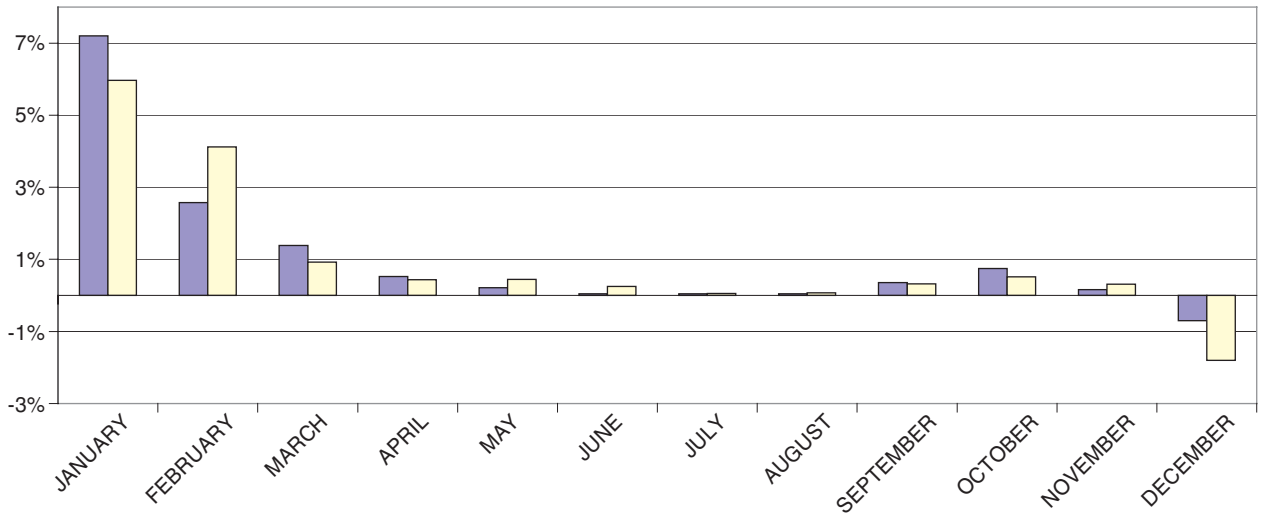

LEGEND

- NO ACTION
- ALTERNATIVE 2

FIGURE 3.9-4
RBDD DRY WATER YEAR ADJUSTED LOADS AS A PERCENT OF NET CVP POWER — NO ACTION ALTERNATIVE VERSUS ALTERNATIVE 2
FISH PASSAGE IMPROVEMENT PROJECT
RED BLUFF DIVERSION DAM EIS/EIR

W042002002RDD_95 (8/13/02)

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3: Gates-out Alternative

Construction-related Impacts.

Impact 3–PR1: Power Resources. Impacts from construction on power resources under Alternative 3 would be the same as those identified for Alternative 1A (see Impace 1A–PR1).

There would be no construction-related impacts on power resources; therefore, no mitigation is required.

Operations-related Impacts.

Impact 3–PR2: Power Resources. The electricity use for the Corning Canal Pumping Plant, administration facilities, drum screens, and research are estimated to be unchanged under this alternative. The loads that would change are the seasonal pumps and RPP diversion loads.

Table 3.9-8 compares the estimated monthly kWh energy requirements for both the main pump station and the fish bypass pump station for the Alternative 3 to the No Action Alternative. In addition, it converts the estimated monthly energy use to an estimated peak demand in each month based on the number of hours in the month and the estimated relationship of peak demand to average usage.

TABLE 3.9-8
Estimated Monthly Energy Use and Peak Demands for the Gates-out Alternative[a]

	No Action Alternative		3: Gates-out Alternative	
Month	Monthly Energy Use (kWh)	Peak Demand (kWh)	Monthly Energy Use (kWh)	Peak Demand (kWh)
January	213,595	1,500	216,373	1,500
February	119,970	900	228,688	1,800
March	452,735	2,100	343,073	1,600
April	963,589	3,000	836,963	2,600
May	658,164	1,400	1,430,688	3,100
June	207,284	500	1,227,058	2,700
July	170,566	400	1,458,896	3,100
August	157,467	400	1,546,229	3,800
September	564,708	3,200	538,735	3,000
October	862,678	3,200	642,174	3,000
November	156,136	600	345,831	1,300
December	87,602	400	263,672	1,200
Total	**4,614,492**	**3,200[b]**	**9,078,379**	**3,800**

[a]There is considerable year-to-year and month-to-month variability in these numbers, depending on water conditions and weather.
[b]Annual maximum.

The incremental use of each alternative is the difference between the alternative and the No Action Alternative. Based on the level of accuracy, the No Action Alternative and Alternative 3 represent about a doubling of the annual electricity use. It can be seen that the estimated peak demand does not increase to the same extent as the energy use. This is because the annual energy use increases are spread out over the various months, and the load factor is relatively unchanged.

Using the monthly energy use from Table 3.9-8, Figure 3.9-5 shows, for a dry water year, how much of the power Western has available to market. It can be seen that in January and February the loads for Alternative 3 are about the same as for the No Action Alternative.

In all other months but December, the percentages are generally less than 0.5 percent (or 0.005 per unit) of the power Western has to market in a dry year. In a dry-year December, power would have to be purchased to meet PUP needs; the new loads, if served with PUP, would increase the amount of power to be purchased.

In an average or wet water year, the percentages are well within the normal variability of the system (less than 0.5 percent on a total load basis).

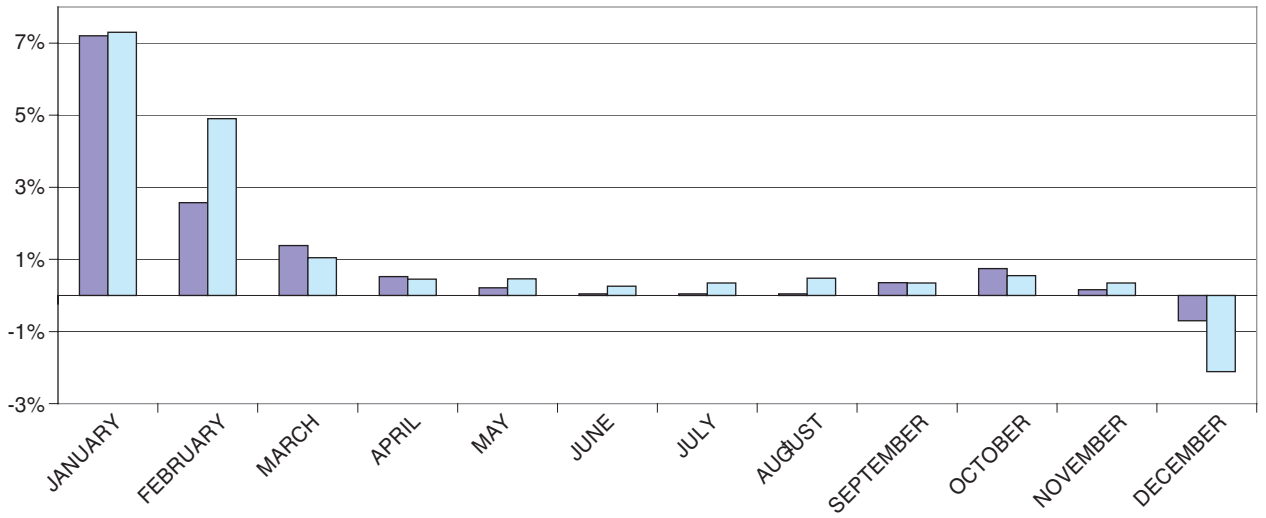
Because California is a summer peaking system, and the new loads are small percentages of the net CVP power in the summer months, there should be less controversy over serving the new pumping loads with PUP.

From this, it can be concluded that the use of PUP to serve any increased loads resulting from Alternative 3 would have an insignificant effect on Western's power marketing, except in the winter. In the winter, California usually has sufficient in-state electrical generation to export power to the Northwest.

The impacts from operations on power resource would be less than significant; therefore, no mitigation is required.

3.9.3 Mitigation

No significant impacts from construction or operations of the proposed alternatives have been identified; therefore, no mitigation is provided.



LEGEND

- NO ACTION
- ALTERNATIVE 3

FIGURE 3.9-5
RBDD DRY WATER YEAR ADJUSTED LOADS AS A PERCENT OF NET CVP POWER — NO ACTION ALTERNATIVE VERSUS ALTERNATIVE 3
FISH PASSAGE IMPROVEMENT PROJECT
RED BLUFF DIVERSION DAM EIS/EIR

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3.10 Socioeconomics

Potential project impacts to the local economy of the City of Red Bluff and Tehama County were identified as a key concern of project stakeholders. This section provides background information about current socioeconomic conditions and provides an analysis of how the proposed project alternatives may impact the local economy.

Potential project impacts to the local economy of the City of Red Bluff and Tehama County were identified as a key concern of project stakeholders.

3.10.1 Affected Environment

This section addresses current conditions in population and housing, labor force and employment, recreation, and the region's economic base.

Population and Housing

Historical trends in population since 1970 for the City of Redding, Tehama County, and the State of California are shown in Table 3.10-1. In the 1970s and 1980s, both the City and County grew more rapidly than other areas of the state. In the 1990s, this trend reversed, and the County grew at a rate similar to that of the state, and the City grew more slowly. In fact, the City grew very slowly in the 1990s; population increased from 12,363 in 1990 to 13,147 in 2000.

TABLE 3.10-1
Historical Population Trends in the City of Red Bluff, Tehama County, and the State of California

	Population				Percentage Growth		
Area Evaluated	1970	1980	1990	2000	1970 to 1980	1980 to 1990	1990 to 2000
Red Bluff	7,676	9,490	12,363	13,147	24	30	6
Tehama County	29,600	39,100	49,625	56,039	32	27	13
California	20,039,000	23,782,000	29,760,021	33,871,648	19	25	14

Sources: U.S. Department of Census Bureau. California Department of Finance, Demographic Research.

The age structure of the population of the City of Red Bluff, Tehama County, and the State of California is shown on Figure 3.10-1. Compared to the rest of the state, both the City and County have fewer persons of working age and more retirees as a percent of total population.

Data from the 2000 Census indicate that there were 5,567 housing units in Red Bluff with a homeowner vacancy rate of 2.7 percent and a rental vacancy rate of 8.4 percent. There were 20,403 housing units in the County, and the County's vacancy rates (2.3 percent and 8.6 percent, respectively) were similar to those in the City. Both the City and County had higher vacancy rates than the state overall, which had an owner vacancy rate of 1.4 percent and a rental vacancy rate of 3.7 percent.

Reflecting the City and County's higher percentage of retirees, the persons per household in 2000 for the City and County (2.57 and 2.67,

respectively) are less than the state average of 2.94 persons per household.

Labor Force, Unemployment, and Income

In 2000, the civilian labor force in Tehama County was 25,760; about a quarter of those employees (5,580) lived in Red Bluff. In recent years, the unemployment rate has been higher in the County than in the state as a whole. For example, in 1990, the unemployment rate was 10.0 percent in the County versus 5.8 percent statewide; and in 2000, the rates were 6.9 percent to 4.9 percent, respectively.

1990 U.S. Department of Census data indicate that the labor force in Tehama County has a somewhat less formal education than the state average. For example, in 1990, the proportion of the population with less than a high school education was 28 percent in Tehama County compared to 24 percent for the state. The proportion of the population with less than a bachelor's degree was 89 percent in Tehama County compared to 77 percent for the state.

The fastest growing sectors of the local economy are retail, trade, finance, insurance, and real estate.

Incomes in Tehama County are much lower than other areas of the state. In the County, 1999 median per capita income was $22,378, which ranked 51st of the 58 counties in California. Statewide, median per capita income was $29,376.

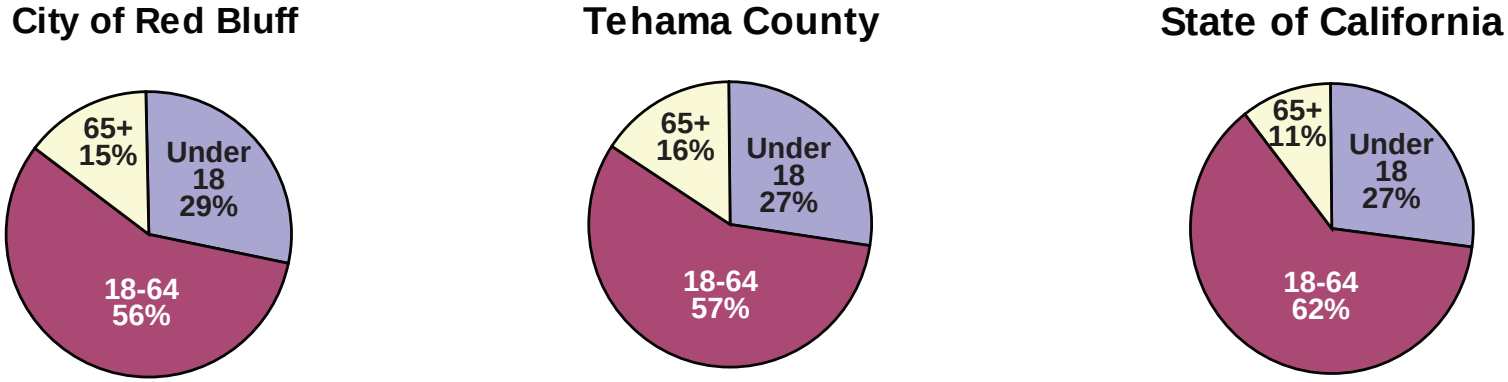
Economic Base

Employment by industry sector in 1990 and 2000 is shown in Table 3.10-2 for Tehama County and the State of California. As shown, total employment grew much more rapidly during the 1990s in Tehama County (31 percent) than did the rest of the state (13 percent). The fastest growing sectors of the local economy are retail, trade, finance, insurance, and real estate.

Table 3.10-3 provides a comparison of employment by industry sector for Tehama County and the State of California. As shown, the local economy is highly dependent on agriculture, including forestry. One recent study (Umbach, 1997) reported that as of 1997, 21 percent of Tehama County's jobs were related to agriculture, compared to 4 percent for the state as a whole. The main cash crops in the County are dried plums, walnuts, dairy and beef cattle, almonds, corn, alfalfa, and olives. Farmland makes up approximately 47 percent of the total acreage in the County.

Farmland makes up approximately 47 percent of the total acreage in the County.

Lumber and wood products manufacturing is also important to the local economy, as it represents over 6 percent of total employment in Tehama County, compared with less than 1 percent for the state. In 2000, the County produced over 100 million board-feet of timber, which was over 5 percent of the state's total.



Source: U.S. Department of Census Bureau.

FIGURE 3.10-1
AGE STRUCTURE OF RED BLUFF, TEHAMA COUNTY, AND THE STATE OF CALIFORNIA
FISH PASSAGE IMPROVEMENT PROJECT
RED BLUFF DIVERSION DAM EIS/EIR

TABLE 3.10-2
Tehama County and State of California Employment by Sector, 1990 and 2000

	Tehama County Employment		California Employment		1990 to 2000 Percent Change	
Industry	**1990**	**2000**	**1990**	**2000**	**County**	**State**
Agriculture, Forestry, Fishing	1,090	1,480	363,600	408,500	36	12
Mining and Construction	320	450	599,500	750,400	41	25
Manufacturing	2,050	2,500	2,068,800	1,947,800	22	-6
Transportation and Public Utilities	330	460	612,200	743,600	39	21
Wholesale Trade	200	200	768,900	818,200	0	6
Retail Trade	2,620	4,240	2,223,800	2,477,400	62	11
Finance, Insurance, Real Estate	410	650	808,800	819,900	59	1
Services	2,300	3,020	3,343,100	4,612,900	31	38
Government	2,750	3,550	2,074,800	2,318,100	29	12
Federal	290	280	362,100	272,900	-3	-25
State	330	350	382,000	443,400	6	16
Local	2,130	2,920	1,330,700	1,601,800	37	20
Other [a]	5,930	7,050	1,455,700	1,348,800	19	-7
Total Employment	**18,000**	**23,600**	**14,319,200**	**16,245,600**	**31**	**13**

Source: California Employment Development Department.

