and are usually developed with curb, gutter, and sidewalk.

Rural Streets

These carry traffic to outlying districts and are generally not developed with curb, gutter, and sidewalk.

Regional and Local Roadways Included in the Transportation Analysis

All pipelines (except for those within the geysers steamfield) will be buried and will generally follow or cross public rights-of-way. Near reservoir sites and irrigation areas, some segments of the pipelines follow private access roads or “cross-country” alignments (i.e., not aligned with any road). Affected roadways within the Project area are combined (as appropriate study segments) by alternative and facility type for the purpose of this analysis. For example, the entire length of Chalk Hill Road between Highway 128 and Pleasant Avenue is considered as one study segment for Alternative 4. The resulting key affected roadway segments and reservoir access roadways included as part of the transportation analysis are listed in Table 4.11-1 by roadway, generally in geographic order from North to South.

Table 4.11-1

Affected Roadway Segments and Existing Traffic Volumes

Roadway Segment	Type	Lanes	Peak Hour			ADT
			Weekday a.m.	Weekday p.m.	Saturday Mid-day	Peak Month
Pine Flat Road north of Red Winery Road	Rural	1	24	19	19	202
Chalk Hill Road north of Spurgeon Road	Collector	2	59	75	67	766
Pleasant Avenue west of Chalk Hill Road	Collector	2	30	22	21	259
Shiloh Road between Conde Lane and Windsor Road	Arterial	2	323	394	240	4,612
Slusser Road south of Laughlin Road	Collector	2	86	69	65	1,364
River Rd./Eastside Rd. west of Slusser Rd.	Arterial	2	786	1,021	1,085	12,721
Trenton-Healdsburg Road south of Mark West Station	Collector	2	93	108	69	1,168
Eastside Road north of Mark West Station	Arterial	2	152	185	129	1,853
River Road east of Slusser Road	Arterial	2	800	1,038	1,076	12,816
Guerneville Road west of Laguna Road	Arterial	2	544	518	597	8,539
Green Valley Road west of Ross Road	Collector	2	135	194	118	2,080
Graton Road west of Sullivan Road	Arterial	2	207	212	179	2,625
Fountaingrove Parkway north of Mendocino Avenue	Arterial	4	942	960	434	11,438
Piner Road east of Coffey Lane	Arterial	4	1,283	1,969	1,322	22,244
Marlow Road north of Steele Lane	Collector	2	549	1,058	468	11,863
Stony Point south of West College Avenue	Arterial	4	1,116	1,852	1,281	20,491
West 3rd Street east of Dutton Avenue	Arterial	2	754	1,232	862	14,909
Bennett Valley Road east of Highway 12	Arterial	2	1,007	1,482	1,015	16,152
Hoen Frontage Road west of Hoen Ave.	Arterial	4	914	1,575	1,087	17,473
Lone Pine Road west of Highway 116	Collector	2	192	201	208	2,725
Bloomfield Road south of Canfield Road	Collector	2	82	112	111	1,296

Table 4.11-1

Affected Roadway Segments and Existing Traffic Volumes

Roadway Segment	Type	Lanes	Peak Hour			ADT
			Weekday a.m.	Weekday p.m.	Saturday Mid-day	Peak Month
Petaluma-Valley Ford Road west of Bloomfield Road	Arterial	2	217	337	618	4,341
Petaluma-Valley Ford Road north of Bodega Avenue	Arterial	2	230	328	574	4,371
Pepper Road south of Walker Road	Arterial	2	203	235	219	2,663
Spring Hill Road south of Bodega Avenue	Collector	2	71	89	74	806
Old Redwood Hwy. north of Railroad Ave.	Arterial	2	696	1,081	762	11,867
Petaluma Hill Rd. north of Railroad Ave.	Arterial	2	1,338	1,815	923	17,727
Petaluma Hill Road south of Crane Canyon Road	Arterial	2	886	1,508	633	12,647
Redwood Highway south of Ely Road	Arterial	4	1,226	1,702	1,080	18,929
Adobe Road south of Corona Road	Arterial	2	855	1,075	577	10,572
East Washington Street east of Ely Road	Arterial	2	463	642	610	8,220
Ely Blvd. south of Frates Road	Arterial	2	305	572	287	4,953
Lakeville Highway north of Highway 37	Arterial	4	1,065	1,636	877	16,664
Llano Road South of Highway 12	Arterial	2	177	217	NA	2,079
State Highway 1 north of Two Rock Road	Arterial/State Highway	2	NA	200	NA	1,300
State Highway 1 west of Petaluma-Valley Ford Road	Arterial/State Highway	2	NA	650	NA	4,600
State Highway 1 east of Valley Ford-Freestone Road	Arterial/State Highway	2	NA	1,100	NA	4,650
State Highway 12 along Farmers Lane	Arterial/State Highway	4	NA	2,450	NA	30,000

Table 4.11-1

Affected Roadway Segments and Existing Traffic Volumes

Roadway Segment	Type	Lanes	Peak Hour			ADT
			Weekday a.m.	Weekday p.m.	Saturday Mid-day	Peak Month
State Highway 37 east of Lakeville Highway	Arterial/State Highway	4	NA	3,350	NA	35,500
State Highway 116 east of Stony Point Road	Arterial/State Highway	2	NA	1,650	NA	18,100
State Highway 116 north of Lakeville Highway	Arterial/State Highway	2	NA	1,300	NA	15,600
State Highway 116 south of Adobe Road`	Arterial/State Highway	2	NA	250	NA	3,000
State Highway 121 north of State Highway 37	Arterial/State Highway	4	NA	1,700	NA	16,300
State Highway 128 south of Pine Flat Road	Arterial/State Highway	2	NA	250	NA	2,450
Proposed Reservoir Access Roads						
Cannon Lane at Lakeville Road	Rural	2	6	7	7	70
Private Driveway off of Stage Gulch Road (SR 116) south of Adobe Road	Rural	1	1	1	1	10
Old Lakeville Road No. 3 (north) at Lakeville road	Local	2	8	10	9	95
Private Driveway off of Highway 121 at Tolay Creek	Rural	1	1	1	1	10
Access Roads (2) onto Sonoma Mountain Road	Rural	2	12	15	13	145
Private Driveway (Ielmorini Road) off of Adobe Road aligned with East Washington Street	Rural	1	1	1	1	10
Walker Road Access Road	Local	2	4	5	4	50

Table 4.11-1

Affected Roadway Segments and Existing Traffic Volumes

Roadway Segment	Type	Lanes	Peak Hour			ADT
			Weekday a.m.	Weekday p.m.	Saturday Mid-day	Peak Month
Private Driveway off of Petaluma Valley Ford Road West of Bloomfield Road	Rural	1	1	1	1	10
Carroll Road off of Petaluma Valley Ford Road	Rural	1	11	13	12	130
Private Driveway off of Highway 1 west of Petaluma Valley Ford Road	Rural	1	1	1	1	10
Martinoni Road off of Fallon Two Rock Road	Rural	1	7	8	8	85

Source: Marks Traffic Data Service Traffic Volume Sheets, 24-Hour Machine Counts, July and August, 1995, Caltrans 1994 Traffic Volumes, May, 1995, County of Sonoma Traffic Volumes, 1995.

Notes:

ADT = Average Daily Traffic

NA = Not Available

Existing Traffic Volumes

Traffic volumes can be described both in terms of average daily traffic and peak hour traffic. Average daily traffic (ADT) represents the average of the total traffic in both directions on a road segment over a 24-hour period. Peak hour traffic is the highest volume of traffic for a one-hour period. Generally, on a weekday, there are two peak hours coinciding with the morning and evening commute periods. In the Project area, peak hours are generally found between 7:00 and 9:00 a.m. and 4:00 and 6:00 p.m. A Saturday peak period is evident mid-day between 11:00 a.m. and 1:00 p.m.

Traffic counts in Sonoma County and northern Marin County vary during different seasons of the year. During the summer months, there is an increase in recreational and sightseeing activities. Therefore, in order to present a more conservative analysis, traffic volume data collected during July and August were used in assessing Project impacts. Along state highways, the peak month ADT and peak hour traffic were used for this analysis. The peak month ADT is the average daily traffic for the month of heaviest traffic flow. In addition, with the longer days, the construction related activities of the Project alternatives are likely to occur during the summer months.

Table 4.11-1 summarizes the affected roadway segment existing peak hour and average daily traffic (ADT) volumes.

Public Transit Service

Five major transit operators provide fixed-route transit services within the Project area. Each of these services is described by jurisdiction below, and the affected routes are summarized in Table 4.11-2.

Sonoma County

Golden Gate Transit connects the Santa Rosa, Sebastopol, Rohnert Park, Cotati, and Petaluma areas with Marin County and San Francisco. Mendocino Transit Authority connects the Mendocino and Sonoma Coast to Santa Rosa via Bodega Bay and Sebastopol. Sonoma County Transit provides inter-city travel within Sonoma County. Sonoma County Transit offers 21 routes which travel as far north as Cloverdale, as far west as Guerneville, as far south as Petaluma, and as far east as the City of Sonoma.