[a] Includes self-employed and any net difference in persons who live in the County (or state) but work in another county (or state).

TABLE 3.10-3
Tehama County and State of California Percent of Total Employment by Industry Sector, 2000

	Percent of Total	
Industry	**County**	**State**
Agriculture, Forestry, Fishing	6.3	2.5
Mining and Construction	1.9	4.6
Manufacturing	10.6	12.0
Lumber and Wood Products	6.3	0.4
Other	4.3	11.6
Transportation and Public Utilities	1.9	4.6
Wholesale Trade	0.8	5.0
Retail Trade	18.0	15.2
Finance, Insurance, Real Estate	2.8	5.0
Services	12.8	28.4
Government	15.0	14.3
Federal	1.2	1.7
State	1.5	2.7
Local	12.4	9.9
Other [a]	29.9	8.3
Total	**100.0**	**100.0**

Source: California Employment Development Department.

[a] Includes self-employed and any net difference in persons who live in the County (state) but work in another county (state).

A relatively high proportion of County workers are employed in the retail sector (18 percent in the County versus 15.2 percent for the state). Compared to the rest of the state, the County also has a much higher proportion of self-employed workers and workers who commute to other areas for employment, such as Redding.

The California Employment Development Department lists (alphabetically) the nine major employers in the County, their location, and their primary business as follows:

- Bell-Carter Foods (Corning, preserved fruits and vegetables)
- Bidwell Elementary School (Red Bluff, education)
- Metteer Elementary School (Red Bluff, education)
- Red Bluff Union High School (Red Bluff, education)
- Sierra Pacific Industries (Corning and Red Bluff, wood products)
- St. Elizabeth Community Hospital (Red Bluff, hospital)
- Tehama County (Red Bluff, public administration)
- Tenneco Packaging (Red Bluff, plastic products)
- Wal-Mart (Red Bluff, department store and distribution center)

The Sacramento River and Lake Red Bluff provide recreation opportunities that result in economic activity in and around the City of Red Bluff.

Recreation

The Sacramento River and Lake Red Bluff provide recreation opportunities that result in economic activity in and around the City of Red Bluff. As documented below, a recent study estimated about 64,000 user days of recreation on the river and lake with the main recreational activities including biking, boating and rafting, fishing, jet skiing, park-based activities, walking, and water skiing.

A number of events held along the river and lake that provide economic benefits to the region includes an annual 4th of July celebration and the Nitro National Drag Boat Festival, which bring 20,000 spectators or more to the shores of Lake Red Bluff every Memorial Day weekend.

3.10.2 Environmental Consequences

Methodology

Implementation of any of the build alternatives has the potential to impact the economy of Red Bluff and Tehama County. A number of different types of economic impacts, both positive and negative, may result, including:

Positive Impacts

- Income and jobs from construction/installation of the fish screen and pumps
- Potential long-term benefits from improvement in fish runs

Negative Impacts

- Reductions of income and jobs associated with:
  - Loss of lake-dependent recreation and tourism activity
  - Loss of the Nitro National drag boat races
- Reductions in property values resulting from the loss of the lake
- Fiscal impacts to the City of Red Bluff
- Loss of quality of life and community cohesion

A discussion of each of these potential impacts is provided below.

Overview of Input-Output Analysis. When data were available to estimate monetary impacts associated with the project alternatives, input-output (I-O) analysis was used to estimate the economic impacts. In this analysis, the economic impacts are estimated using Implan, a model originally developed at USFS that is now sold and supported by MIG, Inc. I-O analysis is a commonly used technique that examines the relationships within a local economy between businesses and their customers. I-O analysis includes a model of transactions in the local economy that allows an analyst to track how a change in final demand ripples through the economy in the form of direct, indirect, and induced spending.

In the I-O framework, a project or action that results in new spending for final demand or a reduction in existing spending is called a direct effect. The businesses that make the final sales must in turn purchase goods and services from other businesses. These indirect purchases are called indirect effects, which continue until leakages from the region in the form of imports, wages, or profits to persons outside the region end the cycle. Finally, workers at the producing businesses spend their wages in the local economy and purchase additional goods and services. These purchases are referred to as induced effects. The total economic impact of an action is the sum of the direct, indirect, and induced effects. I-O models generate multipliers that can be multiplied to direct purchases to represent the total direct, indirect, and induced effect of an action to different sectors of the economy.

The total economic impact of an action is the sum of the direct, indirect, and induced effects.

In conducting an I-O analysis, indirect and induced effects result only when businesses purchase goods and services from other local businesses. Purchases from businesses outside the region are leakages from the local economy. Thus, regional purchase coefficients, which represent the proportion of local demand that is purchased from local businesses, are used in the analysis to prevent an overstatement of the economic impacts to the local economy.

Finally, in I-O analysis, it is only new spending in a region that is considered in an impact analysis. Examples of such spending would include a new manufacturing plant locating in a region, a major new construction project, growth in tourism, or growth in an event attended

by out-of-town residents. Growth in existing businesses or events attended only by local residents are typically excluded from an I-O analysis because they are considered to represent a reallocation of dollars that would have been otherwise spent elsewhere in the economy. In this case, two economic impacts are being analyzed (lake-dependent recreation and tourism and the Nitro National drag boat races) that could result in a reduction of spending in the local economy. The specific assumptions made about how local vs. non-local spending for these impacts are considered in the analysis are addressed below in the discussion of those impacts.

For this analysis, an Implan model of Tehama County was used, so multipliers used to estimate impacts in the I-O analysis are estimated using business relationships in Tehama County. Impacts are reported for sales (referred to as output in I-O modeling) and employment.

Two economic impacts are being analyzed (lake-dependent recreation and tourism and the Nitro National drag boat races) that could result in a reduction of spending in the local economy.

Construction Impacts. The impacts of project construction on local sales and employment are shown in Table 3.10-4. In the table, employment is shown both as an average over the duration of the project and in employee-years. Employee-years is perhaps the better measure for assessing the number of jobs created by the project, and average employment is useful for assessing the number of workers on the project at any one time. As shown, the 2-month Improved Ladder Alternative would result in the most local spending ($90 million) and employment (889 employee-years). The Gates-out Alternative would result in the most local average employment (an average of 316 jobs during construction).

The 2-month with Existing Ladders Alternative would result in the lowest level of local spending ($73 million) and employment (715 employee-years). The 4-month Gates-in Alternative would result in the lowest level of local average employment at an average of 263 jobs during construction.

Data provided by Implan indicate that there are roughly 350 employees in Tehama County that work in construction trades that could be affected by project construction.

For perspective, data provided by Implan indicate that there are roughly 350 employees in Tehama County that work in construction trades that could be affected by project construction. Thus, the impacts shown would spread beyond just Tehama County, and many of these jobs would be filled by workers from a multi-county region.

Fish-run Improvements. One of the main objectives of the TCCA Fish Passage Improvement Project is to improve the long-term ability to reliably pass anadromous fish and other species of concern past RBDD. At this time, it is difficult to predict whether the build alternatives in and of themselves would result in substantial improvements in fish survival rates, but the potential exists. If such improvement occurs, improved fish runs could result in a modest increase in economic activity in the City of Red Bluff as expenditures increase for food, groceries, fuel, and fishing supplies.

The results of the Fishtastic! analysis indicate that potential improvement in fish runs would be greatest under the 2-month Gates-in alternatives and the Gates-out Alternative, and somewhat less improvement would be likely under the 4-month Gates-in alternatives.

TABLE 3.10-4
Economic Impacts of Project Construction

	Alternatives				
	1A: 4-month Improved Ladder	**1B: 4-month Bypass**	**2A: 2-month Improved Ladder**	**2B: 2-month with Existing Ladders**	**3: Gates-out**
Construction Cost (Million 2002$)	$84.5	$90.2	$94.4	$79.0	$88.0
In-region Sales (Million 2002$)					
Direct	$59.5	$64.8	$67.0	$53.9	$59.6
Indirect	$11.1	$12.1	$12.5	$10.1	$11.1
Induced	$9.6	$10.4	$10.8	$8.7	$9.6
Total[a]	**$80.3**	**$87.3**	**$90.3**	**$72.6**	**$80.3**
In-region Employment					
Construction Duration (years)	3.0	3.0	3.0	2.5	2.5
Direct	161	176	182	175	194
Indirect	51	56	57	55	61
Induced	51	55	57	55	61
Average Employment During Construction[b]	**263**	**287**	**296**	**286**	**316**
Employee-years[c]	**790**	**860**	**889**	**715**	**791**

[a]Totals may not add because of rounding.

[b]Assumes employment levels are constant during construction.

[c]Total employment times construction duration.

Economic Losses from Reduced Lake-dependent Recreation and Tourism Spending. Lake Red Bluff provides many benefits to the local community: everything from a pleasant aesthetic experience, to a means to cooling off in the summer, to injections of income into the local economy. This section provides the results of an analysis of the potential for loss of sales and employment that may result from the loss of Lake Red Bluff. These estimates exclude impacts associated with the loss of the Nitro National drag boat races, which are estimated separately.

The estimates of reduced lake-dependent recreation and tourism spending are based on the results of a survey of local motels, campgrounds, and RV parks; Implan spending and employment data; and estimated spending profiles from a national survey of recreation at USACE projects (Propst et al., 1998).

Table 3.10-5 provides an estimate of the lake-dependent hotel and other lodging sales that would be foregone under the Gates-out Alternative (Alternative 3) and the 2-month Gates-in alternatives (Alternative 2). The first line of the table shows total annual estimated hotel and other lodging sales in Tehama County. This is followed by an estimated increase in sales during the gates-out and 2-month gates-in periods of

30 and 20 percent, respectively. These estimates were derived from information provided about summer and non-summer staffing levels and occupancy in the motel survey.

TABLE 3.10-5
Lake-dependent Direct Lodging Sales Loss

	Alternative	
Lodging Sales	**Gates-out**	**2-month Gates-in**
County Hotel and Other Lodging Sales		
Annual[a]	$12,967,360	$12,967,360
Percent Increase Above Average During Months Impacted[b]	30%	20%
During Impact Period if No Seasonality	$4,322,453	$2,161,227
During Impact Period	$5,619,189	$2,593,472
Additional Sales During Impact Period	$1,296,736	$432,245
City Hotel and Other Lodging Sales		
Red Bluff Percent of County[c]	62%	62%
Additional Sales During Impact Period	$803,976	$267,992
Lake-dependent Hotel and Other Lodging Sales		
Percent of Additional Sales that Is Lake-dependent[b]	50%	50%
Additional Lake-dependent Sales	$401,988	$133,996

[a]Implan, 2002.
[b]CH2M HILL estimate based on motel survey and recreation data (Guthrie, 1996).
[c]City of Red Bluff, Finance Department; Tehama County Clerk and Recorder's Office.

The additional hotel and other lodging sales during the impact period is calculated as the difference between estimated sales during the impact period and estimated sales during the impact periods assuming sales occurred at a constant rate throughout the year (e.g., $5,619,189 - $4,322,453 = $1,296,736).

Additional hotel and lodging sales in the City of Red Bluff were estimated by multiplying additional sales in the County by 62 percent, which is the percentage of total transient occupancy tax revenue that is collected within the City limits (California State Controller's Office, 2000). Finally, it is estimated that 50 percent of those additional sales are lake-dependent. Interviews with the motel operators indicated that while the lake was a big draw for some motels, others felt that much of their additional summer business resulted from summer business clientele and persons vacationing in the I-5 corridor. The result is an estimate that approximately $402,000 per year in total direct lake-dependent hotel and lodging sales would be foregone during the Gates-out Alternative, and $134,000 per year would be foregone under the 2-month Gates-in alternatives.

Table 3.10-6 shows estimates of other lake-dependent spending. Other lake-dependent spending is derived from the hotel and lodging estimates presented in Table 3.10-5 and spending profiles derived from surveys conducted at 12 USACE projects (Propst et al., 2002).

TABLE 3.10-6
Lake-dependent Revenue Bridged to Implan Sectors

	USACE Data[a]			Lake-dependent	
Revenue Estimates	**1996 $/party/day**	**2002[b] $/party/day**	**Percent of Hotel[c]**	**4-month**	**2-month**
Hotel/Motel	$49.22	$59.09		$401,988	$133,996
Other Expenses	$59.06	$69.17		$470,504	$156,835
Camping	$1.96	$2.35	4.0	$16,009	$5,336
Grocery	$12.17	$14.22	24.1	$96,756	$32,252
Restaurant	$13.50	$15.78	26.7	$107,334	$35,778
Auto and RV	$8.18	$8.88	15.0	$60,417	$20,139
Boating	$10.42	$12.51	21.2	$85,111	$28,370
Fishing and Hunting	$2.97	$3.56	6.0	$24,218	$8,073
Recreation and Entertainment	$3.28	$3.94	6.7	$26,791	$8,930
Miscellaneous	$6.60	$7.92	13.4	$53,868	$17,956
Total Spending	**$108.28**	**$128.26**		**$872,493**	**$290,831**

Bridge Table to Implan Sectors

			Lake-dependent	
Industry/Commodity	**Sector**	**Revenue Sources**	**4-month**	**2-month**
Industry	463	Hotels and Lodging Places	$417,997	$139,332
Commodity	MIREC[d]	Food–Offsite	$96,756	$32,252
Industry	454	Eating and Drinking	$107,334	$35,778
Commodity	MIREC	Gas and Oil (40%)	$58,211	$19,404
Commodity	MIREC	Other Auto Expense (40%)	$24,167	$8,056
Commodity	436	Water Transportation (40%)	$34,044	$11,348
Commodity	473	Equipment Rental and Leasing (20%)	$29,106	$9,702
Commodity	488	Amusement and Recreation	$51,009	$17,003
Commodity	MIREC	Miscellaneous Expenses/Souvenirs	$53,868	$17,956
Total			**$872,493**	**$290,831**

[a]Propst et al., 1998.
[b]Escalated using data from U.S. Department of Labor, Bureau of Labor Statistics, 2002.
[c]MIG, Inc. 2002.
[d]MIREC = Micro-Implan Recreation Economic Impact Estimation System.

The spending profiles include spending on camping, groceries, restaurants, autos and RVs, boating, fishing, recreation and entertainment, and miscellaneous spending. Average spending per party-day for each expense is shown in 1996 dollars and then inflated to 2002 dollars using relevant price indexes. Then the percent of spending relative to the USACE's hotel/motel estimate is used to estimate lake-dependent spending on the other expenses. As shown, it is estimated that total direct lake-dependent spending is approximately $872,000 per year under the 4-month Gates-in alternatives and approximately $291,000 per year under the 2-month Gates-in alternatives.

The second part of the table shows how the estimated spending is "bridged" to Implan sectors. The numbered sectors refer to Implan-defined sectors. Sectors designated as "MIREC" use spending profiles developed from a model and national study of recreation expenditures

called the Micro-Implan Recreation Economic Impact Estimation System developed at Michigan State University (Stynes, 2002). This is necessary to estimate the indirect and induced spending associated with these expenditures.

The Implan model was used to estimate indirect and induced impacts of the loss of lake-dependent spending. Table 3.10-7 provides total direct, indirect, and induced spending losses resulting from the loss of lake-dependent economic activity for each alternative. As shown, the alternatives result in total direct, indirect, and induced sales losses of $1.0 million for the Gates-out Alternative, and about $363,000 for the 2-month Gates-in alternatives. About 19 jobs would be lost under the Gates-out Alternative, and six jobs would be lost under the 2-month Gates-in alternatives.

TABLE 3.10-7
Direct, Indirect, and Induced Lake-dependent Economic Losses

Economic Losses	Direct	Indirect	Induced	Total
Lake-dependent Economic Losses – Gates-out Alternative				
Sales	$872,000	$95,000	$121,000	$1,088,000
Employment	16	1	2	19
Lake-dependent Economic Losses – 2-month Gates-in Alternatives				
Sales	$291,000	$32,000	$40,000	$363,000
Employment	5	<1	1	6

Loss of the Nitro Nationals Drag Boat Races. The Nitro National drag boat race is a long-standing community event that occurs each year over the Memorial Day weekend and results in a substantial injection of dollars into the local economy. Under the Gates-out and 2-month Gates-in alternatives, the community would lose the boat drag event. An estimate of the economic impact of that loss follows.