Marin County

The majority of both local and transbay (to San Francisco and western Contra Costa County) public transportation service is provided by Golden Gate Transit. The Marin County Transit District also provides local service.

City of Santa Rosa

Santa Rosa has an extensive local transit service. The City is serviced by the CityBus fleet that consists of 14 lines. Regional and inter-county commute bus service is available to Marin County and San Francisco via Golden Gate Transit.

Table 4.11-2

Affected Bus Route Service Frequencies (in minutes)

Route	A.M. Peak 7-9	Mid-Day 11-1	P.M. Peak 4-6	Saturday	Sunday
City of Santa Rosa CityBus					
2	30	30	30	60	60
3	30	30	30	60	60
5	30	30	30	60	60
6	30	30	30	60	60
7	60	60	60	60	60
8	30	30	30	60	60
9	30	30	30	60	60
11	30	30	30	60	60
12	30	30	30	60	60
City of Petaluma No Routes Affected					
Sonoma County					
12	103	165	105	198	198
20 - East	72	104	110	226	226
20 - West	78	93	71	236	236
22 East Express	55	252	113	NS	NS
22 West Express	127	255	145	NS	NS
26 East	73	265	80	NS	NS
26 West	153	75	80	NS	NS
40 East	56	135	68	NS	NS

Table 4.11-2

Affected Bus Route Service Frequencies (in minutes)

Route	A.M. Peak 7-9	Mid-Day 11-1	P.M. Peak 4-6	Saturday	Sunday
40 West	110	165	90	NS	NS
42 North	180	100	130	NS	NS
42 South	180	110	125	NS	NS
44 North	75	126	50	182	182
44 South	62	95	62	185	185
48 North	82	130	109	190	190
48 South	120	205	84	182	182
60 North	33	54	25	77	77
60 South	32	58	33	89	89
62 North	125	NS	73	NS	NS
62 South	60	NS	one trip (LS)	NS	NS
64 North	one trip (LS)	NS	NS	NS	NS
64 South	one trip (LS)	NS	130	NS	NS
Golden Gate Transit (GGT)					
71 Southbound	49 (LS)	NS	NS	NS	NS
71 Northbound	NS	NS	36 (LS)	NS	NS
72 Southbound	19 (LS)	NS	NS	NS	NS
72 Northbound	NS	NS	one trip (LS)	NS	NS
74 Southbound	19 (LS)	NS	NS	NS	NS
74 Northbound	NS	NS	28 (LS)	NS	NS
75 Southbound	28 (LS)	NS	NS	NS	NS
75 Northbound	NS	NS	40 (LS)	NS	NS
76 Southbound	6 (LS)	NS	NS	NS	NS
76 Northbound	NS	NS	32 (LS)	NS	NS
78 Southbound	37 (LS)	NS	NS	NS	NS
78 Northbound	NS	NS	29 (LS)	NS	NS
Mendocino Transit Authority (MTA)					
No routes affected					

Sources: Santa Rosa CityBus System Route Map, July 1994; Petaluma Transit Route Map and Time Schedule, May 1995; Sonoma County Transit Time Schedules, August 1995; Golden Gate Transit Bus & Ferry Transit Guide, Summer 1995 (June 11-September 2) 2nd Edition; Mendocino Transit Authority North Coast Inter City Rider and Coast Bus Time Schedules.

Notes:

NS no service

LS limited service

Sonoma County Transit connects Santa Rosa to all cities and most unincorporated communities. Transfers between routes and systems are provided in Santa Rosa at the Second Street Transit Mall.

City of Cotati

Sonoma County Transit provides inter-city travel within Sonoma County and Golden Gate Transit provides regional service.

City of Sebastopol

Sebastopol is served by three major transit services. Intra-city and inter-city transit service is provided by Sonoma County Transit with routes to Santa Rosa, the lower Russian River area, Cotati and Rohnert Park. Inter-county transit service is provided by Golden Gate Transit, which provides express routes to San Francisco. Service to Mendocino County is provided by Mendocino Transit Authority from Point Arena via Sebastopol to Santa Rosa.

City of Petaluma

Petaluma is currently served by three transit agencies: Golden Gate Transit is oriented mainly to commuters traveling to Marin County and San Francisco; Sonoma County Transit serves Santa Rosa, Sonoma, Cotati/Rohnert Park, and other destinations within Sonoma County; and intra-city transit needs are served by Petaluma Transit's minibuses.

All routes start and end at the downtown bus depot at "C" and 4th Streets. Two of Golden Gate Transit's routes and the Sonoma County Transit lines also use the downtown bus depot as do private operators.

City of Rohnert Park

Rohnert Park is currently served by two transit agencies. Golden Gate Transit is oriented mainly to commuters traveling to Marin County and San Francisco. Sonoma County Transit serves Rohnert Park and other destinations within Sonoma County. The Sonoma County Transit intra-city routes currently operate on 30-minute to one-hour headway.

In addition to the regularly scheduled routes described above, other transit services are also provided in the Project area. These include numerous demand responsive services, commercial taxi service, and other private operators.

Table 4.11-2 summarizes the service characteristics of the major bus routes that have routes along Project pipeline routes.

Bicycle and Pedestrian Facilities

The existing system of bikeways and pedestrian facilities is outlined in the General Plan for each jurisdiction. Many jurisdictions maintain a system of existing bikeways, trails, and pedestrian facilities that provide access to a number of important destinations.

Transportation Goals, Objectives, and Policies

Table 4.11-3 identifies transportation goals, objectives, and policies which provide guidance for development of Project facilities. The table also indicates which criteria in the Transportation Section are responsive to each set of policies.

Table 4.11-3

General Plan Goals, Objectives and Policies - Transportation

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Relevant Evaluation Criteria ¹
Sonoma County General Plan	Circulation and Transit Element	Goal CT-2	Provide and maintain a highway system capacity to serve projected travel demand in 2005 at acceptable levels of service	1
Sonoma County General Plan	Circulation and Transit Element	Policy CT-2k	The County may require correction of potential safety deficiencies prior to or at project approval	2,3
Sonoma County General Plan	Circulation and Transit Element	Policy CT-2v Policy CT-2x Policy CT-2y	Discourage access along parallel arterials; allow access along primary and secondary arterial where it does not interfere with traffic function of the arterial	3
Sonoma County General Plan	Circulation and Transit Element	Policy CT-2v Policy CT-2x	During peak travel periods avoid parking on parallel arterials; discourage parking on primary arterials, especially during peak periods	5

Table 4.11-3

General Plan Goals, Objectives and Policies - Transportation

Adopted Plan Document	Document Section	Document Numeric Reference	Policy	Relevant Evaluation Criteria ¹
Marin Countywide Plan	Transportation Element	Objective T-1 Objective T-7 Policy T-7.1	Have a countywide transportation system that provides for the efficient movement of people and goods, and maintain the transportation system of west Marin county at a rural scale with only those road improvements that enhance safety	1,2,3,4,
Santa Rosa General Plan	Transportation and Circulation Element	Objective TCS-1a	Minimize through traffic in residential neighborhoods, avoid excessive traffic volumes and locate uses generating heavy traffic with access to arterial streets	1,2,6
Rohnert Park General Plan	Circulation Element	Principle 1	Land use decisions shall take into consideration potential traffic impacts	1-6
Cotati General Plan	Community Development Section	Policy 3.1.1	Reduce congestion on Old Redwood and Gravenstein Highways	2
Petaluma General Plan	Transportation Element	Policy 9	Land use decisions shall take into consideration potential traffic impacts	1-6
Sebastopol General Plan	Transportation Element	Policy 8	Place a higher priority on safety and pedestrian oriented design and scale, as opposed to traffic flow and speed	1,2,3
Sebastopol General Plan	Transportation Element	Policy 17 Program 17.1	Reduce through traffic on local streets and limit trucks to arterial and collector streets	6

Source: Harland Bartholomew and Associates, Inc., 1995

Notes:

1. The evaluation criteria are identified in Table 4.11-4.

EVALUATION CRITERIA WITH POINT OF SIGNIFICANCE

Table 4.11-4

Evaluation Criteria with Point of Significance- Transportation

Evaluation Criteria	As Measured By	Point of Significance	Justification
1. Will Project traffic cause congestion along access roads?	Percent increase in traffic along access road	Greater than 10% increase	Professional Judgment
2. Will lane closures due to Project construction cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?	a. Miles of lane closures not in compliance with Standard Transportation Procedures ¹ b. Duration and extent of lane closure	Greater than 0 miles Greater than 1 month over 1 mile segment	Cities of Santa Rosa, Cotati, Petaluma, Rohnert Park, and Sebastopol Public Works Departments; Counties of Marin and Sonoma Public Works Departments; California Department of Transportation, and Professional Judgment
3. Will Project construction traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Number of locations where there is ingress/egress of construction equipment onto a major roadway not in accordance with regulations ¹	Greater than 0 locations	Cities of Santa Rosa, Cotati, Petaluma, Rohnert Park, and Sebastopol Public Works Departments; Counties of Marin and Sonoma Public Works Departments; California Department of Transportation
4. Will Project construction traffic damage public or private roadbeds?	Number of miles of roadway which Project does not restore to existing conditions or better	Greater than 0 miles	Cities of Santa Rosa, Cotati, Petaluma, Rohnert Park, and Sebastopol Public Works Departments; Counties of Marin and Sonoma Public Works Departments; California Department of Transportation
5. Will there be inadequate parking for Project activities?	An on-street parking	Greater than 0 vehicles	Code requirements for Sonoma County. Code requirements for Cities of Santa Rosa, Cotati, Petaluma, Rohnert Park, and Sebastopol Public Works Departments
6. Will Project construction activities result in heavy vehicles on roadways not designated or suitable as truck routes?	Number of roadways traveled by Project heavy vehicles on non-designated truck routes without a Transportation Permit	Greater than 0 roadways	Cities of Santa Rosa, Cotati, Petaluma, Rohnert Park, and Sebastopol Public Works Departments; Counties of Sonoma and Marin; California Department of Transportation

Source: Harland Bartholomew & Associates, Inc., November, 1995.

Notes: 1 See Standard Traffic Control Procedures in Section 2.2.

METHODOLOGY

Traffic and circulation impacts associated with Project activities were evaluated against the criteria listed in Table 4.11-4. The affected regional roadway network, existing traffic volumes, public transit routes, and bicycle and pedestrian facilities were used as the basis for evaluation of impacts in the Project area. The regional roadway network and bicycle/pedestrian routes and standards were determined from General Plans and Congestion Management Plans for the respective jurisdictions. Existing transit service was determined from route schedules published by local and regional transit service providers. Existing traffic volumes were obtained from field observation completed during July and August, 1995, and from Sonoma and Marin Counties, local jurisdictions and Caltrans. Roadway miles affected by pipeline construction were determined from the *Alternative Projects Facilities Plans* (Parsons Engineering Science 1996). Construction impacts on traffic were estimated by the Project team engineers based on typical construction practices.

The construction of the Project alternatives can result in short-term increases in congestion associated with vehicle traffic and construction activities on the existing transportation network serving the Project area. Therefore, this evaluation focuses on construction-related transportation impacts. Temporary impacts to affected roads are assessed for the addition of worker and construction vehicles as well as construction related activities. Worker parking and construction staging areas are discussed for traffic impacts. Temporary road closures or access disruptions during pipeline construction have been identified. Detour routes will be defined as part of the Standard Transportation Procedures presented in Section 2.2. There are no permanent changes planned for the transportation network or its use after completion of construction. Therefore, Project construction impacts to the roadway system are not described utilizing the “level of service” methodology, since the Project will not generate additional traffic in the post-construction period.

Temporary lane closures on state highways, arterials, collectors, and local and rural streets were not considered significant if they will be limited to less than a month in any 1-mile section of road and alternative route/access and/or traffic control is provided.

Standard Traffic Control Procedures

The Standard Traffic Control Procedures are part of the Project measures adopted by the City and are discussed in Section 2.2. They detail typical encroachment construction permit provisions within the Project area road system rights-of-way. Elements of the Standard Traffic Control Procedures provide for: encroachment permits, transportation permits, alternative routes and detours, construction along roadways, construction across roadways, construction near schools, trenches, access, road damage, emergency vehicle

access, parking, oversize vehicles and equipment, construction hours, and ingress/egress of construction equipment onto a major roadway.

ENVIRONMENTAL CONSEQUENCES (IMPACTS) AND RECOMMENDED MITIGATION

No Action (No Project) Alternative

Impact: 11.1.1-6. Will the No Action Alternative impact transportation based on evaluation criteria 1 through 6?

Analysis: *No Impact; Alternative 1.*

There is no construction associated with this component, and continued discharge and irrigation will not increase traffic impacts.

Mitigation: No mitigation is needed.

Headworks Expansion Component

Table 4.11-5

Transportation Impacts by Component - Headworks Expansion

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
11.2.1. Will headworks expansion component traffic cause congestion along access roads?	Greater than 10% increase	Less than 10%	C, O&M	○
11.2.2. Will lane closures due to headworks expansion component cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?	a. Greater than 0 miles not in compliance with standard transportation procedures.	None	C	==
	b. Greater than 1 month over 1 mile segment	None	C	==
11.2.3. Will headworks expansion component construction traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Greater than 0 locations	None	C	==

Table 4.11-5

Transportation Impacts by Component - Headworks Expansion

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
11.2.4. Will headworks expansion component construction traffic damage public or private roadbeds?	Greater than 0 miles	None	C	==
11.2.5. Will there be inadequate parking for headworks expansion component activities?	Any on-street parking	None	C, O&M	==
11.2.6. Will headworks expansion component construction activities result in heavy vehicles on roadways not designated or suitable as truck routes?	Greater than 0 roadways	None	C	==

Source: Harland Bartholomew & Associates, Inc., 1996

Notes: 1. Type of Impact:

C Construction

2. Level of Significance codes:

○

Less than significant impact; no mitigation proposed

O&M Operation and Maintenance

==

No impact

Impact: 11.2.1. Will headworks expansion component traffic cause congestion along access roads?

Analysis: *Less than Significant; Alternatives 2, 3, 4, and 5.*

Installation of the new influent pumps at the headworks on Llano Road will involve little, if any, heavy construction equipment and few construction personnel.

Construction traffic is estimated to be a maximum of 20 trips a day. These trips will increase daily traffic by 1 percent. This is less than 10 percent of the existing average daily traffic on Llano Road.

As noted in Chapter 3, the operation and impacts of disposing of increased sludge production are addressed in the Santa Rosa Subregional Sludge Beneficial Use Project EIR (LSA 1991).

No Impact; Alternative 1.

Alternative 1 does not have a headworks expansion component.

Mitigation: No mitigation is proposed.

Impact: 11.2.2 through 6. Will construction and operation of the headworks expansion component cause traffic impacts based on evaluation criteria 2, through 6?

Analysis: *No Impact; All Alternatives.*

No lane closures will be required for construction of the headworks expansion.

Construction traffic will enter and leave the Laguna Plant via Llano Road. Because little heavy truck traffic is involved in the construction and because of the low levels of traffic currently on Llano Road, no safety hazards will be created at the entrance to the Laguna Plant off Llano Road. The City will comply with provisions outlined in any required construction permits in accordance with governing agency regulations and specifications.

The City is required and committed to restoring any damaged access roads to existing conditions or better.

Parking for construction personnel and new employees can be easily accommodated at the Laguna Plant.

The City is required to obtain all necessary Transportation Permits to operate oversize and heavy vehicles on the public right-of-way. Transportation Permits shall be obtained from the California Department of Transportation (Caltrans) for transportation along State Highways. In addition, Transportation Permits may be required in accordance with County and governing agency regulations and specifications. The City will follow the conditions and provisions outlined in these permits.

Alternative 1 does not have a headworks expansion component.

Mitigation: No mitigation is needed.

Urban Irrigation Component

Impact: 11.3.1-6. Will the urban irrigation component impact transportation based on evaluation criteria 1 through 6?

Analysis: *No Impact; All Alternatives.*

There is no construction associated with the urban irrigation component. Operation and maintenance of the irrigation systems with reclaimed water will not generate more traffic than operation and maintenance of the irrigation systems using their existing source of water. Therefore, there are no traffic impacts from the urban irrigation component.

Alternatives 1, 4, and 5 do not have an urban irrigation component.

Mitigation: No mitigation is needed.

Pipeline Component

Table 4.11-6

Transportation Impacts by Component - Pipelines

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
11.4.1. Will pipeline component traffic cause congestion along access roads?	Greater than 10% increase			
• Alt 2, 3, and 4		Greater than 10%	C	●
• Alt 5		Less than 10%	C	○
• All Alternatives		Less than 10%	O&M	○
11.4.2. Will lane closures due to pipeline component construction, cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?	a. Greater than 0 miles not in compliance with standard transportation procedures	None	C	○
• Alt 2, 3, 4, 5A	b. Greater than 1 month over 1 mile segment	Yes	C	●

Table 4.11-6

Transportation Impacts by Component - Pipelines

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
• Alt 1, 5B		None	C	--
11.4.3. Will pipeline component construction traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Greater than 0 locations	None	C	==
11.4.4. Will pipeline component construction traffic damage public or private roadbeds?	Greater than 0 miles	None	C	==
• Geysers pipeline		Damage if pipelines rupture	C O&M	●
• Bennett Valley Road and Fountaingrove Parkway pipelines		None	C	==
		Damage if pipelines rupture	O&M	○
• All other pipelines		None	C	==
		None	O&M	==
11.4.5. Will there be inadequate parking for pipeline component activities?	Any on-street parking	None	C	==
			O&M	==
11.4.6. Will pipeline component construction activities result in heavy vehicles on roadways not designated or suitable as truck routes?	Greater than 0 roadways	None	C	==

Source: Harland Bartholomew & Associates, Inc.,
November, 1996

Notes: 1. Type of Impact:
C Construction
O&M Operation and Maintenance
-- Not Applicable

2. Level of Significance codes:
● Significant impact before and after mitigation
○ Less than significant impact; no mitigation
== No impact

Impact: 11.4.1. Will pipeline component traffic cause congestion along access roads?