The Nitro National drag boat race is a long-standing community event that occurs each year over the Memorial Day weekend and results in a substantial injection of dollars into the local economy.

This analysis is based upon prior analyses of the economic impacts of the event prepared by the event promoters with input from the local Chamber of Commerce (A&J Events, 2002). An initial version of that analysis was included in the Lake Red Bluff FEIS (USDA/USFS, 1991), and a recent update of that analysis was prepared by A&J Events using 1999 data. Staff at A&J Events provided estimates of spectators, expenses, and revenues for the 2002 event. These estimates were used as a baseline for the estimate.

A&J Events staff forecast that this year's event would attract 25,000 spectators. Spending by those spectators and boaters were estimated and are presented in Table 3.10-8. Spectator spending on meals, refreshments, and other expenses were derived using historical spending estimates updated for inflation. ~~Only spending from out-of-region spectators and boaters were included in the spending estimates.~~ Spending estimates reflect distinctions in likely spending by local and out-of-region spectators. As shown, it was estimated that the 2002 boat

drag event would result in new spending of approximately $1.9 million from spectators and $429,000 from boaters. Table 3.10-9 shows estimates of sales from lodging and total tax revenues. As shown, it was estimated that total sales to motels and RV parks during the event would be $134,000. Total City and County tax revenue from sales and use taxes and the County motel tax were estimated to be $45,000. Total direct spending on the event of $2.7 million was broken down into sectors in Table 3.10-10. The spending profile shown in this table was derived and prepared using confidential expense information provided by A&J Events (A&J Events, 2002).

TABLE 3.10-8
2002 Memorial Day Nitro Nationals Spectator and Boater Spending

	Spectators			Boaters		
Event Days and Meals	**Average Expense ($)**	**No. Spectator**	**Total Expense ($)**	**Average Expense ($)**	**No. Boaters**	**Total Expense ($)**
Event Totals–1999						
Saturday		7,332				
Sunday		8,892				
Total		16,224				
Event Totals–2002						
Saturday		11,298				
Sunday		13,702				
Total		25,000				
Event Totals						
Local Saturday		5,084			0	
Not Local Saturday		6,214			1,981	
Total Saturday		11,298			1,981	
Local Sunday		5,344			0	
Not Local Sunday		8,358			1,981	
Total Sunday		13,702			1,981	
Meal Totals						
Friday Dinner	33.75	6,214	209,723	33.75	1,981	66,867
Saturday Breakfast	6.75	11,298	76,262	6.75	1,981	13,373
Saturday Refreshments	33.75	11,298	381,308	40.23	1,981	79,706
Saturday Dinner	33.75	7,203	243,101	33.75	1,486	50,153
Saturday Evening	6.75	7,203	48,620	13.50	1,981	26,747
Sunday Breakfast	6.75	13,702	92,489	6.75	1,981	13,373
Sunday Refreshments	33.75	13,702	462,443	40.23	1,981	79,706
Sunday Dinner	33.75	5,248	177,120	33.75	991	33,446
Monday Breakfast	6.75	4,179	28,208	6.75	991	6,689
Miscellaneous	6.75	12,500	84,375	14.85	1,981	29,422
Auto Expenses	5.40	12,500	67,500	14.85	1,981	29,422
Total Spending			**1,871,147**			**428,903**

Source: Information is based on an analysis conducted by A&J Events, 2000; updated using 2002 budget data from A&J Events. Per-day spending updated for inflation by CH2M HILL.

TABLE 3.10-9
2002 Memorial Day Nitro Nationals Lodging and Tax Revenues

Revenue Source	Lodging and Tax Revenues
Motel Revenue	
Beds (2 night total)	1,800
Average Room Rate	$70
Motel Revenue	$126,000
Transient Occupancy Tax	10%
Transient Occupancy Tax Revenue	$12,600
RV Park Revenue	
Spaces (2 night total)	300
Average Per Night Fee	$25
RV Park Revenue	$7,500
Sales Tax	
City and County Rate	1.25%
Spectator and Boater Spending	$2,300,051
Motel and RV Park	$133,500
Taxable Promoters Expenses	$175,241
Total Taxable Spending	$2,608,791
City and County Sales Tax Revenue	$32,610
Total Tax Revenue	**$45,210**

TABLE 3.10-10
2002 Memorial Day Nitro Nationals—Total Direct Local Spending Bridged to Implan/MIREC Sectors

Industry or Commodity	Sector Number	Name	Expense ($)
Industry	523	State and Local Government–Non Education	49,210
Industry	520	Federal Government–Nonmilitary	11,000
Industry	493	Other Medical and Health Services	2,700
Industry	488	Amusement and Recreation NEC[a]	9,500
Industry	487	Racing and Track Operation	27,000
Industry	473	Equipment Rental and Leasing	3,000
Industry	470	Other Business Services	23,750
Industry	469	Advertising	8,500
Industry	463	Hotels and Lodging Places	133,500
Industry	459	Insurance Carriers	10,000
Commodity	MIREC	Misc. Expenses/Souvenirs	113,797
Industry	454	Eating and Drinking	1,083,529
Commodity	MIREC	Food–Offsite	1,010,804
Commodity	MIREC	Gas and Oil	67,845
Commodity	MIREC	Other Auto Expense	29,076
Industry	446	Sanitary Services and Steam Supply	6,000
Commodity	HH	High Income	64,791
Total			**2,654,001**

[a]NEC = not elsewhere classified.

The Implan model was used to estimate indirect and induced impacts of the loss of the Nitro National drag boat races. Table 3.10-11 provides total direct, indirect, and induced spending losses resulting from the loss of the Nitro National drag boat races, which assumes it would take place under both the Gates-out Alternative and the 2-month Gates-in alternatives. As shown, the alternatives result in total direct, indirect, and induced sales losses of $3.2 million and the loss of about 49 jobs. The job loss estimates are difficult to interpret because they are based on relationships between jobs and annual sales, and this represents losses of economic activity in support of a weekend event. Therefore, the impact is likely to result in more temporary jobs lost than shown, but fewer full-time jobs lost than shown.

It is possible that a change to the Gates-out Alternative or the 2-month Gates-in alternatives would result in a reduction in property values.

TABLE 3.10-11
Direct, Indirect, and Induced Economic Impacts from Loss of Nitro Nationals

	Direct	Indirect	Induced	Total
Sales	$2,654,000	$196,000	$304,000	$3,154,000
Employment	42	3	5	49

Note: Numbers may not add because of rounding.

Property Value Impacts. A survey of lakefront and lake-access properties was conducted to identify properties that may be affected negatively by the project alternatives. It is possible that a change to the Gates-out Alternative or the 2-month Gates-in alternatives would result in a reduction in property values. The potential for property value impacts was estimated by first identifying properties that are adjacent to the lake, or with a lake view, or properties with lake access defined as properties within walking distance (three to five blocks) of River Park. The properties were identified using field surveys and information obtained from the Tehama County Assessor's Office (2001).

The survey included residential and small commercial properties as well as properties located within Red Bluff City limits and unincorporated Tehama County. Lands that are zoned for industrial use, government-owned land, mills, and churches were excluded from the analysis. Properties included in the residential category included single-dwelling units, multi-family units, and vacant home sites. Small commercial properties included vacant and occupied parcels with businesses such as mini markets, medical and dental offices, restaurants, fast food establishments, full service stations, and professional offices.

Data from the Tehama County Assessor's Office were used to gain perspective into the magnitude of potential property tax impacts. The Fiscal Year 2001-02 total assessed value for Tehama County is $2.73 billion. The City of Red Bluff has a market valuation of approximately $483 million. Properties identified as being on the lake or having lake access have an assessed value of approximately $33.6 million, which

represents approximately 1.2 percent of the total assessed value of the County. Most of the value of those properties, $29 million, is located within the City of Red Bluff. This represents approximately 6 percent of the total assessed value of the City ($483 million). A breakdown into residential and small commercial property in the City and unincorporated County is provided in Table 3.10-12.

TABLE 3.10-12
Value and Number of Properties that May Be Affected by Project Alternatives

	Within Red Bluff City Limits			Unincorporated County		
	On Lake	Park Access	Total	On Lake	Park Access	Total
Assessed (Million $, Fiscal Year 2001-02)						
Residential	$4.7	$12.4	$17.1	$3.7	$0	$3.7
Small Comm	$6.4	$5.7	$12.0	$0.7	$0	$0.7
Total	**$11.0**	**$18.1**	**$29.1**	**$4.4**	**$0**	**$4.4**
Number of Properties						
Residential	40	114	154	29	0	29
Small Comm	16	43	59	3	1	4
Total	**56**	**157**	**213**	**32**	**1**	**33**

Note: The results shown in this table are estimates of the total value of properties that may experience an impact in property values. They are not an estimate of the loss of property tax value.

The likelihood of impacts to property values associated with the different alternatives is difficult to quantify because of the numerous factors that contribute to real estate valuations. Phone interviews with local real estate agents and the County Assessor's Office were conducted to obtain information on historical and current trends in the real estate market. The agents that were contacted did not recall a noticeable change in property values after 1988 when the operation of the lake was modified from 12 months to 8 months. Since that time, property values have steadily increased, particularly in the residential real estate market. One real estate agent described the current market as a "seller's market," with increasing property values (Bianco, 2002, pers. comm.). The Assistant Assessor noted that riverfront property throughout the County has been selling at a premium price, and houses and vacant lots in the Surrey Village area upstream from the diversion dam have experienced a significant increase in price because of their proximity to the river and the fact that they have year-round riverfront property (Stroud, 2002, pers. comm.).

The consensus opinion expressed during interviews is that it would be more difficult to sell property under the Gates-out Alternative than under the 2-month Gates-in alternatives. One real estate agent noted that there was not much of an impact going from a 12-month lake to a 6-month lake because property owners knew the lake would be usable during the summer months (Hill, 2002, pers. comm.). The interviewees were all generally of the opinion that the 2-month Gates-in alternatives

and the Gates-out Alternative would have a greater impact on market values than previous changes to the lake. Houses would be more difficult to sell, and property value changes would be more pronounced under the Gates-out Alternative than under the 2-month Gates-in alternatives.

Based on interviews and the limited data available to assess property tax impacts, it is likely that the Gates-out Alternative would result in a negative impact to properties within the City that are adjacent to the lake. Those properties are likely to sell for less in the future than they would otherwise. The amount of decline would depend on a number of other factors that are also important in establishing the value of residential and commercial properties. The effect on properties adjacent to the lake but outside the City limits is likely to be much less noticeable because there would be a much smaller change in the aesthetics and access in areas where the lake is not much wider than the free-flowing river. It is possible, but less likely, that properties within walking access to River Park (also known as City Park) would suffer a noticeable drop in property values under the Gates-out Alternative.

The extent of the potential decline in property values is uncertain. A recent study that summarized research into the added value of a view amenity in residential real estate indicated that lake-view premiums range from 4 to 18 percent (Benson, 1998). This could be considered a reasonable range of the potential for decline in value for properties with a view of the lake. Considering that the view is only available currently for 4 of 12 months and that in some areas a lake view would be replaced by a river view, it is likely that the loss of value for most properties would tend to be at the lower end of that range.

Under the 2-month Gates-in alternatives, it is possible that some properties would be more difficult to sell, which is another way of saying that, ultimately, sales prices would be somewhat lower than what they would have been if the gates were in for 4 months. However, the impact is not likely to be substantial.

The City receives a majority of its revenues from various taxes collected within the City limits.

Fiscal Impacts to City of Red Bluff. The Fiscal Year 2001-02 general fund revenues budgeted for the City of Red Bluff are approximately $4.7 million. The City receives a majority of its revenues from various taxes collected within the City limits. As shown in Table 3.10-13, the largest contributor to the City's revenues is sales taxes, which are expected to account for approximately $2.2 million, or nearly 47 percent of all revenues in Fiscal Year 2001-02. About 18 percent of the City's total revenues is projected to be derived from property taxes, and the transient occupancy tax would generate over 8 percent of total revenues. Other sources of revenue include licenses and permits, inter-governmental revenues, and other revenues.

TABLE 3.10-13
City of Red Bluff General Fund Revenues

Revenue Source	2001-02 Budget ($)	Percent of Total Revenues
Property Tax	860,000	18.2
Sales Tax	2,200,000	46.6
Transient Occupancy Tax	395,000	8.4
Other Taxes	192,000	4.1
Licenses and Permits	186,100	3.9
Intergovernmental Revenue	755,260	16.0
Other Revenues[a]	135,000	2.9
Total General Fund Revenues	4,723,360	100.0

Source: City of Red Bluff, Finance Department.

[a]Other revenues include charges for current services ($44,500), interest income ($67,000), and miscellaneous revenue ($23,500).

Tehama County assesses a tax rate of $1.00 per $100 of assessed values on all taxable property in the County. The property tax rate is allocated to the County, cities, special tax districts (i.e., cemeteries, flood control), and schools for annual operational expenses. For Fiscal Year 2001-02, the County general fund was estimated to receive approximately 18.7 percent of the total collections. The City of Red Bluff was estimated to receive about 3.15 percent of the total collections for its operations.

Because the market valuations of the properties surveyed represent a relatively small percentage of the overall assessed value of the County, a decrease in value of these properties would likely have a minor impact on the overall market value of the County.

As discussed above, under the 4-month Gates-in alternatives it is expected that property values would likely continue to increase and result in increased property tax collections and revenue. If the market valuations of the properties surveyed were to decrease in value because of either the 2-month Gates-in alternatives or the Gates-out Alternative, property tax revenues would experience a corresponding decrease. Because the market valuations of the properties surveyed represent a relatively small percentage of the overall assessed value of the County, a decrease in value of these properties would likely have a minor impact on the overall market value of the County.

A change in the market valuation of Red Bluff could potentially affect the amount of property taxes allocated to the City for annual operations. Currently, the City is allocated 3.15 percent of the total property tax collected in Tehama County. The allocation is calculated by the state and is partially based on total market valuations in the City, per capita market valuation, services provided by the City, and the allocation rate from previous years. Under the Gates-out Alternative, if property values decline or increase more slowly than projected trends, the City might receive a smaller property tax allocation rate. However, because of the relatively sizeable tax base in the City, a change in market valuations of the properties surveyed would likely have a minor impact

on the overall assessed value of the City. Thus, the allocation rate would likely not be impacted significantly.

More specifically, the properties analyzed currently pay approximately $286,000 in property taxes. According to state allocation rates, the City of Red Bluff currently receives approximately $9,000 (3.15 percent) in property tax revenues from the potentially affected parcels. The total amount of that revenue represents about 1 percent of the City's budgeted property tax revenues ($860,000) for Fiscal Year 2001-02. Thus, even in the unlikely event property values decline (rather than just grow more slowly) as a result of any of the alternatives, the impact on property collections in the City and County would be very small.

There may be more substantial fiscal impacts from reductions in sales and use taxes to the City of Red Bluff. As discussed above, under both the 2-month Gates-in alternatives and the Gates-out Alternative, local governments in Tehama County would lose an estimated $12,600 in transient occupancy tax and $32,600 in sales and use tax revenue from the loss of the Nitro National drag boat races. Based on data from the Board of Equalization, A&J Events, and the motel survey, it is estimated that 60 percent of the transient occupancy tax revenue would come from the City, and 80 percent of the sales and use tax revenue would come from the City. Also, the City would experience a loss of approximately $55,000 under the Gates-out Alternative and a loss of approximately $18,000 under the 2-month Gates-in alternatives resulting from a loss of lake-dependent recreation and tourism spending.

The combined impact to the City of Red Bluff from the loss of transient occupancy tax revenues and sales and use tax revenues is approximately $89,000 under the Gates-out Alternative and $52,000 under the 2-month Gates-in alternatives. When compared with total City tax revenues of $4.7 million, this represents a loss of 1.9 percent of total City revenues under the Gates-out Alternative and a loss of 1.1 percent of total City revenues under the 2-month Gates-in alternatives.

Reduced Quality of Life and Loss of Community Cohesion. Under the Gates-out Alternative, the greater Red Bluff community would lose an important physical feature and there would be a negative impact to the quality of life of local residents. While some residents prefer restoration of a free-flowing river, it is likely that a majority of local residents believe that they benefit from the presence of the lake in many non-quantifiable ways such as the cooling effect in summer months or just knowing the lake is there for recreation whenever one wants to go for a visit. This loss cannot be quantified, but is a sizeable loss to local residents. The impact on the quality of life and community cohesion would be much greater under the Gates-out Alternative than under the 2-month Gates-in alternatives.

The loss of the boat drag races would result in a loss of community cohesion and civic pride.

Under the 2-month Gates-in alternatives and the Gates-out Alternative, the Nitro National drag boat races, traditionally held on Lake Red Bluff over Memorial Day weekend, could no longer be held. Beyond the economic impact of this change, the boat drags is an important community event that is a shared reference point for local citizens. The loss of this event would result in a loss of community cohesion and civic pride. Even though this effect cannot be quantified, it would represent a loss to many local residents who enjoy the annual event.

A summary of the impacts to the build alternatives is shown in Table 3.10-14, with negative impacts shown in parenthesis. The results shown in the table will be used as the basis for the comparison of impacts presented below.

TABLE 3.10-14
Summary of Socioeconomic Impacts[a]

	Alternative 1: 4-month Gates-in	Alternative 2: 2-month Gates-in	Alternative 3: Gates-out
Construction Impacts (Option A)			
County Sales Impact	$80,300,000	$90,300,000	$88,000,000
Employee-years	790	889	791
Construction Impacts (Option B)			
County Sales Impact	$87,300,000	$72,600,000	Same as above
Employee-years	860	715	
Potential for Positive Economic Impacts from Fish-run Improvements	Less than Alt 2 and Alt 3	More than Alt 1, Similar to Alt 3	More than Alt 2, Similar to Alt 3
Economic Losses from Reduced Recreation and Tourism Spending (Direct, Indirect, Induced)			
Annual Sales	No impact	($363,000)[a]	($1,088,000)
Annual Employment	No impact	(6)	(19)
Economic Losses from the Loss of the Nitro National Drag Boat Races			
Annual Sales	No impact	($3,154,000)	($3,154,000)
Employment[b]	No impact	(49)	(49)
Potential Reduction in Property Values in City of Red Bluff			
Assessed Value of Potentially Impacted Properties	No impact	$29,100,000	$29,100,000
Number of Potentially Impacted Properties	No impact	213	213
Likely Decline in Property Values	None	(small)	(low end of 4-18% range)
Fiscal Impacts from Loss of Lake to the City of Red Bluff			
Property Tax Losses	No impact	(Small)	(Small)
Annual Sales and Use Tax Losses ($)	No impact	($52,000)	($89,000)
Annual Sales and Use Tax Losses (percent of City Total)	No impact	(1.1%)	(1.9%)
Reduced Quality of Life and Loss of Community Cohesion	No impact	(Moderate)	(High)

[a]Negative impacts are shown in parentheses.

[b]Employment impact is difficult to interpret. Number shown is based on annual relationship to sales, but most jobs affected are temporary jobs associated with the event.

No Action Alternative

No changes to hydrology or surface-water management would occur. Gates would be operated during the current 4-month gates-in period. Construction activity would be limited to the installation of the fourth pump at RPP. No other construction activity would occur as a result of the No Action Alternative.

1A: 4-month Improved Ladder Alternative

Construction-related Impacts.

Impact 1A–S1: Spending. Alternative 1A would result in direct, indirect, and induced spending of approximately $80.3 million and 790 employee-years during the project. These impacts are similar to those of Alternative 3.

The impacts from construction on socioeconomics would be less than significant; therefore, no mitigation is required.

Operations-related Impacts.

Impact 1A–S2: Improved Fish Runs. The only operations-related impact under Alternative 1A would be the potential for positive economic impacts from improved fish runs. However, the potential for positive economic impact is uncertain and should be viewed as speculative at this stage of analysis.

The impacts from operations on socioeconomics would be less than significant; therefore, no mitigation is required.

1B: 4-month Bypass Alternative

Construction-related Impacts.

Impact 1B–S1: Spending. Alternative 1B would result in direct, indirect, and induced spending of approximately $87.3 million and 860 employee-years. These impacts are just below those of Alternative 2A, which has the greatest economic impact during construction.

The impacts from construction on socioeconomics would be less than significant; therefore, no mitigation is required.

Operations-related Impacts.

Impact 1B–S2: Improved Fish Runs. Impacts from operations on socioeconomics under Alternative 1B would be the same as those identified for Alternative 1A (see Impact 1A– S2).

The impacts from operations on socioeconomics would be less than significant; therefore, no mitigation is required.

2A: 2-month Improved Ladder Alternative

Construction-related Impacts.

The 2-month Improved Ladder Alternative would result in the greatest economic impact during construction.

Impact 2A–S1: Spending. Alternative 2A would result in direct, indirect, and induced spending of approximately $90.3 million and 889 employee-years. These impacts would be the greatest of the alternatives.

The impacts from construction on socioeconomics would be less than significant; therefore, no mitigation is required.

Operations-related Impacts.

Impact 2A–S2: Improved Fish Runs, Reduced Recreation and Tourism Spending, and Loss of Property Values. As shown in Table 3.10-14, there would be a number of potential economic impacts under the 2-month Gates-in alternatives. In general, the impacts associated with the 2-month Gates-in alternatives would be noticeable, but not significant.

The one positive impact, the potential for positive economic impacts from fish-run improvements would be similar in magnitude to Alternative 3 and more than Alternatives 1A and 1B. However, the potential for positive economic impact is uncertain and should be viewed as speculative at this stage of analysis.

The combined impact from reduced recreation and tourism spending and from the loss of the Nitro National drag boat races is estimated to be about $3.5 million per year. This is small relative to total annual sales in Tehama County of $1.7 billion, but it would be a more substantial impact to the City of Red Bluff. One measure of this impact is the resulting loss of sales and use tax revenue of $52,000, which is about 1.1 percent of the City's total revenues from sales and use taxes.

There would be some potential for a loss of property values for the owners of property adjacent to the lake or with easy access to the lake resulting from the loss of the lake for an additional 2 months of the year. There would also be a moderate reduction in the quality of life and reduced community cohesion for local residents. ***However, the lake would still be present during the hottest summer months (July and August), and while the socioeconomic impacts would be noticeable, the impacts would not be significant; therefore, no mitigation is required.***

2B: 2-month with Existing Ladders Alternative

Construction-related Impacts.

Impact 2B–S1: Spending. Alternative 2B would result in direct, indirect, and induced spending of approximately $72.6 million and 715 employee-years. These impacts would be the lowest of the alternatives.

The impacts from construction on socioeconomics would be less than significant; therefore, no mitigation is required.

Operations-related Impacts.

Impact 2B–S2: Improved Fish Runs, Reduced Recreation and Tourism Spending, and Loss of Property Values. Impacts from operations on socioeconomics under Alternative 2B would be the same as those identified for Alternative 2A (see Impact 2A–S2).

The impacts from operations on socioeconomics would be less than significant; therefore, no mitigation is required.

3: Gates-out Alternative

Construction-related Impacts.

Impact 3–S1: Spending. Alternative 3 would result in direct, indirect, and induced spending of approximately $80.3 million and 791 employee-years. These impacts are similar to those of Alternative 1A.

The impacts from construction on socioeconomics would be less than significant; therefore, no mitigation is required.

Operations-related Impacts.

Impact 3–S2: Improved Fish Runs, Reduced Recreation and Tourism Spending, Decreased Property Value, and Reduced Quality of Life and Community Cohesion. As shown in Table 3.10-14, there would be a number of potential economic impacts under Alternative 3. Although there have been gradual reductions in the amount of time the lake has been available each year, the total loss of Lake Red Bluff would have much more dramatic effects on the local economy than those in recent history. The sum total of the various impacts of this alternative would result in a significant economic impact to the local community.

The one positive impact, the potential for positive economic impacts from fish-run improvements would be similar in magnitude to Alternative 3 and more than Alternatives 1A and 1B. However, the potential for positive economic impact is uncertain and should be viewed as speculative at this stage of analysis.

The combined impact from reduced recreation and tourism spending and from the loss of the Nitro National drag boat races is estimated to be about $4.2 million per year. This is small relative to total annual sales in Tehama County of $1.7 billion, but it would be a more substantial impact to the City of Red Bluff. One measure of this impact is the resulting loss of sales and use tax revenue of $89,000, which is about 1.9 percent of the City's total revenues from sales and use taxes. This impact is not quite double the impact that would be experienced under Alternatives 2A and 2B.

It is likely that the value of properties adjacent to the lake or with easy access to the lake would decline from the loss of the lake. While it is uncertain how large this impact would be, it is expected that, in general,

the impact would be in the low end of national estimates of the value of lake views and proximity of 4 to 18 percent.

This alternative would also result in a noticeable impact to local residents in a number of social aspects such a reduction in the quality of life and reduced community cohesion. Even though these impacts are hard to quantify, they are nonetheless real impacts to the local community.

The sum of the effects on local economic activity, fiscal impacts to the City of Red Bluff, property value declines, and social impacts under Alternative 3 result in a significant socioeconomic impact and cannot be mitigated.

3.10.3 Mitigation

This section discusses mitigations for each significant impact described in Environmental Consequences.

1A: 4-month Improved Ladder

No significant impacts from construction or operations of Alternative 1A have been identified; therefore, no mitigation is provided.

1B: 4-month Bypass Alternative

No significant impacts from construction or operations of Alternative 1B have been identified; therefore, no mitigation is provided.

2A: 2-month Improved Ladder Alternative

No significant impacts from construction or operations of Alternative 2A have been identified; therefore, no mitigation is provided.

2B: 2-month with Existing Ladders Alternative

No significant impacts from construction or operations of Alternative 2B have been identified; therefore, no mitigation is provided.

3: Gates-out Alternative

Significant, unavoidable impacts under Alternative 3 cannot be mitigated; therefore, no mitigation is provided.

3.11 Cultural Resources

3.11.1 Affected Environment

This section addresses potential impacts to archaeological resources, historic buildings and structures, and traditional cultural resources (collectively known as cultural resources) as a result of project implementation. ~~The cultural resources of the project area were reviewed to determine whether sensitive or important resources might be impacted as a result of the project. This section reviews known and potential resources that may be impacted by project implementation.~~

Prehistoric and Historic Background

Prehistoric Background. Chartkoff and Chartkoff (1984) identified three major periods of prehistory observed throughout California: Pre-Archaic, Archaic, and Pacific. During the Pre-Archaic period (prior to 11,000 years before present), evidence throughout California and the Western United States generally suggests that populations were small, and their subsistence economies included the capture of big game, such as now-extinct mammoth and mastodon. Large, fluted lanceolate projectile points known as Clovis points, which are the most widely recognized markers for this time period, have been found sporadically in California. Archaeologists have suggested that very early sites may be buried in alluvium in the Sacramento Valley and foothills (Moratto, 1984).

During the Early and Middle Archaic periods (11,000 to 6,000 years before present), Northern California prehistoric cultures, as elsewhere, began to put less emphasis on large game hunting. Advances in technology, such as the advent of milling stones, indicate that new food processing methods became important during these periods, enabling more efficient use of certain plant foods including grains and plants with hard seeds. Evidence of human occupation in the Sacramento Valley and adjacent foothills during these periods is rare, but present (Willig and Aikens, 1988). During the Late Archaic period, aggregations of food resources, such as occurred at the shores of a large body of water or along a major fish-producing river, allowed for larger aggregations of people, at least seasonally.

The beginning of the Pacific period is marked by the advent of acorn meal as the most important staple food resource for most California Indians (Chartkoff and Chartkoff, 1984). During the Late and Final Pacific period (1,500 years before present), the bow and arrow replaced the spear thrower and dart as the hunting tool and weapon of choice. The most useful markers for this period tend to be the small projectile points used as arrow tips. Late and Final Pacific period sites are generally well-developed midden deposits, some with surface

components. The midden deposits contain both cremated and intact human burials and residential features, including house floors, reflecting the increasingly sedentary populations.

Ethnography. The dominant group of native inhabitants of the Red Bluff area is the Wintu. The Wintu are the northernmost dialectical groups of the Wintun, whose territory roughly incorporates the western side of the Sacramento Valley from the Carquinez Straits north to include most of the upper Sacramento River drainage, the McCloud River, and the lower reaches of the Pit River. The Wintun, a collective name, were divided into three subgroups with the southern, central, and the northern dialects known respectively as Patwin, Nomlaki, and Wintu. The area surrounding RBDD has been identified as belonging to the River Nomlaki (Goldschmidt, 1978). The River Nomlaki village of Tehemet was near the confluence of the Sacramento River and Elder Creek, approximately 5 miles south of the current RBDD (Goldschmidt, 1978).

Although Wintun subsidence was heavily weighted toward the acorn, the Sacramento River supplied a large variety of foods, not only including fish, but also large and small game found at or near the river.

Although subsistence was heavily weighted toward the acorn, the staple of the diet, the Sacramento River supplied a large variety of foods. These likely included not only fish but also large and small game found at or near the river. Hunting and seasonal gathering of vegetables occurred throughout the villages' territories.

Villages were usually situated along rivers and streams or close to springs where reliable water supplies allowed a semi-permanent occupation. Major villages were located along the riverbanks, with locations oriented to higher spots on the natural levees. Smaller villages tended to be along the tributary streams and near springs. Cultural resources surveys in the region have demonstrated that there was very heavy use of tributary streams and other areas at a distance from the main river, while early ethnographies had emphasized the concentration of population along the Sacramento River.

~~Historical Settlement~~ Historic Background. Tehama County began in 1856, with the incorporation of portions of Colusa, Butte, and Shasta counties. The community of Tehama was the first County seat, but this honor was transferred to Red Bluff in 1857 (Hoover et al., 1970).

The earliest European explorer in the area was most likely the Spanish explorer Luis Arguello in 1821, followed 7 years later by Jedediah Strong Smith. Other fur trappers and travelers followed, and the route along the Sacramento River became known as the California-Oregon Trail, and later, the California-Oregon Road (Hoover et al., 1970).

Interest in settlement in the county began somewhat by accident when John Bidwell, Peter Lassen, and John Burheim were in pursuit of horse thieves in 1843 and ended their chase somewhere near Red Bluff.

Peter Lassen was so impressed with the area that he applied for a Mexican Land Grant.

The community of Red Bluff was named after the prominent geologic feature, the bluffs, located along the Sacramento River. The earliest known reference to the future town is in May 1850, when Sashel Woods and Charles L. Wilson were noted to be laying out a town at Red Bluffs, or the Bluffs (Bruff cited in Gudde, 1969). Other early names applied to Red Bluff include Leodocia and Covertsburg. By 1854, maps showed the community as Red Bluffs (Gudde, 1969). The community of Proberta, located approximately 4 miles south of RBDD, was named after a railroad station in 1889, in honor of Edward Proberta (Gudde, 1969).

Methods to Collect Information for Affected Environment

For archaeological resources, the area of potential effect is the area that could experience direct impacts from ground disturbance. The area of potential effect included the potential footprint of each alternative, including the pump station and the bypass channel (Figure 3.11-1). For historic buildings and structures, the area of potential effect is the area that could experience indirect effects (e.g., visual) as a result of project implementation. Information on cultural resources was collected through a records search, literature review, consultation with agencies, and two archaeological surveys. The records search and literature review were conducted at the Northeast Information Center of the California Historical Resources Information System.

A request for information concerning Sacred Lands and the names of individuals and groups who might have knowledge of the study area was submitted to the Native American Heritage Commission. The Native American Heritage Commission replied with a list of three names of individuals and organizations that might have knowledge of the area, and with information indicating that no Sacred Lands are known to be located within the study area. Letters with accompanying maps were sent to the three Native American individuals and organizations. The letters requested information on the study area and information about individuals who might have knowledge of the area. Letters and maps were also sent to the Tehama County Genealogical and Historical Society, and the Tehama County Museum Foundation requesting information they might have concerning the study area.