Analysis: Construction

Significant; Alternatives 2, 3, and 4.

Construction of pipelines will require both construction workers and heavy equipment. The major construction activities associated with installation of the pipelines that will increase congestion on access roads consist of the mobilization of construction equipment, disposal of excess excavated materials, delivery of gravel, asphalt, and water for pipeline trenches, pavement restoration, and soil compaction and dust control, deliveries of piping, and construction employees. Table 4.11-7 summarizes the daily peak activity of construction equipment and employee trips along major affected roadways and reservoir access roads where the increase in traffic is greater than 10 percent.

Table 4.11-7

Estimated Construction Traffic Impacts - Pipelines

Affected Roadway Segment	Daily Trips - Equipment Traffic	Daily Trips - Employee Traffic	Existing Daily Traffic	Percent Increase in Daily Traffic
Pine Flat Road	60	135	202	97%
Chalk Hill Road	80	45	766	16%
Pleasant Avenue	80	45	259	48%
Trenton/Healdsburg Road	80	45	1,168	11%
Spring Hill Road	80	45	806	16%
Cannon Lane	80	45	70	179%
Old Lakeville No. 3 (north)	80	45	95	132%
Sonoma Mountain Road	80	45	145	86%
Walker Road	80	45	50	250%
Carroll Road	80	45	130	96%
Martinoni Road	80	45	85	147%
Private Driveways to Reservoir Sites	80	45	10	>1,000%
Locations where Irrigation Distribution Pipeline Segments have less than 1,250 ADT	80	45	<1,250	10%

Source: Harland Bartholomew & Associates, Inc., November, 1995

Notes: ADT = Average Daily Traffic

Less than Significant; Alternative 5A.

The pipeline construction traffic associated with this alternative is less than 10 percent of the existing average daily traffic.

No Impact; Alternatives 1 and 5B.

Alternatives 1 and 5B do not have a pipeline component.

Operation and Maintenance

Less than Significant; Alternatives 2, 3, 4, and 5A.

Operation of the pipelines will generate less than 10 trips per month to any area; this impact is less than a 10 percent change for all affected roadways.

No Impact; Alternatives 1 and 5B.

Alternatives 1 and 5B do not have a pipeline component.

Mitigation: *Alternatives 2, 3, and 4.* No feasible mitigation has been identified.

Alternatives 1 and 5. No mitigation is proposed.

After

Mitigation: *Significant after Mitigation; Alternatives 2, 3, and 4.*

Alternative routes and/or detours will be identified where applicable to be determined through the Standard Traffic Control Procedures, described in Section 2.2 as Measures 2.2.15 to 2.2.24 adopted as part of the Project. No feasible mitigation for this impact exists along Pine Flat Road, Cannon Lane, Sonoma Mountain Road, Walker Road, Carroll Road, Martinoni Road, and the private driveways to the reservoir sites.

Impact: 11.4.2. Will lane closures due to pipeline component construction cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?

Analysis: *Significant; Alternatives 2, 3, 4, and 5A.*

The major construction activities associated with installation of the pipelines that will cause lane closures consist of the mobilization of construction equipment; stockpiling lengths of piping along pipeline alignments; delivery of gravel, asphalt, and water for pipeline trenches; pavement restoration; soil compaction and dust control; breaking and removing pavement; excavation of pipeline trench; and installation of pipe sections.

Construction along pipeline alignments will cause partial lane closures, one-lane closure, or in the case of the geysers pipeline, closure of the whole road. The City has agreed to conduct construction in accordance with existing regulations as outlined under the Standard Traffic Control Procedures, Measures 2.2.15 through 2.2.24.

As part of the Standard Traffic Control Procedures, the City has adopted the following:

2.2.16. Emergency response vehicles will not be impeded. The City will provide advance notice to emergency service providers and coordinate alternate response routes during construction.

2.2.17. Maintain maximum number of open lanes on roadways. The City has committed to keeping at least one lane of through traffic open whenever feasible.

2.2.18. Jack and bore construction of major highways. To avoid disrupting traffic and delaying commerce, the City will jack and bore pipelines under major highways, railroads, and aqueducts. All jack and bore crossings are listed in Chapter 2.

2.2.20. Access to businesses and residences. The City will notify businesses and residences in advance of scheduled construction. The city will also maintain access to businesses and residences during pipeline construction.

Temporary lane closures will occur for longer than a month on several sections of road longer than one mile (see Table 4.11-8a). Table 4.11-8b provides a breakdown of the roadway miles affected by each alternative.

The public transit routes affected by pipeline construction are summarized in Table 4.11-8c for each alternative. Lane closures, due to Project construction will cause transit delays along these transit routes. With implementation of the Standard Traffic Control Procedures, these impacts are considered to be less than significant.

Table 4.11-8a

Estimated Duration of Pipeline Construction

Affected Roadway Segment	Duration of Construction (Working Days) ¹	Number of Lanes	Existing Daily Traffic	Roadway Classification (Type)
Pine Flat Road ²	53 ²	1	202	Rural
State Highway 128	31	2	2,450	Arterial
Chalk Hill Road	31	2	766	Collector
Pleasant Avenue	31	2	259	Collector
Shiloh Road	31	2	4,612	Arterial
Slusser Road	31	2	1,364	Collector
Laguna Road	31	2	1,993	Collector
Trenton/Healdsburg Road	36	2	1,168	Collector
Eastside Road	36	2	1,853	Arterial
Bloomfield Road	31	2	1,296	Collector
State Highway 116 east of Stony Point	31	2	18,100	Arterial
Petaluma-Valley Ford Road	46	2	4,371	Arterial
Roblar Road	31	2	1,032	Arterial
Carroll Road	31	1	130	Rural
West Railroad Avenue	31	2	1,733	Collector
Old Redwood Hwy. south of Railroad	31	4	11,120	Arterial
Stony Point north of Roblar Road	31	2	5,039	Arterial
Above Road	31	2	11,211	Arterial
Frates Road	31	2	8,590	Arterial
Ely Road south of Frates Road	31	2	4,953	Arterial
Hwy. 116 north of Lakeville Road	31	2	15,600	Arterial
Hwy. 116 south of Adobe Road	31	2	3,000	Arterial
Cannon Lane	31	2	70	Rural
Lakeville Road	36	2	16,664	Arterial
State Highway 37	36	4	35,500	Arterial
State Highway 121	36	4	16,300	Arterial

Source: Harland Bartholomew & Associates, Inc., 1995

Notes:

- 1 Lists only road segments where construction of 1 mile segment exceeds 1 month.
- 2 An additional 6 months time is needed for completion of reconstruction/widening/stabilization or portions of Pine Flat Road prior to pipeline construction. This time is not included in the duration of construction estimate.

Table 4.11-8b

Roadway Miles Affected

Alternative		State Route	Arterial	Collector	Total
2A	S. Co. -Tolay Extended	2.5	43.5	30.0	76.0
2B	S. Co. -Adobe/Lakeville	2.5	43.5	30.5	76.5
2C	S. Co. -Tolay Confined	2.5	43.5	29.0	75.0
2D	S. Co. -Lakeville/Sears Point	6.0	43.5	30.5	80.0
3A	W. Co. -Two Rock	5.5	34.0	39.0	78.5
3B	W. Co. -Bloomfield	6.0	34.0	44.5	84.5
3C	W. Co. -Carroll Road	5.5	34.0	39.0	78.5
3D	W. Co. -Valley Ford	5.5	34.0	39.0	78.5
3E	W. Co. -Huntley	5.5	34.0	39.0	78.5
4	Geysers Steamfield Recharge	3.5	9.5	29.5	42.5
5A	Discharge - Russian River	0.5	10.5	5.0	16.0
5B	Discharge - Laguna	0	0	0	0

Source: Harland Bartholomew & Associates, Inc., 1995

Notes:

1. Based upon roadways potentially disrupted by construction of transmission and distribution pipelines within public rights-of-way. Miles are one-way route miles. Roadway classification is based upon local general plan and Caltrans designations.