Two responses to these inquires were received. The first, from the Paskenta Band of Nomlaki Indians, noted that any area adjacent to a water course is sensitive and has the potential to contain cultural resources. The second, from the Tehama County Genealogical and

Historical Society, noted that they were not aware of any historic-period resources in the study area.

In addition, USBR sent a letter of inquiry to the Paskenta Band of Nomelaki Indians. No response to this specific inquiry was received.

Two archaeological surveys were conducted in the study area (Peak and Associates, 2002; Welch, 2002). The first survey included evaluation of the study area by a professional archaeologist by means of parallel transects not exceeding 15 meters in width (Peak and Associates, 2002). Every effort was made to inspect all exposed sediment, including the cutbanks along both banks of the Sacramento River. One area, consisting of a dense stand of riparian species, was not inspected because of limited access (see Figure 3.11-1). In addition, portions of the Recreation Area in the Mendocino National Forest were covered with sod, and surface visibility was limited to small, disturbed areas. The remaining areas studied were generally free of vegetative cover.

The second archaeological survey included excavation of four trenches in areas thought to represent the recorded location of sites TEH-59 and TEH-66 (Welch, 2002). One trench was excavated within the mapped location of TEH-66 (6 meters long by 2.9 meters deep), two were excavated in the mapped location of TEH-59 (5 meters by 3.5 meters and 5 meters by 3.8 meters), and one was excavated for comparative purposes (4.5 meters by 2.5 meters). No cultural resources were identified in these trenches.

Known Prehistoric Resources. The records search identified three previous archaeological surveys in the vicinity of RBDD (Information Center File Numbers T-6, T-14, and T-L-121), but the files for these surveys are missing; therefore, no information is available. Two prehistoric-period cultural resources, TEH-881 and TEH-882, were identified and recorded within a 0.5-mile radius of the study area, but they are not located within the area of potential effect (Peak and Associates, 2002). Accordingly, they are not discussed further.

The literature review and records search revealed that there were three sites recorded in the area of potential effect: TEH-32, TEH-59, and THE-66 (at Redbank). Little information is available on the nature and location of these sites. After the record search, Peak and Associates (1978) described sites TEH-32 and TEH-66 as having been adjacent to each other and modified by activities associated with the Diamond Lumber Mill. According to the recorder of the sites, the sites had been "destroyed or extensively modified" by activities at the Diamond Lumber Mill. Site TEH-59 was described by Peak and Associates (1978) as potentially a part of the ethnographically known Village of Damak. However, Johnson and Johnson (1974) reported the site as damaged by

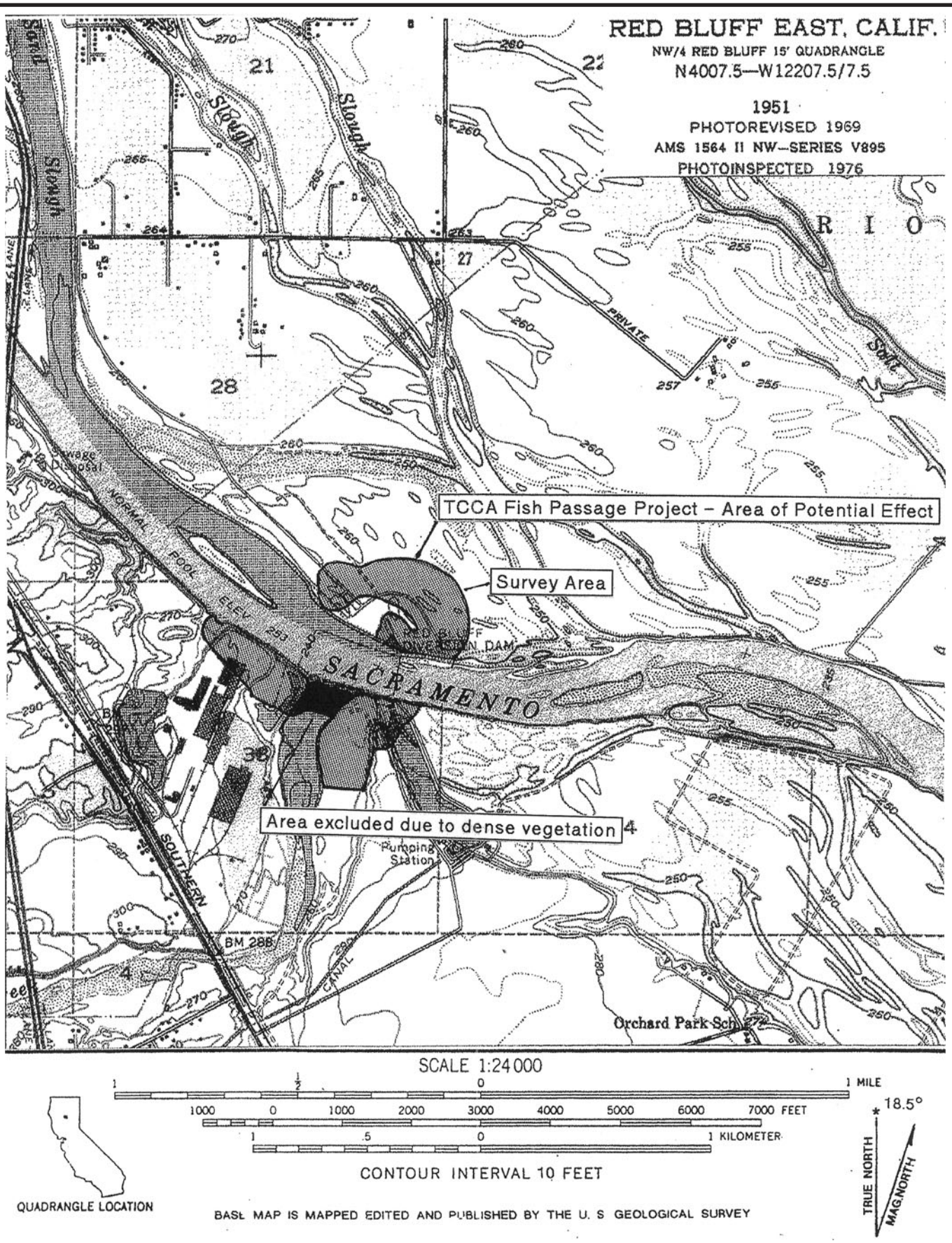


FIGURE 3.11-1
AREA OF POTENTIAL EFFECT
FISH PASSAGE IMPROVEMENT PROJECT
RED BLUFF DIVERSION DAM EIS/EIR

WB032008002RDD_03 (4/28/08)

CH2MHILL

activities of the Diamond Lumber Mill. After reviewing the site forms, Peak and Associates concluded that the site had "low research value."

The locations of sites TEH-59 and TEH-66 were thoroughly checked during the 2002 archaeological surveys. The areas were found to have been substantially modified, and no archaeological materials were discovered (Peak and Associates, 2002). The USGS topographic map shows the area surrounding the sites as purple, indicating that the area was disturbed sometime between 1951 and 1969. In addition, four trenches were dug at the recorded locations of sites TEH-59 and THE-66. No archaeological materials were discovered (Welch, 2002). Because of the known disturbances to the area of these sites and because of the results of the archaeological surveys, it is assumed that these sites have been destroyed. However, USBR still needs to conclude the Section 106 process for this undertaking and will seek the State Historic Preservation Officer's concurrence that no historic properties will be affected by the project.

Known Structural Resources. During the field survey, o~~O~~ne cultural resource, a small, one-room, single-story structure was identified within the ~~proposed activity area~~ area of potential effect ~~of all of the action alternatives~~. This resource was assigned a temporary designation, PA-02-01, and was recorded to current California Office of Historic Preservation standards. California Department of Parks and Recreation 523 Series forms, photographs, a scaled sketch map, and location map were also documented (Peak and Associates, 2002). This small structure is believed to be ineligible for inclusion in the National Register of Historic Places (NRHP), although USBR still needs to conclude the Section 106 process for this undertaking and will seek the State Historic Preservation Officer's concurrence that PA-02-01 is not eligible. ~~The reported locations of cultural resources identified in the literature search were thoroughly checked, but the area was found to have been substantially modified during recent times; accordingly, they are not considered further.~~

One cultural resource, a small, one-room, single-story structure was identified within the ~~proposed activity area~~ area of potential effect ~~of all of the action alternatives~~.

~~PA-02-01 consists of a front gable, rectangular-shaped, single-story, wood frame building with tongue-and-groove siding, galvanized sheet metal roof (replacement over green composition rolled roofing), with two, double-sash windows, close eaves, and a plywood door (replacement). It measures approximately 20 by 10 feet. A 20- by 8-foot platform (34 inches high) is located directly adjacent to the building on the south side. A concrete pad, measuring 30 by 30 feet, with threaded rebar imbedded, is located approximately 11 feet to the east. Some evidence of recent (unauthorized) habitation was evident, with refuse and a chair (overturned) in the building.~~

~~Given the size of the building, it is unlikely that it ever served as a residence. It is more likely that the building was used for storage, or as a~~

~~temporary work station. Three power poles also are located in proximity, possibly indicating use as some support building for water pumping activities. The presence of an elevated platform adjacent to the building (at window height) may also imply that the building was not originally built or designed for the use at this locale, but was moved to the site after construction. The building is not shown on the USGS Red Bluff East 7.5-minute series topographic quadrangle.~~

~~It is questionable as to whether or not the structure was originally built at this site. The small size and lack of internal elements that would allow for habitation essentially precludes the possibility that this structure was associated with an individual important in history. It most likely was a small support structure building used during the operation of the Diamond International Lumber Yard, a development itself that is less than 50 years in age.~~

Two additional structures or facilities remain to be recorded and evaluated for possible inclusion in the NRHP because they lie adjacent to the area of potential effect. The Diamond International Lumber Mill (Mill Site) and associated buildings are abandoned and dilapidated. The Mill Site is assumed to be ineligible for the NRHP. USBR still needs to conclude the Section 106 process for this undertaking and will seek the State Historic Preservation Officer's concurrence that the Mill Site is not eligible. If it is determined that the Mill Site is eligible, then USBR will invoke the criterion of adverse effect found at 36 CFR Part 800.5 and assess effects of the projects to the Mill Site.

The small size and lack of internal elements that would allow for habitation essentially precludes the possibility that this structure was associated with an individual important in history.

The Red Bluff Dam and Diversion Facility will be affected by the proposed undertaking. The dam and associated facility will be evaluated for possible inclusion in the NRHP. As with the Mill Site, if the Red Bluff Dam and Diversion Facility is determined to be eligible, then USBR will apply the criterion of adverse effect and conclude the Section 106 process, as appropriate.

3.11.2 Environmental Consequences

As with most construction projects, implementation of any of the build alternatives has the potential to impact cultural resources in the project vicinity. Following is a description of the methods used to determine the existence of archaeological resources, historic buildings and structures, and traditional cultural resources, ~~sensitive resources~~ as well as the potential for impacts to those resources.

Methodology

Using existing data references, cultural resource impacts were categorized as either direct or indirect impacts. Direct impacts are those that may directly, physically affect archaeological and historic resources as a result of excavations or other disturbances. Indirect impacts may include effects to the visual setting of resources through new

construction or noise and vibration impacts. ~~A literature review was conducted on the project vicinity. According to the Northeast Information Center of the California Historical Resources Information, three early archeological inspections were conducted in the vicinity of RBDD. Two prehistoric-period cultural resources have been identified and recorded within a one-half-mile radius of the proposed activity area. Three unrecorded cultural resources to be located within the proposed activity area were plotted on Information Center maps. All of these resources were noted for additional consideration.~~

~~A request for information concerning Sacred Lands and the names of individuals and/or groups who may have knowledge of the proposed activity area was submitted to the Native American Heritage Commission. The Heritage Commission replied with a list of names of individuals and organizations that may have knowledge of the area, and with information indicating that no Sacred Lands are known to be located within the proposed activity area. Letters with accompanying maps were sent to three Native American individuals and groups listed to request information on the proposed activity area, or information concerning individuals who might have knowledge of the area. Letters and maps were also sent to the Tehama County Genealogical and Historical Society and Tehama County Museum Foundation requesting information they might have concerning the proposed activity area.~~

~~Two responses to these inquires were received. One noted that any area adjacent to a water course is sensitive and could have the potential to contain cultural resources. The second, from the Tehama County Genealogical and Historical Society, noted that they were not aware of any historic-period resources at the proposed activity area.~~

~~The proposed activity area incorporates two areas administered by federal agencies, USFS and USBR. Both agencies were contacted for assistance in obtaining the necessary permits for an archeological inspection.~~

~~The proposed project area was evaluated by a professional archeologist by means of parallel transects not exceeding 15 meters in width. Every effort was made to inspect all exposed sediment, including the cutbanks along both banks of the Sacramento River. One area, consisting of a dense stand of riparian species, was not inspected because of limited access. Portions of the Recreation Area, administered by Mendocino National Forest, were covered with sod; and surface visibility was limited to small, disturbed areas. The remaining area was generally free of vegetative cover. The results of the inspections, consultations, and research form the basis of the impact analysis.~~

Significance Criteria

The proposed TCCA Fish Passage Improvement Project requires compliance with both the National Historic Preservation Act (NHPA) and cultural resources requirements found in CEQA, although federal law generally supersedes state law in the event of a conflict. Section 106 of the NHPA requires the federal government to take into account the effects of an undertaking on cultural resources listed on or eligible for listing on the NRHP and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Those resources that are listed on or eligible for inclusion in the NRHP are referred to as historic properties. Historic properties are "districts, sites, buildings, structures, or objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association (36 CFR Part 60.4)" and meet at least one of four eligibility criteria. Historic properties must:

a) be associated with events that have made a significant contribution to the broad patterns of our history;

b) be associated with the lives of important people;

c) embody distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic value; or

d) yield or have yielded information important in prehistory or history.

The 36 CFR Part 800 regulations that implement Section 106 follow a series of steps that are designed to identify interested parties, determine the area of potential effect, conduct cultural resource inventories, evaluate the cultural resources to determine if they are historic properties, and assess effects to any historic properties within the area of potential effect. In the event that identified historic properties will experience adverse effects, then the federal agency seeks to resolve these adverse effects through development and implementation of an agreement document. All steps identified within the 36 CFR Part 800 regulations require consultation with interested parties, State Historic Preservation Officer, and Indian tribes.

Native American tribes are participants in the Section 106 process. The regulations require federal agencies to consult with federally recognized tribes to determine if sites of religious or cultural significance are present within the area of potential effect for a specific action. Non-federally recognized tribes may also have concerns, and USBR involves such tribes as interested members of the public pursuant to 36 CFR Part 800.2(c)(5) and 800.2(d).

According to CEQA and the provisions of the NHPA, an impact would be considered significant if it:

a) Caused a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5;

b) Caused a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5;

c) Directly or indirectly destroyed a unique paleontologic resource or site or unique geologic feature; or

d) Disturbed any human remains, including those interred outside of formal cemeteries.

~~The Proposed TCCA Fish Passage Improvement Project requires compliance with Section 106 of the National Historic Preservation Act of 1966. Section 106 requires that federal agencies take into account the effect of their actions on properties that may be eligible for, or listed in, the National Register of Historic Places (NRHP). Further, decisions regarding management of cultural resources hinge on determinations of their significance (36 CFR 60.2). As part of this decision-making process, the National Park Service has identified components that must be considered in the evaluation process, including:~~

- ~~NRHP criteria for significance~~
- ~~Historical context~~
- ~~Integrity~~

~~The NRHP criteria for evaluation are those resources:~~

~~(a) That are associated with events that have made a significant contribution to the broad patterns of our history; or~~

~~(b) That are associated with the lives of persons significant in our past; or~~

~~(c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or~~

~~(d) That have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).~~

A well-developed historical context helps determine the association between property types and broad patterns of American history.

For this analysis, the historical context is defined as a narrative statement "that groups information about a series of historic properties based on a shared theme, specific time period, and geographical area." To evaluate resources in accordance with federal guidelines, these sites must be examined to determine whether they are examples of a defined "property type." The property type is a "grouping of individual properties based on shared physical or associative characteristics." Through this evaluation, each site is viewed as a representative of a class of similar properties rather than as a unique phenomenon.

A well-developed historical context helps determine the association between property types and broad patterns of American history. Once this linkage is established, each resource's potential to address specific research issues can be explicated.

For a property to be eligible for listing in the NRHP, it must meet one of the criteria for significance and retain integrity.

For a property to be eligible for listing in the NRHP, it must meet one of the criteria for significance (36 CFR 60.4 [a, b, c, or d]) and retain integrity. Integrity is defined as "the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic or prehistoric period."

To define the concept of integrity, this analysis uses seven aspects or qualities that define integrity in various combinations. The seven aspects are location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity, a property will possess several or usually most of these aspects. The retention of specific aspects is necessary for a property to convey this significance. Determining which of the seven aspects are important involves knowing why, where, and when the property is significant.

This evaluation used the following steps in assessing integrity:

- Define the essential physical features that must be present for a property to represent its significance
- Determine whether the essential physical features are visible enough to convey their significance
- Determine whether the property needs to be compared with similar properties
- Determine, based on the significance and essential physical features, which aspects of integrity are particularly vital to the property being nominated and if they are present

Ultimately, the question of integrity is answered by whether or not the property retains the identity for which it is significant. All properties change over time. It is not necessary for a property to retain all its historic physical features or characteristics. However, the property must retain the essential physical features that enable it to convey its historic

~~identity. The essential physical features are those features that define why a property is significant.~~

~~A property's historical significance depends on certain aspects of integrity. Determining which of the aspects is most important to a particular property requires an understanding of the property's significance and its essential physical features. For example, a property's historic significance can be related to its association with an important event, historical pattern, or person. A property that is significant for its historic association is eligible for listing if it retains the essential physical features that made up its character or appearance during the period of its association with the important event, historical pattern, or person.~~

~~A property important for association with an event, historical pattern, or person ideally might retain some features of all seven aspects of integrity. Integrity of design and workmanship, however, might not be as important to the significance, and would not be relevant if the property were an archeological site. A basic integrity test for a property associated with an important event or person is whether a historical contemporary would recognize the property as it exists today. For archeological sites that are eligible under Criteria a and b, the seven aspects of integrity can be applied in much the same way as they are to buildings, structures, or objects.~~

~~In summary, the assessment of a resource's NRHP eligibility hinges on meeting two conditions:~~

- ~~The site must meet at least one of the NRHP evaluation criteria either individually or as a contributing element of a district based on the historic context that is established~~
- ~~The site must possess sufficient integrity, i.e., it must retain the qualities that make it eligible for the NRHP~~

Consultation

USBR consulted with State Historic Preservation Office regarding this project on May 1, 2002, with a request for them to concur with the determination that two archaeological sites, TEH-59 and TEH-66, and the structure PA-02-01 were not eligible for inclusion in the NRHP. It was also requested that that State Historic Preservation Officer comment on the adequacy of USBR's efforts to identify historic properties within the area of potential effect. The State Historic Preservation Officer's response, dated July 3, 2002, did not concur with either request. The response letter indicated that the area of potential effect was not clearly identified, that they could not concur with USBR's determinations of eligibility for any of the sites, and that additional structures were located adjacent to the project area that needed to be discussed. USBR will continue consultation on

these issues and on the eligibility of the Mill Site and on the Diversion Facility.

No Action Alternative

No changes to hydrology or surface-water management would occur. Gates would be operated during the current 4-month gates-in period. Construction activity would be limited to the installation of the fourth pump at RPP. No other construction activity would occur as a result of the No Action Alternative.

1A: 4-month Improved Ladder Alternative

Construction-related Impacts.

Impact1A–CR1: Identified Structural Resources. The one-story structure, PA-02-01, does ~~not retain integrity as indicated in the replaced front door, new roof, and addition of the raised platform on the south side.~~ not appear eligible for inclusion in the NRHP. In addition, the Mill Site does not appear eligible for inclusion in the NRHP. USBR still needs to conclude the Section 106 process for this undertaking and will seek State Historic Preservation Officer concurrence that PA-02-01 and the Mill Site are not eligible for inclusion in the NRHP. The eligibility of the Diversion Facility also remains to be determined in consultation with the State Historic Preservation Officer. If the Diversion Facility is determined eligible, then USBR will apply the criterion of adverse effect found at 36 CFR Part 800.5 and conclude the Section 106 process, as appropriate.~~This resource does not qualify as a historic property under the NRHP criteria.~~

~~***The impacts from construction activities on this structure would be less than significant; therefore, no mitigation is required.***~~

The impacts from construction activities on these structures would be less than significant; therefore, no mitigation is required unless the Diversion Facility is found to be a historic property. If so, then USBR will assess effects to the Diversion Facility and develop mitigation measures.

Impact 1A–CR2: Unidentified Cultural Resources. Construction activities related to this alternative include excavation and other grading and digging activities.

It is possible that currently unidentified cultural resources could be discovered during these activities, and destruction of such resources could result in a significant impact.

Operations-related Impacts. ***No impacts are anticipated during operations under Alternative 1A; therefore, no mitigation is required.***

1B: 4-month Bypass Alternative

Construction-related Impacts.

Impact1B–CR1: Identified Structural Resources. Impacts on identified cultural resources from construction under Alternative 1B would be the same as those identified for Alternative 1A (see Impact 1A–CR1).

The impacts from construction activities on this structure would be less than significant; therefore, no mitigation is required.

Impact 1B–CR2: Unidentified Cultural Resources. Impacts on unidentified cultural resources from construction under Alternative 1B would be the same as those identified for Alternative 1A (see Impact 1A–CR2).

It is possible that currently unidentified cultural resources could be discovered during these activities, and destruction of such resources could result in a significant impact.

Operations-related Impacts. ***No impacts are anticipated during operations under Alternative 1B; therefore, no mitigation is required.***

2A: 2-month Improved Ladder Alternative

Construction-related Impacts.

Impact 2A–CR1: Identified Structural Resources. Impacts on identified cultural resources under Alternative 2A would be the same as those identified for Alternative 1A (see Impact 1A–CR1).

The impacts from construction activities on this structure would be less than significant; therefore, no mitigation is required.

Impact 2A–CR2: Unidentified Cultural Resources. Impacts on unidentified cultural resources from construction under Alternative 2A would be the same as those identified for Alternative 1A (see Impact 1A–CR2).

It is possible that currently unidentified cultural resources could be discovered during these activities, and destruction of such resources could result in a significant impact.

Operations-related Impacts. ***No impacts are anticipated during operations under Alternative 2A; therefore, no mitigation is required.***

2B: 2-month with Existing Ladders Alternative

Construction-related Impacts.

Impact 2B–CR1: Identified Structural Resources. Impacts on identified cultural resources under Alternative 2B would be the same as those identified for Alternative 1A (see Impact 1A–CR1).

The impacts from construction activities on this structure would be less than significant; therefore, no mitigation is required.

Impact 2B–CR2: Unidentified Cultural Resources. Impacts on unidentified cultural resources from construction under Alternative 2B would be the same as those identified for Alternative 1A (see Impact 1A–CR2).

It is possible that currently unidentified cultural resources could be discovered during these activities, and destruction of such resources could result in a significant impact.

Operations-related Impacts. ***No impacts are anticipated during operations under Alternative 2B, therefore, no mitigation is required.***

3: Gates-out Alternative

Construction-related Impacts.

Impact 3–CR1: Identified Structural Resources. Impacts on identified cultural resources from construction under Alternative 3 would be the same as those identified for Alternative 1A (see Impact 1A–CR1).

The impacts from construction activities on this structure would be less than significant; therefore, no mitigation is required.

Impact 3–CR2: Unidentified Cultural Resources. Impacts on unidentified cultural resources from construction under Alternative 3 would be the same as those identified for Alternative 2A (see Impact 1A–CR2).

It is possible that currently unidentified cultural resources could be discovered during these activities, and destruction of such resources could result in a significant impact.

Operations-related Impacts. ***No impacts are anticipated during operations under Alternative 3; therefore, no mitigation is required.***

3.11.3 Mitigation

This section discusses mitigations for each potentially significant impact described in Environmental Consequences.

1A: 4-month Improved Ladder Alternative

Mitigation 1A–CR2. With any surface inspection there is always a remote possibility that previous activities (both natural and cultural) have obscured prehistoric or historic period artifacts or habitation areas, leaving no surface evidence that would permit discovery of these cultural resources. If during construction activities, ~~unusual~~ amounts of non-native stone (obsidian, fine-grained silicates, basalt), bone, shell, or prehistoric or historic period artifacts (purple glass) are discovered, or if areas that contain dark-colored sediment that do not appear to have been created through natural processes are discovered, then work should cease in the immediate area of discovery, and USBR's Contract Inspector and the USBR Regional Archaeologist ~~a professionally qualified archeologist should~~ would be contacted immediately for an

onsite inspection of the discovery. USBR would consult with the State Historic Preservation Officer pursuant to 36 CFR 800.13 to evaluate the find, assess the project's effects on the find, and resolve any potential adverse effects. ~~If any bone is uncovered that appears to be human, the Tehama County Coroner would be contacted, according to state law. If the coroner determines that the bone most likely represents a Native American interment, the Coroner would contact the Native American Heritage Commission in Sacramento for identification of the most likely descendants.~~

~~Implementation of this mitigation would reduce potentially significant impacts to a less than significant level.~~If any bone is uncovered that appears to be human, the Tehama County coroner would be contacted, according to state law. If the coroner determines that the bone most likely represents a Native American interment, the coroner would contact the Native American Heritage Commission for identification of the most likely descendants.

In the event that human remains or cultural items are discovered on USBR lands, then all work should cease in the vicinity of the discovery, and the requirements of the Native American Graves Protection and Repatriation Act and Reclamation Directives and Standards LND 07-01 shall be implemented and followed.

1B: 4-month Bypass Alternative

Mitigation 1B–CR2. See Mitigation 1A–CR2.

2A: 2-month Improved Ladder Alternative

Mitigation 2A–CR2. See Mitigation 1A–CR2.

2B: 2-month with Existing Ladders Alternative

Mitigation 2B–CR2. See Mitigation 1A–CR2.

3: Gates-out Alternative

Mitigation 3–CR2. See Mitigation 1A–CR2.

3.12 Aesthetic and Visual Resources

3.12.1 Affected Environment

The Sacramento River is considered an important aesthetic and visual resource for residents of the City of Red Bluff and Tehama County and visitors to the area. The river largely defines the eastern edge of the City, although there are some incorporated areas to the east of the river. Residents and visitors actively use the river for recreation, both on and adjacent to the river. Four publicly accessible parks are in the project vicinity, and many residences and businesses line the river as it flows through town. For northbound travelers along I-5, the Sacramento River at Red Bluff is the first large body of water viewed north of the Sacramento area. Anyone traveling through Red Bluff on I-5 crosses the Sacramento River twice, a source of some pride for Red Bluff residents. When the dam gates are in the lowered position for 4 months each summer (May 15 through September 15), the formation of Lake Red Bluff causes some viewers to feel that Red Bluff has an abundance of water. In addition to raising the river elevation immediately adjacent to RBDD, Lake Red Bluff also increases the river's elevation for roughly 6 miles upstream, to a point slightly north of the Ide Adobe State Historic Park. This increased river elevation results in the river becoming significantly wider at RBDD (a portion of the river known as Lake Red Bluff) and East Sand Slough filling in with water (also referred to as Lake Red Bluff). A northbound traveler on I-5 through Red Bluff during the 4-month gates-in period not only experiences two river crossings, but also experiences intermittent water views as the interstate parallels East Sand Slough for between 0.5 and 1 mile through town. This extended water view is considered by some to be important in attracting tourists and new residents to Red Bluff.

The Sacramento River is considered an important aesthetic and visual resource for residents of the City of Red Bluff and Tehama County and visitors to the area.

Throughout the year, the volume of water in the Sacramento River varies greatly, accounting for some degree of visual change in the river, as increased flow corresponds with increased river elevation. Flow in the Sacramento River during the gates-out period of September 15, 2001 through March 14, 2002, ranged from a mean low flow of 5,677 cfs to a mean high flow of 51,337 cfs. During the gates-in period of May 15, 2001 through September 15, 2001, the mean low daily flow was 8,467 cfs, and the mean high daily flow in the river was 16,040. Aerial photographs of the project vicinity under both the gates-in and gates-out conditions are shown on Figures 3.12-1 and 3.12-2, respectively. Many figures have been created to display the visual resources of the project area; for reader ease, all Section 3.12 figures are located at the end of this section.

Throughout the year, the volume of water in the Sacramento River varies greatly, accounting for some degree of visual change in the river, as increased flow corresponds with increased river elevation.

Study Methods

Because of the geographic scope of the project vicinity, the project setting was divided into four subareas or reaches with somewhat

Because of the geographic scope of the project vicinity, the project setting was divided into four subareas or reaches with somewhat distinctive visual conditions and project-related issues.

distinctive visual conditions and project-related issues. The use of these subareas provides a convenient way of focusing the analysis to provide a comprehensive assessment of the setting and any changes resulting from the proposed project. Figure 3.12-3 illustrates the geographic extent of each reach. The first reach is referred to as the Lower River/ Red Bluff Recreation Area, and is generally defined as RBDD northward to the Sacramento River/East Sand Slough split. The second reach encompasses the general area known as East Sand Slough. The third reach is referred to as the Middle River, and encompasses the Sacramento River between the Sacramento River/East Sand Slough split and the northern I-5 crossing. The fourth reach is generally the Sacramento River north of the northern I-5 crossing, and is referred to as the Upper River. The sections below describe in detail the setting of each of these reaches.

To structure the analysis of project effects on visual resources, view areas most sensitive to the project's potential visual impacts were identified.

To structure the analysis of project effects on visual resources, view areas most sensitive to the project's potential visual impacts were identified. For each of these areas, viewpoints, referred to as "key viewpoints," were established. Photographs taken from these viewpoints were used to document the appearance of the river under gates-in and gates-out conditions, and in some cases were used as the basis for development of photo simulations illustrating how the area would appear with the addition of the proposed project facilities. Upon review of project plans and project area conditions and use patterns, a preliminary set of key viewpoints considered to be most sensitive to project construction and operation was identified. These key viewpoints were presented to the SWG on March 12, 2002. Generally, the SWG concurred that the key viewpoints selected were appropriate to assess the visual character of the project vicinity. Given the geographic scope of the project vicinity, however, the SWG requested that additional key viewpoints be added to the analysis, including viewpoints from locations on the Sacramento River. The SWG also emphasized the importance of public, rather than private, views. Ultimately, 15 key viewpoints were identified to capture the visual character of the project vicinity, from RBDD to north of Ide Adobe State Historic Park. These viewpoints were photographed in March 2002 to show the gates-out period and in May 2002 to show the gates-in period. Figure 3.12-3 indicates the locations of the 15 key viewpoints.

The gates-out condition was documented on March 26, 2002, when the mean daily flow in the Sacramento River was 7,098 cfs. The gates-in condition was documented on May 16, 2002, when the mean daily flow in the Sacramento River was 11,565 cfs.

To respond to the CEQA requirement that an assessment be made of the visual quality of the landscapes potentially affected by the project, the discussion of the views seen from the key viewpoints presented in this section includes ratings of the visual quality of the landscapes that they

represent. These ratings were developed on the basis of a series of in-field observations carried out during the period from February through May 2002, review of photos of the affected areas, review of methods for assessment of visual quality, and review of research on public perception of the environment and scenic beauty ratings of landscape scenes. The final assessment of the visual quality of the views from each of the key viewpoints was made based on professional judgement that took a broad spectrum of factors into consideration. The factors considered included evaluation of:

- Natural features, including topography, water courses, rock outcrops, and natural vegetation
- The positive and negative effects of human-made alterations and built structures on visual quality
- Visual composition, including assessment of the complexity and vividness of patterns in the landscape

The final ratings assigned fit within the rating scale summarized in Table 3.12-1. This scale, which is based on the scale developed for use with an artificial intelligence system for evaluation of landscape visual quality (Buhyoff et al., 1994), provides a useful framework for the qualitative ratings because it is based on research about the ways that the public evaluates visual quality, and provides an intuitively meaningful description of what is means for a landscape to have been assigned a particular rating.