Lane closures due to Project construction will be more problematic along State Routes, Arterials, and Collectors.

Table 4.11-7d shows the number of working days and total duration in calendar years required to install the pipeline segments (by alternative) where construction exceeds a month for a 1-mile section of road.

Table 4.11-8c

Bus Routes Affected¹

Alternative	Golden Gate Transit	Sonoma County Transit	Santa Rosa City Bus	Other	Total Routes Affected
2A S. Co. - Tolay Extended	76, 78	20, 20E, 40 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	21
2B S. Co. - Adobe/Lakeville	76, 78	20, 20E, 40 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	21
2C S. Co. - Tolay Confined	76, 78	20, 20E, 40 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	21
2D S. Co. - Lakeville/Sears Point	76, 78, 90	20, 20E, 40 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	22
3A W. Co. - Two Rock	78	20, 20E, 26 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	20
3B W. Co. - Bloomfield	78	20, 20E, 26 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	20
3C W. Co. - Carroll Road	78	20, 20E, 26 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	20
3D W. Co. - Valley Ford	78	20, 20E, 26 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	20
3E W. Co. - Huntley	78	20, 20E, 26 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	MTA Coast Bus	20
4 Geysers Recharge	None	, 20E, 26 42, 44, 46, 48, 60, 62, 66, 64	2, 3, 5, 6, 7, 8, 9, 12	None	18
5A Discharge - Russian River	None	20E, 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	None	16
5B Discharge - Laguna	None	20E, 42, 44, 46, 48, 60, 62, 64	2, 3, 5, 6, 7, 8, 9, 12	None	16

Source: Harland Bartholomew & Associates, Inc., based upon bus route timetables/maps for the following agencies: Golden Gate Transit, June 1995; Sonoma County Transit, December 1994; Santa Rosa City Bus, July 1994; Petaluma Transit, May 1995; Sebastopol Transit Service, September 1993; MTA Coast Bus, March 1995.

Notes: 1. Bus routes operating along roadways potentially disrupted by construction of transmission and distribution pipelines within public rights-of-way.

Table 4.11-8d

Total Length of Piping and Duration of Construction

Alternative ¹	Miles	Duration of Construction (weeks ²)	Calendar Years ³
2A	42.0	44.8	1.9
2B	36.5	35.5	1.9
2C	35.1	37.7	1.9
2D	42.1	43.7	1.9
2E	37.9	35.6	1.9
3A	24.6	25.6	1.7
3B	23.8	24.9	1.7
3C	26.1	27.4	1.7
3D	26.2	27.4	1.7
3E	20.7	20.6	1.7
3F	26.3	25.4	1.7
4	35.4	66.1	2.4
5A	7.4	36.4	1.0

Source: Parsons Engineering Science, Inc. and Harland Bartholomew and Associates, Inc., 1996

Note:

- 1 All Alternative 2 and 3 projects include piping for Sebastopol irrigation. It is assumed that 4 work crews will be engaged simultaneously at different locations for any of the Alternative 2 or 3 projects, 3 crews for the Alternative 4 Project, and 1 crew for the Alternative 5a Project.
- 2 Based on 7 working days per week and 10 hours per workday.
- 3 Based on 250 working days per calendar year. Time includes actual construction activity only. Alternative 4 estimate includes an additional 6 months for stabilization of portions of Pine Flat Road.

No Impact; Alternatives 1 and 5B.

Alternatives 1 and 5B do not have a pipeline component.

Mitigation: *Alternatives 2, 3, 4, and 5A.* No feasible mitigation has been identified.

Alternatives 1 and 5B. No mitigation is needed.

After

Mitigation: *Significant after Mitigation; Alternatives 2, 3, 4, and 5A.*

Impact: 11.4.3 and 6. Will construction or operation of the pipeline component have traffic impacts based on evaluation criteria 3 and 6?

Analysis: *No Impact; All Alternatives.*

Construction of the pipelines will occur along public roadways, requiring construction equipment to enter and leave the construction zone. The City has agreed to conduct construction in accordance with existing regulations as outlined previously under the Standard Traffic Control Procedures. These regulations require the City to obtain an Encroachment Permit and Transportation Permit from the appropriate agency to minimize hazards due to construction traffic entering and leaving the construction area.

Heavy vehicles used in the construction process will travel on non-designated truck routes. However, the City has agreed to conduct construction in accordance with existing regulations as outlined previously under the Standard Traffic Control Procedures. These regulations require the City to obtain a Transportation Permit prior to using non-designated roadways; this Permit controls signage, timing, or the need for flag persons along the roadway.

The construction of the Project alternatives will result in short-term impacts to both bicycle and pedestrian facilities. There are no permanent changes planned for these facilities after completion of construction. Further, all affected facilities will be improved as a result of construction due to roadway and sidewalk resurfacing. The Standard Traffic Control Procedures presented in Section 2.2 detail specific Encroachment Permit requirements for construction within the public right-of-way, including bicycle and pedestrian facilities. Because construction will be in accordance with applicable regulation and permits, no impact to pedestrian or bicycle safety has been identified.

Alternatives 1 and 5B do not have a pipeline component.

Mitigation: No mitigation is needed.

Impact: 11.4.4. Will the pipeline component cause damage to public or private roadbeds?

Analysis: *Operation and Maintenance*

Significant; Alternative 4.

While operation will not damage roadbeds, pipeline failure could be caused by an earthquake and could damage roads that the pipe is located

in. The geysers pipeline crosses faults on Pine Flat Road and Chalk Hill Road.

Less than Significant, Alternatives 2 and 3

Operation will not damage public roads. Potential pipe ruptures along Bennett Valley Road or Fountaingrove Parkway will probably not damage the roadbed because the pipe is only 12" in diameter and damage to the road from the earthquake will be more severe than damage from the broken pipe.

No Impact; Alternatives 1 and 5

No pipelines in Alternative 5A cross an active fault line which will subject pipelines to potential rupture.

Alternatives 1 and 5B do not have a pipeline component.

Construction

No Impact; All Alternatives.

Though heavy vehicles used in the construction process will damage Project area roadways, the City has agreed to restore all affected roadways to existing conditions or better as required under the Standard Traffic Control Procedures.

Alternatives 1 and 5B do not have a pipeline component.

Mitigation: *Alternative 4.* No feasible mitigation has been identified.

Alternatives 2, 3, and 5. No mitigation is needed.

Impact 11.4.5. Will there be inadequate parking for pipeline component activities?

Analysis: *No Impact; All Alternatives.*

Standard Traffic Control Procedures 2.2.22, Park within Construction Easements, requires that all construction equipment and construction worker vehicles be parked within the construction easements.

Operation and maintenance parking for pipelines will be accommodated within the rights-of-way.

Alternatives 1 and 5B do not have a pipeline component.

Mitigation: No mitigation is proposed.

Storage Reservoir Component

Table 4.11-9

Transportation Impacts by Component - Storage Reservoirs

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
11.5.1. Will storage reservoir component construction traffic cause congestion along access roads? <ul style="list-style-type: none"> Alt 2 & 3 Alt 2 & 3 Alt 1, 4 & 5 	Greater than 10% increase	Greater than 10% Less than 10% None	C O&M C	● ○ ==
11.5.2. Will lane closures due to storage reservoir component construction, cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?	a. Greater than 0 miles not in compliance with standard transportation procedures b. Greater than 1 month over 1 mile segment	None None	C C	== ==
11.5.3. Will storage reservoir component construction traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Greater than 0 locations	None	C	==
11.5.4. Will storage reservoir component construction traffic damage public or private roadbeds?	Greater than 0 miles	None	C, O&M	==
11.5.5. Will there be inadequate parking for storage reservoir component activities?	Any in-street parking.	None	C, O&M	==
11.5.6. Will storage reservoir component construction activities result in heavy vehicles on roadways not designated or suitable as truck routes?	Greater than 0 roadways	None	C	==

Source: Harland Bartholomew & Associates, Inc. 1996

Notes: 1. Type of Impact:
C Construction
O&M Operation and Maintenance

2. Level of Significance codes:
● Significant impact before and after mitigation
○ Less than significant impact; no mitigation proposed
== No impact

Impact: 11.5.1. Will storage reservoir component traffic cause traffic congestion along access roads?

Analysis: *Construction*

Significant; Alternatives 2 and 3.

Reservoir construction will take up to 500 days (about 17 months) and will likely occur during the spring, summer, and fall periods because of the longer days and better weather. Construction traffic will consist of travel by workers to the site and transportation of equipment and construction materials onto the site. Truck trips to and from the site will also be required for import of fill. Table 4.11-10 summarizes the estimated construction traffic.

Construction workers generally travel in off-peak periods, starting work by 7:00 a.m., before the typical a.m. commuter peak hour, which generally occurs between 7:00 a.m. and 9:00 a.m., and stopping work by 3:00 p.m., before the p.m. commuter peak hour, which generally occurs between 4:00 p.m. and 6:00 p.m.. Even if two shifts were hired, employee trips will not tend to overlap peak commute periods. Thus, the work trips generated by construction workers will not impact peak hour traffic flows. However, the number of trips generated, especially the number of truck trips, will cause substantial congestion on access roads throughout the day.

The major construction activities associated with the reservoirs that will increase congestion on access roads consist of the mobilization of construction equipment, clearing of dam and reservoir area, stripping of the dam foundation area, dam foundation excavation, earthwork fill placement, tunnel construction (if necessary), construction of appurtenant structures, and construction employees. Table 4.11-10 summarizes the daily peak activity of construction equipment and employee trips along major affected roadways and reservoir access roads where the increase in traffic is greater than 10 percent.

The construction of the storage reservoirs will result in the transportation impacts associated with hauling materials. The total truck trips and total days of hauling are summarized in Table 4.11-12 for each reservoir.

Table 4.11-11 summarizes the daily peak activity of construction equipment and employee trips along haul routes where the increase in traffic is greater than 10 percent.

Table 4.11-10

Estimated Construction Traffic¹ - Reservoirs

Affected Roadway Segment	Daily Trips - Equipment Traffic	Daily Trips - Employee Traffic	Existing Daily Traffic	Percent Increase in Daily Traffic
Cannon Lane	100	230	70	Greater than 400%
Old Lakeville No. 3 (north)	100	230	95	Greater than 300%
Sonoma Mountain Road	100	230	145	Greater than 200%
Walker Road	100	230	50	Greater than 600%
Carroll Road	100	230	130	Greater than 200%
Martinoni Road	100	230	85	Greater than 300%
Private Driveways to Reservoir Sites	100	230	10	Greater than 1,000%
Fallon Two Rock Road	100	230	400	Greater than 80%
State Highway 116 south of Adobe Road	100	230	3,000	11%

Source: Harland Bartholomew & Associates, Inc.
November, 1995

Notes:

1 Lists only roadway segments where impact is greater than 10%.

Table 4.11-11

Estimated Construction Traffic¹ - Haul Routes

Affected Roadway Segment	Daily Trips - Importation Traffic	Existing Daily Traffic	Percent Increase in Daily Traffic
Cannon Lane	100	70	Greater than 40%
Sonoma Mountain Road	100	145	Greater than 60%
Walker Road	100	50	200%
Carroll Road	100	130	Greater than 70%
Martinoni Road	100	85	Greater than 100%
Private Driveways to Reservoir Sites	100	10	Greater than 1,000%
Fallon Two Rock Road	100	400	20%

Source: Harland Bartholomew & Associates, Inc.
November, 1995

Notes:

1 Lists only roadway segments where impact is greater than 10%.

No Impact; Alternatives 1, 4, and 5.

These alternatives do not have a storage reservoir component.

Operation and Maintenance

Less than Significant; Alternatives 2 and 3.

Operation and maintenance of the storage reservoirs will generate fewer than 20 trips per month. These trips are less than 10 percent of the existing traffic on the primary access road.

No Impact; Alternatives 1, 4, and 5.

These alternatives do not have a storage reservoir component.

Mitigation: *Alternatives 2 and 3.* No feasible mitigation has been identified.

Alternatives 1, 4, and 5. No mitigation is needed.

Table 4.11-12

Reservoir Construction Materials Importation Volumes, Haul Distance from Quarries, Truck Trips, Days of Haulage¹⁾

Reservoirs	Valley Ford	Carroll Road	Bloomfield	Huntley	Two Rock	Adobe Road	Lakeville	Tolay Extended	Tolay Confined	Sears Point	Assumed Quarry Source
Filter/Drain Material											
Volume (CY) (5)	144,000	123,000	189,000	180,000	98,000	180,000	47,000	96,000	430,000	100,000	San Rafael Rock
Haul Truck Trips (2)	9,800	8,200	11,267	10,667	6,533	12,000	3,133	6,533	30,000	6,667	San Rafael
Average Haul Distance (3) (5) (From Quarry)	36	35	34	32	28	23	18	20	20	16	
Riprap Rock											
Volume (CY) (5)	85,000	54,000	79,000	70,000	39,000	68,000	18,000	32,000	139,000	37,000	Syar
Haul Truck Trips (2)	5,417	4,500	6,583	5,833	3,250	6,867	1,500	2,067	11,583	3,083	Lake Herman
Average Haul Distance (3) (5) (From Quarry)	51	50	49	48	45	36	26	28	29	23	
Downstream Slope Protection Rock											
Volume (CY) (5)	27,000	24,000	33,000	32,000	18,000	33,000	7,000	12,000	56,000	14,000	Syar
Haul Truck Trips (2)	2,250	2,000	2,750	2,667	1,500	2,750	583	1,000	4,583	1,187	Lake Herman
Average Haul Distance (3) (5) (From Quarry)	51	50	49	48	45	36	26	29	29	23	
Moisture Barrier											
Volume (CY) (5)	None	None	None	None	None	None	None	None	None	190,000	San Rafael Rock
Haul Truck Trips (2)										12,667	San Rafael

Table 4.11-12

Reservoir Construction Materials Importation Volumes, Haul Distance from Quarries, Truck Trips, Days of Haulage¹⁾⁽

Reservoirs	Valley Ford	Carroll Road	Bloomfield	Huntley	Two Rock	Adobe Road	Lakeville	Tolay Extended	Tolay Confined	Sears Point	Assumed Quarry Source
Average Haul Distance (3) (5) (From Quarry)										18	
Bentonite Clay											
Volume (CY) (5)	30,400	None	44,000	None	None	None	None	None	None	None	Vallejo Rail Yard
Haul Truck Trips(2)	2,027	--	2,933								
Average Haul Distance (3) (5) (From Quarry)	50	--	50								
Total Truck Trips	17,267	14,700	20,600	19,167	11,283	20,417	5,217	10,200	48,167	23,583	
Total Days of Haulage (4)	194	147	236	192	113	204	52	102	462	236	

Source: Parsons Engineering Science, Inc., 1996

- (1) All Data Based on 1% Project.
- (2) Truck Haul Trips Based on 15 CY/Truck for Filter/Drain Material and Moisture Barrier Material and 12 CY/Truck for Rock Materials
- (3) Truck Haul Distance Based on Distance from Assumed Quarries to Reservoir Sites
- (4) Working Days of Haulage Based on 100 Truck Trips per Day.
- (5) Volumes of Import Materials, and Distance to Individual Quarries, Provided by Rust Environment & Infrastructure.

Impact: **11.5.2-6. Will the construction or operation of the storage reservoir component have traffic impacts based on evaluation criteria 2 through 6?**

Analysis: *No Impact; All Alternatives.*

No lane closures will be required for reservoir construction.

Construction of the storage reservoirs and associated facilities will include hauling of heavy equipment to the construction site, hauling of rock to the site, and commute trips by the construction crew. This activity will cause congestion and safety concerns at the access road intersections and interfere with local residential roadway access. However, the City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These procedures require the City to obtain an Encroachment Permit and Transportation Permit to regulate ingress and egress from the construction site, thus reducing any potential hazards.

There will not be any parking impacts associated with construction of the reservoirs. Sufficient land exists at each site within the designated construction zone to accommodate all parking needs during construction.

Construction or maintenance operations will result in heavy vehicles on roadways not designated or suitable as truck routes. However, the City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These procedures require the City to obtain a Transportation Permit prior to using non-designated roadways; this Permit controls signage, timing, and the need for flag persons along the roadway.

Heavy vehicles used in the construction process will damage Project area roadways. The City has agreed to restore all roadways, public and private, to existing conditions or better.

Alternatives 1, 4, and 5 do not have a storage reservoir component.

Mitigation: No mitigation is needed.

Pump Station Component

Intermediate pump stations along the storage transmission and irrigation distribution pipelines will be constructed on parcels adjacent to public roads and connected to the pipelines in the public right-of-way. Electrical services will need to be provided to all proposed pump stations. Although most of the pump stations can be served from existing

electrical distribution lines running along public right-of-ways, new electric distribution lines and new substations will need to be constructed for some pump stations. The transportation impacts associated with pump stations are included in Table 4.11-13.

Table 4.11-13

Transportation Impacts by Component - Pump Stations

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
11.6.1. Will pump station component traffic cause congestion along access roads?	Greater than 10% increase	Less than 10%	C, O&M	○
11.6.2. Will lane closures due to pump station component construction cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?	a. Greater than 0 miles not in compliance with standard transportation procedures	None	C	==
	b. Greater than 1 month over 1 mile segment	None	C	==
11.6.3. Will pump station component construction traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Greater than 0 locations	None	C, O&M	==
11.6.4. Will pump station component construction traffic damage public or private roadbeds?	Greater than 0 miles	None	C, O&M	==
11.6.5. Will there be inadequate parking for pump station component activities?	Any on-street parking	None	C, O&M	==
11.6.6. Will pump station component construction activities result in heavy vehicles on roadways not designated or suitable as truck routes?	Greater than 0 roadways	None	C, O&M	==

Source: Harland Bartholomew & Associates, Inc., 1996

Notes: 1. Type of Impact:

C Construction

O&M Operation and Maintenance

2. Level of Significance codes:

○ Less than significant impact; no mitigation proposed

== No impact

Impact: 11.6.1. Will the pump station component cause traffic congestion along access roads?