TABLE 3.12-1
Landscape Visual Quality Scale Used in Rating the Areas Potentially Affected by the Proposed Project

Rating	Explanation
Outstanding Visual Quality	A rating reserved for landscapes with exceptionally high visual quality. These landscapes will be significant regionally and/or nationally. They usually contain exceptional natural or cultural features that contribute to this rating. They will be what we think of as “picture post card” landscapes. People will be attracted to these landscapes to be able to view them.
High Visual Quality	Landscapes that have high-quality scenic value. This may be due to cultural or natural features contained in the landscape or to the arrangement of spaces contained in the landscape that causes the landscape to be visually interesting or a particularly comfortable place for people. These are often landscapes that have high potential for recreational activities or where the visual experience is important.
Moderately High Visual Quality	Landscapes that have above average scenic value but are not of high scenic value. The scenic value of these landscapes may be due to human-made or natural features contained within the landscape, the arrangement of spaces in the landscape, or to the two-dimensional attributes of the landscape.
Moderate Visual Quality	Landscapes that have average scenic value. They usually lack significant human-made or natural features. Their scenic value is primarily a result of the arrangement of spaces contained in the landscape and the two-dimensional visual attributes of the landscape.

TABLE 3.12-1
Landscape Visual Quality Scale Used in Rating the Areas Potentially Affected by the Proposed Project

Rating	Explanation
Moderately Low Visual Quality	Landscapes that have below average scenic value but not low scenic value. They may contain visually discordant human-made alterations, but these features do not dominate the landscape. They often lack spaces that people will perceive as inviting and provide little interest in terms of two-dimensional visual attributes of the landscape.
Low Visual Quality	Landscapes with low scenic value. The landscape is often dominated by visually discordant human-made alterations; or they are landscapes that do not include places that people will find inviting and lack interest in terms of two-dimensional visual attributes.

Note: Rating scale based on Buhyoff et al., 1994.

Lower River/Red Bluff Recreation Area

The Lower River/Red Bluff Recreation Area is dominated by the 488-acre Recreation Area, which occupies the entire eastern bank of this reach.

The Lower River/Red Bluff Recreation Area is dominated by the 488-acre Recreation Area, which occupies the entire eastern bank of this reach. USFS manages the Recreation Area with an emphasis on the interpretation of natural systems through displays, facilities, and programs. Popular activities at the Recreation Area include boating; individual and group camping; walking, biking, and picnicking; fish viewing; and bird watching. Users of the Recreation Area include local residents, tourists, and students. The Recreation Area is also home to the Discovery Center, which provides visitors with educational information about the Sacramento River. This center features walking trails through native riparian forests, grasslands, wetlands, and oak woodlands; demonstration agricultural sites; and a temporary modular building that hosts an environmentally focused charter school, as well as scheduled programs and events.

Section 3.5, Recreation, provides a detailed discussion of the types of activities that take place at the Recreation Area and the number of users that participate in each activity. Generally, attendance at the Recreation Area is greater during the summer, when RBDD gates are in the down position (Figure 3.5-1). However, many more persons use the Recreation Area for in-park activities, rather than river- or lake-centered activities (Figure 3.5-3).

The western bank of the river in the Lower River/Red Bluff Recreation Area primarily consists of various industrial uses. Immediately north of RBDD are the existing intake headworks, right bank fish ladder, and diversion dam facilities. North of these facilities is Red Bank Creek. The remainder of the western bank consists of a manufacturing facility, a landfill for wastewater treatment sludge, and a vacant industrial site (referred to as the Mill Site). The northern extent of the western bank of the Lower River/Red Bluff Recreation Area consists of the City's wastewater treatment plant.

There are no residential uses adjacent to the Lower River/Red Bluff Recreation Area reach.

Five viewpoints were established within the Lower River/Red Bluff Recreation Area reach to capture representative views within this reach of the project vicinity. Figure 3.12-4 shows the location of these five viewpoints and the direction in which they were photographed.

All proposed project facilities are located within the Lower River/Red Bluff Recreation River reach. Therefore, the viewpoints selected within this reach are intended to establish the project setting for potential visual impacts resulting from both construction and operation of the proposed project and from a change in gate operation. Some of the viewpoints and associated figures address potential facilities, some address gate operation, and some address both.

All proposed project facilities are located within the Lower River/Red Bluff Recreation River reach. Therefore, the viewpoints selected within this reach are intended to establish the project setting for potential visual impacts resulting from both construction and operation of the proposed project and from a change in gate operation.

Gates-out Condition. When RBDD gates are in the raised position (gates-out), the Sacramento River approximates a free-flowing river, and the movement of water is visible through the Lower River/Red Bluff Recreation Area reach. Under the gates-out condition, water depth in this reach is such that the eastern bank of the river along the Recreation Area consists of exposed gravel, which is lightly vegetated part of the time. One can follow a well-defined high water mark along the eastern bank of the river throughout this reach. The western bank is bordered by a nearly vertical bluff, along which a high water mark is also readily evident.

Gates-in Condition. When the gates of RBDD are in the lowered position (gates-in), Lake Red Bluff is formed, and the movement of water is considerably slowed through the Lower River/Red Bluff Recreation Area reach. During the gates-in period, water depth increases approximately 12 to 14 feet at the dam (compared to the gates-out period), flooding the eastern bank of the Recreation Area so that no exposed gravel remains and the width of the river increases. The flooded area along the Recreation Area along this reach is popular for water skiers because the shallow water of the lake is warmer than that of the river.

Viewpoint #1. Viewpoint #1 was established in the boat ramp area north of RBDD. This viewpoint was selected to capture representative views that a large number of visitors to the Recreation Area experience. From Viewpoint #1, one can see westward across the Sacramento River, north and south along the Sacramento River, across East Sand Slough and the Sacramento River, northward along East Sand Slough, and northward along the trail that follows East Sand Slough.

Figure 3.12-5a depicts the westerly view across the Sacramento River under the gates-out condition. In the foreground of the view, a wide, lightly vegetated bed of exposed gravel is visible. During several

months of the gates-out period, the gravel becomes lightly vegetated, as shown on this figure. In the middleground of this view, the Sacramento River is visible as it flows roughly north to south through this vicinity. The background view of Figure 3.12-5a is largely industrial. At the far left of the view, Red Bank Creek can be seen as it empties into the Sacramento River, and industrial buildings are visible on the plateau above the bank in the area toward the right side of the photograph. The western bank of the river that is visible in this view would be the location of the proposed pump station, fish screen, and conveyance facility across Red Bank Creek.

Figure 3.12-5b is the same view as depicted on Figure 3.12-5a, except under the gates-in condition. The gates-in condition raises the elevation of the Sacramento River approximately 12 to 14 feet in this location, which causes the formation of Lake Red Bluff. The lightly vegetated gravel in the foreground of Figure 3.12-5a is now completely covered by water.

Figure 3.12-6a depicts the westerly view across the Sacramento River under the gates-out condition, continuing the view toward the north shown on Figure 3.12-5a. Figure 3.12-6a also shows the continuation of industrial buildings along the plateau above the bank of the river. The western bank of the river that is visible in this view is the area where the proposed pump station and fish screen would be located.

Figure 3.12-6b is the same view as depicted on Figure 3.12-6a, except under the gates-in condition. The rise in river elevation causes the debris in the river and the gravel in the foreground to be completely covered by water.

Figure 3.12-7a is a view looking upstream along the Sacramento River under the gates-out condition. The foreground is lightly vegetated gravel; the middleground is the Sacramento River; and the background is the bank of the Sacramento River with mountain views in the far distance.

Figure 3.12-7b is the same view as depicted on Figure 3.12-7a, except under the gates-in condition. As on Figure 3.12-6b, the rise in river elevation causes the debris in the river and the gravel in the foreground to be completely covered by water.

Figure 3.12-8a is a view looking northward toward East Sand Slough and the Antelope Boulevard bridge under the gates-out condition. In the foreground of this view is an expanse of lightly vegetated gravel that extends into East Sand Slough, which is visible at the right side of the view. The Antelope Boulevard bridge and the mountains beyond are visible in the distance.

Figure 3.12-8b is the same view as depicted on Figure 3.12-8a, except under the gates-in condition. The formation of Lake Red Bluff causes

water to back up and fill East Sand Slough. Figure 3.12-8b shows East Sand Slough completely filled with water.

Figure 3.12-9a is a view looking northward under the gates-out condition along the walking/biking trail that parallels East Sand Slough. The left portion of the photograph shows the lightly vegetated gravel that becomes East Sand Slough farther north. The right two-thirds of the photo shows the walking/biking trail with recreation and picnicking areas. This view includes the area where the western extent of the proposed bypass channel would be located.

Figure 3.12-9b is the same view as depicted on Figure 3.12-9a, except under the gates-in condition. This view shows East Sand Slough completely filled with water to its eastern bank. The vegetation that appears green and lush during the gates-out period is now dry and brown.

Viewpoint #2. Viewpoint #2 was established at the entrance to the Discovery Center. This viewpoint was also selected to capture representative views that a large number of visitors to the Recreation Area may experience, particularly those who visit the Discovery Center. From Viewpoint #2, one can look west across a parking lot toward the Sacramento River and can also look east toward the Sycamore Campground.

Figure 3.12-10a is a view looking west toward the Sacramento River under the gates-out condition. In the near foreground of the view, the parking lot serving the boat ramp is visible. In the middleground, the Sacramento River, which is partially obscured by vegetation, can be seen. On the western bank of the river, the old industrial facilities are visible.

Figure 3.12-10b is the same view as depicted on Figure 3.12-10a, except under the gates-in condition. In this view, increased foliage along the river almost completely obscures the view of the river, making a change in river elevation and width undetectable.

Figure 3.12-11 is a view looking east along the road that encircles the Sycamore Campground and toward the area where the proposed bypass channel would be sited. Intersecting roads dominate the foreground view of this photograph; and grass, shrubs, and trees are in the middleground.

Viewpoint #3. Viewpoint #3 is a view looking northwest along the access road that leads from the Sycamore boat ramp out of the Recreation Area (Figure 3.12-12). This view encompasses a portion of the area where the bypass channel would be developed if the bypass alternative were selected.

Viewpoint #4. Viewpoint #4 is a view from Sale Lane north of the Discovery Center, looking southward into the Recreation Area (Figure 3.12-13). This view encompasses a portion of the area where the bypass channel would be developed if the bypass alternative were selected.

Viewpoint #5. Viewpoint #5 was established within the Sacramento River west of the Recreation Area. This viewpoint was selected to capture representative views that river users may experience in the vicinity of the proposed project. From this point in the river, one may look west and downstream toward the location of the proposed pump station and fish screen, east and downstream toward the location of the proposed left bank intake and fish ladder, and upstream toward the Sacramento River/East Sand Slough split.

Figure 3.12-14a is a view looking eastward under the gates-out condition toward the location of the proposed left bank intake and fish ladder. The river dominates the foreground of this view. The far right side of the middleground shows the easterly extent of the diversion dam. The proposed left bank intake and fish ladder would be located just to the left of the existing dam facility.

Figure 3.12-14b is the same view as depicted on Figure 3.12-14a, except under the gates-out condition. In this view, increased river elevation is evident, as the water line extends up to the vegetation lining the river.

Figure 3.12-15a is a view looking southwest under the gates-out condition toward the location of the proposed pump station and fish screen. The river also dominates the foreground of this photograph. The middleground shows the western bank of the river that is the location of the proposed pump station and fish screen.

Figure 3.12-15b is the same view as depicted on Figure 3.12-15a, except under the gates-in condition. An increase in river elevation is evident along the western bank of the river.

Figure 3.12-16a is a view looking upstream under the gates-out condition toward the Sacramento River/East Sand Slough split. The foreground and left side of this photograph shows the Sacramento River extending northward. The exposed gravel in the right three-quarters of the photograph of middleground is the beginning of East Sand Slough.

Figure 3.12-16b is the same view as depicted on Figure 3.12-16a, except under the gates-in condition. In this view, the increased river elevation has resulted in water covering the exposed gravel shown in the middleground of Figure 3.12-16a.

Lower River/Red Bluff Recreation Area Visual Character and Quality. A summary evaluation of the visual character and quality of each of the

viewpoints in the Lower River/Red Bluff Recreation Area for both the gates-out and gates-in period is provided in Table 3.12-2.

TABLE 3.12-2
Visual Character and Quality of the Lower River/Red Bluff Recreation Area Viewpoints

Visual Character and Quality	
Gates Out	**Gates In**
Viewpoint #1	
Overall Description: Viewpoint #1 includes views east and north across the Sacramento River from the Recreation Area.	
Visual Character: Flowing river bordered by wide gravel strand in foreground and striking bluff on opposite shoreline. Abandoned mill and visually prominent water tower on top of bluff create a sense that this is a human-dominated landscape.	Visual Character: Same as under the gates-out condition, although water is a much more dominant feature of the landscape under the gates-in condition.
Visual Quality: Moderate	Visual Quality: Moderate
Viewpoint #2	
Overall Description: Viewpoint #2 includes views from the entrance to the Discovery Center at the Recreation Area east across a parking lot toward the Sacramento River and west overlooking a road and open space that is part of the Recreation Area.	
Looking East	
Visual Character: Paved parking lot framed by vegetation, through which the Sacramento River and abandoned mill on top of the bluff on the far side of the river can be viewed. The parking lot and industrial buildings create a sense that this is a human-dominated landscape.	Visual Character: Same as under the gates-out condition, although additional vegetation growth reduces the effect of water on the landscape.
Visual Quality: Moderately Low	Visual Quality: Moderately Low
Looking West	
Visual Character: Intersection of two paved roads, beyond which is a mixture of vegetation, including trees and shrubs, with views of foothills in the distance. The view is primarily natural looking, but the paved roads create a sense that this is a human-dominated landscape.	
Note: Viewpoint #2 looking west is not oriented toward the Sacramento River, so there is no difference between the gates-in and gates-out condition.	
Visual Quality: Moderate	
Viewpoint #3	
Overall Description: Viewpoint #3 is a view north from the boat ramp parking lot south of the Discovery Center at the Recreation Area along a paved road that surrounds the Sycamore Grove Campground.	
Visual Character: Intersection of paved parking lot and road, alongside which is a mixture of vegetation, including grass and trees, with interspersed small outbuildings. The managed vegetation and paved roads indicate that this is a human-dominated landscape.	
Note: Viewpoint #3 is not oriented toward the Sacramento River, so there is no difference between the gates-in and gates-out condition.	
Visual Quality: Moderate	

TABLE 3.12-2
Visual Character and Quality of the Lower River/Red Bluff Recreation Area Viewpoints

Visual Character and Quality	
Gates Out	**Gates In**
Viewpoint #4	
Overall Description: Viewpoint #4 is a view south along Sale Lane as if approaching the Discovery Center at the Recreation Area. Visual Character: Paved road with trees and grass alongside. The orderly, managed vegetation and paved road indicate that this is a human-dominated landscape. *Note: Viewpoint #4 is not oriented toward the Sacramento River, so there is no difference between the gates-in and gates-out condition.* Visual Quality: Moderate	
Viewpoint #5	
Overall Description: Viewpoint #5 includes views southeast, southwest, and north from a point on the Sacramento River. Visual Character: Flowing river bordered by a gentle slope with trees and shrubs on one bank and a striking bluff on the opposite shoreline. Old boat ramp and dam facilities on the eastern bank and abandoned mill, power poles, and water tower on the western bank contribute to the sense that this is a human-dominated landscape. Visual Quality: Moderately High	Visual Character: Same as the gates-out condition, although water plays a marginally greater role in the landscape during the gates-in period. Visual Quality: Moderately High

The East Sand Slough reach is bordered east and west by the Recreation Area to the south of Antelope Boulevard and is bordered by private land north of Antelope Boulevard.