Analysis: *Less than Significant; Alternatives 2, 3, and 4.*

Construction of pump stations will require both construction workers and heavy equipment. The major construction activities associated with the pump stations that will increase congestion on access roads consist of the mobilization of construction equipment, construction of new electrical substations and polelines to serve some pump stations, construction of pump station buildings, installation of mechanical and electrical equipment, installation of above-grade steel storage tanks, and construction employees. Maximum construction trips will be 24 trips per day. The daily peak activity of construction equipment and employee trips along major affected roadways is not expected to increase traffic greater than 10 percent.

Operation and maintenance of the pump stations will generate less than 20 trips per month. These trips are less than 10 percent of existing traffic on the access roads.

No Impact; Alternatives 1 and 5.

Alternatives 1 and 5 do not have a new pump station component.

Mitigation: No mitigation is proposed.

Impact: 11.6.2 - 6. Will construction and operation of the pump station component have traffic impacts based on evaluation criteria 2, 3, 4, 5 and 6?

Analysis: *No Impact; All Alternatives.*

Most pump stations are located on newly purchased small lots adjacent to public roads, and construction will not require closure of part or all of one lane of traffic. Some of the new electric distribution lines will run along a public road for several thousand feet, and construction will require closure of part or all of one lane of traffic. Construction of the Geysers pump stations and substation along Pine Flat Road will require closure of Pine Flat Road for short periods. However, the City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These procedures require access to be provided for residents and emergency vehicles and to minimize the disruption to through-traffic.

Construction of the pump stations will include hauling of heavy equipment and materials to the construction site and commute trips by the construction crew. This activity could cause safety concerns at the construction access points to the public road. However, the City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These procedures require the City to obtain an Encroachment Permit and Transportation Permit to regulate ingress and egress from the construction site, thus reducing any potential hazards.

Heavy vehicles used in the construction process will damage Project area roadways. The City has agreed to restore all roadways, public and private, to existing conditions or better.

Standard Traffic Control Procedures 2.2.22, Park within Construction Easements, requires that all construction equipment and construction worker vehicles be parked within the construction easements.

Heavy vehicles used in the construction process will travel on non-designated truck routes. However, the City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These procedures require the City to obtain a Transportation Permit prior to using non-designated roadways; this Permit controls signage, timing, and the need for flag persons along the roadway.

Alternatives 1 and 5 do not have a new pump station component.

Mitigation: No mitigation is needed.

Agricultural Irrigation Component

Table 4.11-14

Transportation Impacts by Component- Agricultural Irrigation

Evaluation Criteria	Point of Significance	Impact	Potential Type of Impact ¹	Level of Significance ²
11.7.1. Will agricultural irrigation component traffic cause congestion along access roads?	Greater than 10% increase	Less than 10%	C, O&M	○
11.7.2. Will lane closures due to agricultural irrigation component construction, cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?	Greater than 0 miles Greater than 1 month over 1 mile segment	None None	C C	== ==
11.7.3. Will agricultural irrigation component construction traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Greater than 0 locations	None	C, O&M	==
11.7.4. Will agricultural component construction traffic damage public or private roadbeds?	Greater than 0 miles	None	C, O&M	==
11.7.5. Will there be inadequate parking for agricultural irrigation component activities?	Any on-street parking.	None	C, O&M	==
11.7.6. Will agricultural irrigation component construction activities result in heavy vehicles on roadways not designated or suitable as truck routes?	Greater than 0 roadways	None	C, O&M	==

Source: Harland Bartholomew & Associates, Inc., 1996

Notes: 1. Type of Impact:

C Construction

O&M Operation and Maintenance

2. Level of Significance codes:

○ Less than significant impact; no mitigation proposed

== No impact

Impact: 11.7.1. Will agricultural irrigation component cause traffic congestion along access roads?

Analysis: *Less than Significant; Alternatives 2 and 3.*

Construction of agricultural irrigation areas will require both construction workers and heavy equipment. The major construction activities associated with agricultural irrigation that will increase congestion on roads consists of the mobilization of construction equipment and construction employees. The daily peak activity of construction equipment and employee trips along major affected roadways is not expected to increase traffic greater than 10 percent. Maximum daily construction trips will be 24 trips per day.

Operation and maintenance of the agricultural irrigation component will generate a small number of additional trips. These trips are estimated to be less than 10 percent of existing traffic on the access roads.

No Impact; Alternatives 1, 4, and 5.

Alternatives 1, 4, and 5 do not have an agricultural irrigation component.

Mitigation: No mitigation is proposed.

Impact: 11.7.2-6. Will operations and maintenance of the agricultural irrigation component have traffic impacts based on evaluation criteria 2 through 6?

Analysis: *No Impact; All Alternatives.*

No new pipelines are required within the public right-of-way, and therefore, no lane closures are expected with the construction of agricultural irrigation areas.

Components in a typical agricultural field layout can be accommodated on the irrigated parcel.

Heavy vehicles used in the construction process could damage affected roadways. The City has agreed to restore all roadways, public and private, to existing conditions or better. No traffic hazards are expected.

Adequate construction parking can be provided on site. Parking for personnel involved in operation of irrigation systems on private farms or

ranches will be accommodated on private property, similar to existing farming activity.

Construction and operation of the agricultural irrigation systems will utilize heavy equipment in the same manner as the existing farms and ranches.

Alternatives 1, 4, and 5 do not have an agricultural irrigation component.

Mitigation: No mitigation is needed.

Geysers Steamfield Component

Table 4.11-15

Transportation Impacts by Component - Geysers Steamfield

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
11.8.1. Will geysers steamfield component traffic cause congestion along access roads?	Greater than 10% increase	Greater than 10% Less than 10%	C O&M	● ○
11.8.2. Will lane closures due to geysers steamfield component construction, cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?	a. Greater than 0 miles not in compliance with standard transportation procedures b. Greater than 1 month over 1 mile segment	None None	C C	== ==
11.8.3. Will geysers steamfield component construction traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Greater than 0 locations	None	C	==
11.8.4. Will geysers steamfield component construction traffic damage public or private roadbeds?	Greater than 0 miles	None	C, O&M	==
11.8.5. Will there be inadequate parking for geysers steamfield component activities?	Any on-street parking	None	C, O&M	==

Table 4.11-15

Transportation Impacts by Component - Geysers Steamfield

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
11.8.6. Will geysers steamfield component construction activities result in heavy vehicles on roadways not designated or suitable as truck routes?	Greater than 0 roadways	None	C, O&M	==

Source: Harland Bartholomew & Associates, Inc., 1996

Notes: 1. Type of Impact:

C Construction

O&M Operation and Maintenance

2. Level of Significance codes:

● Significant impact before and after mitigation

○ Less than significant impact; no mitigation proposed

== No impact

Impact: 11.8.1. Will the Geysers steamfield component cause traffic congestion along access roads?

Analysis: *Construction*

Significant; Alternative 4.

Construction of the geysers steamfield component will require both construction workers and heavy equipment. The major construction activities associated with the geysers steamfield that will increase congestion on access roads are mobilization of construction equipment, construction of the geysers tank site, delivery of storage tanks, and construction employees. The daily peak activity of construction equipment and employee trips is expected to generate 195 trips per day along Pine Flat Road, greater than 10 percent of existing traffic.

No Impact; Alternatives 1, 2, 3, and 5.

Alternatives 1, 2, 3, and 5 do not have a geysers steamfield component.

Operation and Maintenance

Less than Significant; Alternative 4.

Operation and maintenance of the geysers steamfield component will generate fewer than 20 trips per month on Pine Flat Road. These trips are estimated to be less than 1 percent of existing traffic on the access roads.

No Impact; Alternatives 1, 2, 3, and 5.

Alternatives 1, 2, 3, and 5 do not have a geysers steamfield component.

Mitigation: *Alternative 4.* No feasible mitigation has been identified.

Alternatives 1, 2, 3, and 5. No mitigation is needed.

Impact: 11.8.2-6. Will construction and operation of the geysers steamfield component have traffic impacts based on evaluation criteria 2 through 6?

Analysis: *No Impact; All Alternatives.*

Some public and/or private roadways may be temporarily closed during construction. The City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These procedures require access to be provided for residents and emergency vehicles and to minimize the disruption to through-traffic.

Heavy vehicles used in the construction or operation process could damage Project area roadways. The City has agreed to restore all roadways, public and private, to existing conditions or better.

No traffic hazards are expected.

Parking for construction and operation personnel could be accommodated within the geysers area.

Heavy vehicles used in the construction process could travel on non-designated truck routes. However, the City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These procedures require the City to obtain a Transportation Permit prior to using non-designated roadways; this Permit controls signage, timing, and the need for flag persons along the roadway.

Alternatives 1, 2, 3, and 5 do not have a geyser steamfield component.

Mitigation: No mitigation is needed.

Discharge Component

Table 4.11-16

Transportation Impacts by Component - Discharge

Evaluation Criteria	Point of Significance	Impact	Type of Impact ¹	Level of Significance ²
11.9.1. Will the discharge component traffic cause congestion along access roads?	10% increase in traffic	Less than 10%	C, O&M	○
11.9.2. Will lane closures due to discharge component construction, delay traffic, delay transit services, restrict access, increase hazards, and reroute traffic, including emergency vehicle?	a. Greater than 0 miles not in compliance with standard transportation procedures	None	C	==
	b. Greater than 1 month over 1 mile segment	None	C	==
11.9.3. Will discharge component traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Greater than 0 locations	None	C	==
11.9.4. Will discharge component construction traffic damage public or private roadbeds?	Greater than 0 miles	None	C, O&M	==
11.9.5. Will there be inadequate parking for discharge component activities?	Any on-street parking	None	C, O&M	==
11.9.6. Will discharge component construction activities result in heavy construction vehicles on roadways not designated or suitable as truck routes?	Greater than 0 roadways	None	C, O&M	==

Source: Harland Bartholomew & Associates, Inc., 1996

Notes: 1. Type of Impact:

C Construction

O&M Operation and Maintenance

2. Level of Significance:

○ Less than significant impact; no mitigation proposed

== No impact

Impact: 11.9.1. Will the discharge component cause traffic congestion along access roads?

Analysis: *Less than Significant; All Alternatives.*

Construction of the outfall on the Russian River will require both construction workers and heavy equipment. The major construction activities associated with the outfall that will increase congestion on access roads are mobilization of construction equipment, excavation and construction of the outfall, and construction employees. The daily peak activity of construction equipment and employee trips is expected to generate less than 36 trips per day on affected roadways, less than 10%.

Operation and maintenance of discharge facilities will generate fewer than 20 trips per month. These trips are less than 10% of existing traffic on the access roads.

Mitigation: No mitigation is proposed.

Impact: 11.9.2 - 6. Will construction and operation of the discharge component have traffic impacts based on evaluation criteria 2 through 6?

Analysis: *No Impact; All Alternatives.*

The discharge facilities to be constructed along the Russian River will be on private property and no road closures will be required.

The construction of the discharge facilities will include hauling of heavy equipment to the construction site and commute trips by the construction crew. This activity could cause congestion and safety concerns at the access road intersection and interfere with local residential roadway access. However, the City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These regulations require the City to obtain an Encroachment Permit to regulate ingress and egress from the construction site, thus reducing any potential hazards.

Heavy vehicles used in the construction or operation process could damage Project area roadways. The City has agreed to restore all roadways, public and private, to existing conditions or better.

There should not be any parking impacts associated with construction of the discharge facilities. Sufficient land exists within the designated construction zone to accommodate all parking needs during construction of the Project.

Heavy vehicles used in construction or operation could travel on non-designated truck routes. However, the City has agreed to conduct construction in accordance with existing regulations as outlined in the Standard Traffic Control Procedures. These procedures require the City to obtain a Heavy Vehicle Permit prior to using non-designated roadways; this Permit controls signage, timing, and the need for flag persons along the roadway.

Alternative 1, does not have a discharge component.

Mitigation: No mitigation is needed.

CUMULATIVE IMPACTS

There are three impacts -- either less than significant or significant -- identified in the Transportation section:

Impact: 11.1C. Will the Project plus cumulative projects cause congestion on access roads?

Analysis: Construction of the storage reservoirs and primary transmission pipelines will occur around the year 2000; distribution pipelines and pump stations will continue to be constructed over the next 15-20 years as the buildout of the general plans requires more agricultural irrigation. Construction of the Geysers and discharge alternative will take place around the year 2000. Traffic in the Project area will continue to increase over this time period, including even the outlying areas near the storage reservoirs and agricultural irrigation areas. The point of significance for traffic congestion has been set very low at a 10 percent increase over existing traffic. Although a comprehensive cumulative traffic scenario has not been developed for every affected roadway, virtually all affected roadways have been identified as significant, and cumulative impacts will not change that determination.

Impact: 11.2C. Will the Project plus cumulative projects cause lane closures longer than 1 month over a 1-mile segment?

Analysis: Large construction projects on the cumulative Project list which may overlap with the Long-Term Project are the storage reservoirs for

Healdsburg, Petaluma, and the Sonoma County Airport; pipelines to agricultural irrigation areas for Petaluma, Windsor, and Guerneville, and several major road and utility improvements (for example, replacement of a bridge on Chalk Hill Road, reconstruction of Adobe Road, and shoulder widening of Graton Road). The Healdsburg and Sonoma County Airport reservoirs are due to be constructed by the end of 1997, prior to the start of construction of the Long-Term Project. The pipelines to the proposed Petaluma reservoir and agricultural irrigation areas overlap Long-Term Project pipelines for 4-5 miles on Lakeville Highway, Browns Lane, South Ely Road, Frates Road, and South Adobe Road. Timing of construction of the Petaluma project is uncertain due to the controversial nature of the project, and could conceivably overlap with the Long-Term Project. Though the overlap of construction projects is extremely unlikely, if they do occur on the same roads during the same time period, the City of Santa Rosa should coordinate with the City of Petaluma so that lane closures are kept to a minimum.

Impact: 11.4C. Will the Project plus cumulative projects cause damage to public or private roadbeds?

Analysis: The Project impact is significant or less than significant only in the case of a pipeline rupture. Such an impact is localized and temporary and not subject to cumulative impacts from other projects.

SUMMARY OF SIGNIFICANT IMPACTS AND MITIGATION

Table 4.11-17

Summary of Significant Impacts and Mitigation Measures

Impact	Level of Significance	Mitigation
Pipeline Component		
11.4.1. The pipeline component may cause congestion along access roads.	Alt 2 - ● Alt 3 - ● Alt 4 - ●	No feasible mitigation has been identified.
11.4.2. Lane closures due to construction of the pipeline component construction may delay traffic, delay transit services, restrict access, increase hazards, and reroute traffic, including emergency vehicles..	Alt 2 - ● Alt 3 - ● Alt 4 - ● Alt 5A - ●	No feasible mitigation has been identified.

Table 4.11-17

Summary of Significant Impacts and Mitigation Measures

Impact	Level of Significance	Mitigation
11.4.4. The pipeline component may cause damage to public or private roadbeds.	Alt 4 - ●	No feasible mitigation has been identified.
Storage Reservoir Component		
11.5.1. The storage reservoir component may cause congestion along access roads.	Alt 2 - ● Alt 3 - ●	No feasible mitigation has been identified.
Geysers Steamfield Component		
11.8.1. Traffic from construction or the Geysers steamfield component may cause congestion along access roads.	Alt 4 - ●	No feasible mitigation has been identified.

Source: Harland Bartholomew & Associates, Inc., 1996

Notes:

- Significant impact before and after mitigation
- ⊙ Significant impact before mitigation; less than significant impact after mitigation

SUMMARY OF IMPACTS BY ALTERNATIVE

Table 4.11-18

Summary of Impacts by Alternative - Transportation

Component	Alt 1	Alt 2A	Alt 2B	Alt 2C	Alt 2D	Alt 3A	Alt 3B	Alt 3C	Alt 3D	Alt 3E	Alt 4	Alt 5A	Alt 5B
No Action (No Project) Alternative	==	--	--	--	--	--	--	--	--	--	--	--	--
Headworks Expansion	--	○	○	○	○	○	○	○	○	○	○	○	○
Urban Irrigation	--	==	==	==	==	==	==	==	==	==	--	--	--
Pipelines	--	●	●	●	●	●	●	●	●	●	●	●	--
Storage Reservoirs	--	●	●	●	●	●	●	●	●	●	--	--	--
Pump Stations	--	○	○	○	○	○	○	○	○	○	○	--	--
Agricultural Irrigation	--	○	○	○	○	○	○	○	○	○	--	--	--
Geysers Steamfield	--	--	--	--	--	--	--	--	--	--	●	--	--
Discharge	--	○	○	○	○	○	○	○	○	○	○	○	○

Source: Harland Bartholomew & Associates, inc., 1996

Notes: Level of Significance Codes

- Not applicable
- Less than significant impact; no mitigation proposed
- Significant impact before and after mitigation
- == No impact

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Consultation and Coordination

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