East Sand Slough

The East Sand Slough reach is bordered east and west by the Recreation Area to the south of Antelope Boulevard and is bordered by private land north of Antelope Boulevard. Because views and uses of East Sand Slough are principally south of Antelope Boulevard, this section discusses only that portion of the reach. A paved walking/biking trail that is part of the Recreation Area parallels East Sand Slough all the way to Antelope Boulevard.

No project facilities are proposed to be constructed within the East Sand Slough reach, so all viewpoints were selected to assess potential visual impacts from a change in gate operation.

After I-5 crosses the Sacramento River at the southern end of Red Bluff, it parallels East Sand Slough for the majority of its length. Most of the views of East Sand Slough from northbound I-5 are partially obscured by vegetation, but periodic breaks in the trees allow for unobstructed, if brief, views. No residences are adjacent to East Sand Slough. The nearest homes are on the east side of Sale Lane between the Recreation Area and Antelope Boulevard.

Two viewpoints were established within East Sand Slough to capture representative views within this reach of the project vicinity. No project facilities are proposed to be constructed within the East Sand Slough reach, so all viewpoints were selected to assess potential visual impacts from a change in gate operation. Figure 3.12-17 shows the location of

these two viewpoints and the direction in which they were photographed.

Gates-out Condition. Under the dry gates-out condition, East Sand Slough is broad, flat, and sandy. The edges of the slough become lightly vegetated under the gates-out condition, but the center remains sandy. When East Sand Slough is dry, it effectively increases the land area of the Recreation Area, and the area is used by walkers and bikers, as evidenced by informal trails that bisect the slough.

Gates-in Condition. When RBDD gates are in the lowered position and the river elevation rises upstream of the dam, East Sand Slough floods and fills in with water, and is commonly referred to as Lake Red Bluff. Because it is shallow and relatively still, the water in East Sand Slough/ Lake Red Bluff is typically warmer than that in the river, and is commonly used by water skiers.

Viewpoint #6. Viewpoint #6 was established at the intersection of Sale Lane with the walking/biking trail that parallels East Sand Slough. From Viewpoint #6, a visitor can traverse the slough both north and south, and has unobstructed views of East Sand Slough in all directions.

Figure 3.12-18a is a view looking south and slightly west under the gates-out condition. The view is dominated by the broad, flat bottom of East Sand Slough. Bare sand is visible down the middle of the slough, with lightly vegetated edges.

Figure 3.12-18b is the same view as depicted on Figure 3.12-18a, except under the gates-in condition. This view shows East Sand Slough filled in with water from bank to bank.

Figure 3.12-19a is a view looking north and slightly west under the gates-out condition. This view is also dominated by the broad, flat bottom of East Sand Slough. The northern end of East Sand Slough has less bare sand, and vegetation is sparse. I-5 can be seen in the background of the photo, and the far right edge of the photo shows the walking/biking trail extending north.

Figure 3.12-19b is the same view as depicted on Figure 3.12-19a, except under the gates-in condition. This view shows East Sand Slough filled in with water from bank to bank.

Viewpoint #7. Viewpoint #7 was established to represent views toward the slough from I-5. The viewpoint selected is located at a point along I-5 where a break in the trees provides northbound freeway travelers with an unobstructed view toward the east. From Viewpoint #7, a northbound traveler has a brief unobstructed view of East Sand Slough, the Recreation Area on the east and west sides of the slough, orchards on the east side of Sale Lane, and mountains in the far distance.

Figure 3.12-20a is a view looking east from northbound I-5 under the gates-out condition. The view is dominated by the western edge of the Recreation Area adjacent to the interstate (foreground view) and by fields, hills, and mountains to the far east (background view). East Sand Slough is visible as a narrow swath running through the center of the photograph.

Figure 3.12-20b is the same view as depicted on Figure 3.12-20a, except under the gates-in condition. This view shows East Sand Slough filled in with water through the center of the photograph.

East Sand Slough Visual Character and Quality. A summary evaluation of the visual character and quality of each of the viewpoints in the East Sand Slough reach for both the gates-out and gates-in period is provided in Table 3.12-3.

TABLE 3.12-3
Visual Character and Quality of the East Sand Slough Viewpoints

Visual Character and Quality	
Gates Out	**Gates In**
Viewpoint #6	
Overall Description: Viewpoint #6 includes views north and south along East Sand Slough.	
Visual Character: Large expanse of sand bordered by natural-looking grass, shrubs, and trees. The absence of obvious human-made facilities contributes to a sense of nature in an otherwise urban setting, although glimpses of freeway traffic and trails indicate a human-altered landscape. Visual Quality: Moderately High	Visual Character: Same as under the gates-out condition, except the large expanse of sand is replaced by a large body of water. The natural character of the view remains, while the landscape is changed by the addition of water. Visual Quality: Moderately High
Viewpoint #7	
Overall Description: Viewpoint #7 is a view from I-5 across East Sand Slough.	
Visual Character: View of natural field with agriculture and associated buildings with East Sand Slough as a sandy strip between them, and mountains in the far distance. The combination of natural field and sandy slough in the foreground with agricultural fields and buildings and mountains in the background create a landscape that obviously has a human-made component but is visually pleasing. Visual Quality: Moderately High	Visual Character: Same as under the gates-out condition, except the strip of sand is replaced by a strip of water. The pleasing combination of natural and human-made features remains, while the landscape is changed by the addition of water. Visual Quality: Moderately High

The Middle River is likely the most heavily used and viewed of the four reaches in the project area. Two widely used parks lie within the Middle River, and a large number of private residences front the river throughout this reach.

Middle River

The Middle River is likely the most heavily used and viewed of the four reaches in the project area. Two widely used parks lie within the Middle River, and a large number of private residences front the river through-

out this reach. City Park lies on the western bank of the Middle River, approximately in the mid-point of the reach. Roughly 43,000 visitor days per year are experienced at the City Park (Red Bluff City Parks and Recreation Department, 1999). City Park facilities include a boat dock, play equipment, and a swim pool. The City Park is generally a long, narrow stretch of land that hugs the west bank of the Sacramento River. Despite its orientation, the only water-related feature of the park is the boat ramp at the south end of the park. Other amenities, including play equipment, picnic areas, and swim pool, have views of the river but are not directly affected by it.

The Red Bluff Chamber of Commerce building is also located at the City Park. Samuel Ayer/Dog Island Park is located at a bend in the river at the northern end of the Middle River reach. This park hosts roughly 25,000 visitor days per year (Red Bluff City Parks and Recreation Department, 1999) and is used primarily for walking and wildlife viewing. The park is dry under the gates-out condition, but is surrounded by water during the gates-in period, becoming a river island accessible by a footbridge. Use of the park is generally unaffected by whether the gates are in the up or down position.

Numerous residences that are oriented to take advantage of river views line the east and west banks of the Sacramento River through this reach. Generally, residences on the west bank of the river are oriented higher above the river because of their location on a bluff, while the residences on the east bank are closer to the water. Many residences on both sides of the river have fixed or floating docks that are useable only under the gates-in condition.

Antelope Boulevard bisects this reach north of the City Park. Nearly 25,000 vehicles cross over the Sacramento River via the Antelope Boulevard bridge each day. Occupants of these vehicles have partially obstructed views across the Sacramento River both up- and down-stream. Pedestrians also use Antelope Boulevard bridge and have unobstructed views up- and downstream.

Five viewpoints were established within the Middle River reach to capture representative views within this reach of the project vicinity. No project facilities are proposed to be constructed within the Middle River reach, so all viewpoints were selected to assess potential visual impacts from a change in gate operation. Figure 3.12-21 shows the location of these five viewpoints and the direction in which they were photographed.

No project facilities are proposed to be constructed within the Middle River reach, so all viewpoints were selected to assess potential visual impacts from a change in gate operation.

Gates-out Condition. Similar to the Lower River/Red Bluff Recreation Area reach, the Middle River reach approximates a free-flowing river under the gates-out condition, with the movement of water readily visible. The western bank of the Middle River ranges from moderately to gently sloping toward the river to nearly vertical. The eastern bank

generally slopes gently toward the river. Between the City Park and the Antelope Boulevard bridge, the western bank of the river is dominated by massive gravel bars that obstruct views of the water from various locations. Other stretches of the Sacramento River along this reach also exhibit exposed gravel under the gates-out condition, particularly at bends in the river.

Gates-in Condition. Under the gates-in condition, water depth through the Middle River reach increases and water velocity decreases. The increase in water depth is sufficient to flood areas along the river that are exposed gravel under the gates-out condition, significantly changing the appearance of the river.

Viewpoint #8. Viewpoint #8 was established within the Sacramento River at the southern edge of the Middle River reach, just north of the southern I-5 crossing, approximately at the intake to the Elks Lodge harbor. This viewpoint was selected to capture representative views that river users may experience in the vicinity of the proposed project. From this point in the river, one may look downstream in the direction of the proposed pump station and fish screen (although the location of those facilities is not visible) and upstream toward the City Park.

Figure 3.12-22a is a view of the Sacramento River and adjacent property looking upstream under the gates-out condition. The river dominates the foreground and middleground of this view, but also exposed gravel bars along the edge of the City Park are visible.

Figure 3.12-22b is the same view as depicted on Figure 3.12-22a, except under the gates-in condition. An increase in river elevation is faintly discernable in this view along the shore in the far right side of the photograph and along the City Park, which is seen in the left side of the middleground of the photograph.

Viewpoint #9. Viewpoint #9 was established at the eastern edge of the City Park, just north of the boat ramp. This viewpoint was selected to capture representative views that users of the City Park may experience. From this point at the park, users have unobstructed views of the Sacramento River both up and downstream.

Figure 3.12-23a is a view of the Sacramento River looking downstream under the gates-out condition. The gravel bar that is exposed under the gates-out condition, with the river occupying the eastern edge of the riverbed dominates the foreground in this view.

Figure 3.12-23b is the same view as depicted on Figure 3.12-23b, except under the gates-in condition. In this view, the river occupies the riverbed from bank to bank. Significantly more water is seen from this view during the gates-in condition than during the gates-out condition.

Figure 3.12-24a is a view of the Sacramento River looking upstream. The gravel bar that is exposed under the gates-out condition dominates the foreground in this view. The water view at this location is nearly obscured by the gravel.

Figure 3.12-24b is the same view as depicted on Figure 3.12-24a, except under the gates-in condition. In this view, the river is visible from bank to bank, without being obscured by gravel. The increase in river elevation is evident both by the covered gravel in the foreground and the higher water line along the far bank of the river as seen in the middleground of the photograph.

Viewpoint #10. Viewpoint #10 was established at the Antelope Boulevard bridge where it crosses the Sacramento River. This viewpoint was selected to capture representative views that vehicle occupants and pedestrians may experience at various points of crossing the bridge. Along the length of the bridge, from both the north and south sides, partially obstructed and completely unobstructed views of the Sacramento River and adjacent properties are possible.

Figure 3.12-25a is a view from the northeast corner of the bridge looking toward the west across the Sacramento River under the gates-out condition. From this location and direction, a local motel and several residences on the west bank of the river are visible. Some exposed gravel is visible along the western bank.

Figure 3.12-25b is the same view as depicted on Figure 3.12-25a, except under the gates-in condition. The exposed gravel along the western bank that is visible on Figure 3.12-25a is covered with water in this view.

Figure 3.12-26a is a view from the northwest corner of the bridge looking northeast under the gates-out condition. From this location and direction, private residences and riparian vegetation is visible. A visible line of gravel denotes the high water mark along the eastern bank of the river.

Figure 3.12-26b is the same view as depicted on Figure 3.12-26a, except under the gates-in condition. The exposed gravel along the western bank of the river and in the bend of the river in the center of the photograph is covered by water in this view.

Figure 3.12-27a is a view from the southeast corner of the bridge looking in a southerly direction toward the City Park under the gates-out condition. From this location and direction, the exposed gravel around the City Park is visible.

Figure 3.12-27b is the same view as depicted on Figure 3.12-27a, except under the gates-in condition. The exposed gravel that runs the length of the City Park is completely covered by water in this view.

Figure 3.12-28a is a view from the southwest corner of the bridge looking in a southeasterly direction under the gates-out condition. From this location and direction, the view of the Sacramento River is nearly obscured by exposed gravel.

Figure 3.12-28b is the same view as depicted on Figure 3.12-28a, except under the gates-in condition. This view shows the Sacramento River filled with water from bank to bank, with no gravel visible.

Viewpoint #11. Viewpoint #11 was established at Rio Street where it intersects Cedar Street on a bluff overlooking the Sacramento River. Area residents are reported to use Rio Street to avoid traffic at the intersection of Antelope Boulevard and Main Street. This viewpoint was selected to capture a representative view that vehicle occupants may have as they take advantage of this shortcut. It is also representative of the views from homes that line the top of the bluff in this area. Viewpoint #11 is located at a bend in the river where there is an expansive view of the river to the northeast and a view to the southeast is also available.

Figure 3.12-29a is a view looking northeast along the Sacramento River toward the northern I-5 crossing under the gates-out condition. Samuel Ayer/Dog Island Park is visible in the far left of the photograph; private property occupies the far right. Some exposed gravel along bends in the river can be seen in this photograph.

Figure 3.12-29b is the same view as depicted on Figure 3.12-29a, except under the gates-in condition. The exposed gravel along bends in the river is covered by water in this view. The appearance of swift-moving water that is evident on Figure 3.12-29a is missing on Figure 3.12-29b, largely because of the slowing of river flow resulting from the gates-in condition.

Viewpoint #12. Viewpoint #12 was established at the water's edge of Samuel Ayer/Dog Island Park. Walking trails are located throughout the park, some of which extend to the edge of the Sacramento River. From Viewpoint #12, a visitor may experience views of the Sacramento River both up- and downstream.

Figure 3.12-30a is a view looking south-southeast (downstream) along the Sacramento River toward the Antelope Boulevard bridge under the gates-out condition. The view is dominated by water, although some exposed gravel can be seen along the eastern bank of the river as the river bends and continues south.

Figure 3.12-30b is the same view as depicted on Figure 3.12-30a, except under the gates-in condition. The exposed gravel along the eastern bank of the river as it bends and continues south is covered by water in this view. The water is also visibly more calm, with some floating debris evident.

Middle River Visual Character and Quality. A summary evaluation of the visual character and quality of each of the viewpoints in the Middle River reach for both the gates-out and gates-in period is provided in Table 3.12-4.

TABLE 3.12-4
Visual Character and Quality of the Middle River Viewpoints

Visual Character and Quality	
Gates Out	**Gates In**
Viewpoint #8	
Overall Description: Viewpoint #8 is a view north along the Sacramento River from the intake to the Elks Lodge harbor.	
Visual Character: Wide swath of water bordered on one bank by natural-looking shrubs and trees and on the other bank by manicured lawn, homes, and other buildings, with a bridge crossing the water in the distance. The water and vegetation contribute to a sense of naturalness, but the buildings and bridge indicate that this is a human-altered landscape. Visual Quality: Moderately High	Visual Character: Same as under the gates-out condition. Visual Quality: Moderately High
Viewpoint #9	
Overall Description: Viewpoint #9 includes view upstream and downstream along the Sacramento River from the Red Bluff City Park.	
Visual Character: Wide swath of gravel leads into a flowing river, with some natural-looking vegetation on one bank, and manicured lawn, trees, and homes on both banks. The lawn and homes contribute to the sense that this is a human-altered landscape, and the exposed gravel is a visually displeasing element of the landscape. Visual Quality: Moderate	Visual Character: Same as under the gates-out condition, except the large expanse of gravel is replaced by a large body of water. The landscape is significantly enhanced by the addition of water. Visual Quality: Moderately High
Viewpoint #10	
Overall Description: Viewpoint #10 includes views upstream and downstream along the Sacramento River from the Antelope Boulevard bridge.	
Looking Upstream	
Visual Character: Flowing river bordered by a mixture of natural and landscaped vegetation and commercial and residential buildings. Water and natural vegetation dominate the landscape, but the homes and buildings indicate a human-altered environment. The water has a sense of movement that is visually appealing. Visual Quality: Moderate	Visual Character: Same as during the gates-out condition, except that water plays a marginally greater role in the landscape. The water has a static appearance that is less visually appealing than when the river flows freely. Visual Quality: Moderate