5.10 Traffic

The County retained Rising Sun Enterprises (RSE) to gather and analyze information on viewsheds, recreation, noise and traffic resulting from Mad River gravel extraction operations. Portions of the following section were adapted from the Rising Sun report. See Appendix E for the complete report.

Overview

This section discusses the adequacy of existing transportation systems to accommodate vehicular traffic generated by the surface mining operations covered under this PEIR.

Traffic load on existing transportation systems varies by operation and by season. During the 'dry' season, more traffic is generated for longer periods of time. The dry season coincides with long days, the majority of construction and the extraction phase of surface mining operations in the County. With the exception of drought years, little extraction and construction occurs in Humboldt County during the winter, or wet season.

Traffic resulting from the surface mining operations include:

1. Transporting equipment to and from extraction sites;
2. Transporting raw material to stockpile areas;
3. Transporting stockpiled material to processing yards;
4. Transporting raw material to job sites;
5. Transporting processed material to job sites;
6. Employee private vehicles.

Each operation covered by this PEIR has private access to either a city or county-owned and maintained road. On the basis of the CalTrans' Highway Design Manual, all of the surface mining operation private access road intersections with city or county roads have adequate sight stopping distance. For roads with 35 m.p.h. traffic, approximately 250' of visual clearance in each direction is required.

Table 5.10-1 shows approximate volumes of material extracted at the various sites during 1990-1991. The average daily traffic (ADT) is based on: the volume extracted; a five day work week; four-month extraction period; eight-month processing and transporting period; and assumes a 15-yard dump truck is used for transporting raw material.

The actual number of trips per day is determined by the job, the number of vehicles employed, the destination, and the product being transported. When the length of extraction season is shortened, the intensity of activity is increased, resulting in a period of higher traffic volumes.

Traffic count information was obtained for intersections on city, county and state roads and, where available, percentage of traffic that consisted of trucks. Those figures are noted in Table 5.10-2. Because these operations are existing, the listed ADT totals have incorporated the traffic generated by these projects.

The service area for most of these operations range from Eureka to Orick, and east to Willow Creek, for an approximate 50-mile radius. There is the possibility that rail traffic could be used to reduce the amount of truck traffic. Because of the short haul and the need to unload and load aggregate, it is not likely that the railroad could be effectively used to transport Mad River gravel from extraction sites to stock piles or processing sites. Also, because of the current shortage of extractable Mad River aggregate, it is unlikely that the rail road could be used to export Mad River gravel to another market area. Because of the current shortage of

extractable Mad River aggregate there may be a possibility of using the rail road to import aggregate into the some Mad River processing plants.

There are two apparent logical sites where the imported gravel could be taken off of the rail road cars and stockpiled for distribution to processing sites. The first is an old mill site near the west end of West End Road, approximately across the freeway from Boyd Road. The second site is in the Glendale area where the tracks cross the entrance to the Eureka Sand and Gravel processing site (Christie Bar). It is possible that Eel River gravel could be economically transferred by rail to either of these sites in order to meet Mad River gravel market demands. This is a business decision which would have to be based on the economics of the potential rail use.

Table 5.10-1 - Approximate Traffic Generation

Site No.	Site	Cubic yds per year	Extraction Year	Processing ADT[a/]	ADT
1	MRS&G	85,000	1991	0	35
2	REA (Emmerson)	28,950	1991	24	12
3	REA (Blue Lake)	82,750	1991	69	35
4	ES&G	50,000	1990	0	21
5	REA (Johnson)	29,700	1990	25	13[b/]
9	Zabel-Simpson	62,300	1990	52	0
6	Essex	3,500	1990	3	0
7	Arcata ReadiMix	84,950	1990	70	35
8	REA (Graham)	36,000	1990	118[c/]	15
	Total	463,150		361	166

a/ These figures represent one-way trips. Figures should be doubled to account for return trips.

b/ This amount represents exports from the Giuntoli site as a result of importation from this site.

c/ This amount includes importation of materials from the other three REA sites.

Table 5.10-2 - Existing Traffic Levels [a/]

Site/Road Segment	ADT[b]	Peak Hour	Percent Trucks
REA Giuntoli			
Hwy 299 at Hwy 101	9,700	1,050	15
Giuntoli west of Valley West Blvd	12,200		
Janes Road west of Hwy 101	8,500		
Giuntoli east of Valley East Blvd.	6,200		
Arcata ReadiMix			
Boyd Road	2,200		
Hwy 299 at Giuntoli	9,800	1,100	14.5
Hwy 299 at North Bank Road	10,600	1,150	11.7
Essex			
Hwy 299 at Essex Lane	10,600	1,150	
Simpson/Johnson/Eureka Sand & Gravel			
Glendale Drive near E&O Market	1,700		
Hwy 299 at Glendale Drive	8,500	940	
Blue Lake/Emmerson/Mad River Sand & Gravel			
Hwy 299 at Blue Lake Blvd	3,550	500	18
Blue Lake Blvd. west of Greenwood	5,600		
Greenwood Ave. south of Blue Lake Blvd.	4,000		
Taylor Way north of hatchery Road	775		
Hatchery Road north of West End Road	750		
West End Road west of Hatchery Road	175		

a/ CalTrans Information, 1991; City of Arcata information, 1990-91
County of Humboldt Information, 1992.
b/ Figures represent totals in both directions.

Individual Sites

Note: Unless otherwise indicated, all truck trips represent one-way trips. Figures should be doubled to account for round trips.

Site No. 1 Mad River Sand and Gravel - Guynup Bar

Traffic from Mad River Sand & Gravel is, for the most part, limited to transportation of sorted and/or washed materials. On an average, in the summer months the operation produces 25-30 loads per day. For a large job, as many as 100 loads per day may leave the site. During the winter months, activity is reduced. Some days the gate remains shut and no loads are exported. No traffic or access conflicts were noted by RSE (1993).

Site No. 2 Redwood Empire Aggregate - Emmerson Bar

Use of the Emmerson bar is limited to the extraction season. Trucks leaving Emmerson bar access Hatchery Road and either proceed through the City of Blue Lake or to the stockpile area at the Nicholls Trucking facility at Site No. 3 - Blue Lake bar.

During the 1992 season, an estimated 24,344 cubic yards were extracted between September 8th and September 24th for a total of 697 loads, and an average of 50 loads per day. Approximately 50 percent of the 697 loads was stockpiled at Nicholls Trucking. No traffic or access conflicts were noted by RSE (1993).

Site No. 3 Redwood Empire Aggregates - Blue Lake Bar
During the 1992 season, an estimated 47,256 cubic yards were extracted from the Blue Lake bar. Extraction on the Blue Lake bar occurred over 23 days between August 11th and September 5th, with a total of 1,352 loads, for an average of 59 loads per day. Approximately 50 percent of the 1,352 loads were stockpiled at the adjacent Nicholls Trucking.

Traffic associated with the Blue Lake bar occurs primarily during the extraction season when material is exported to the REA Giuntoli processing site. Some of the material is stockpiled at the Nicholls Trucking facility for transportation during less active periods of the year. In the 1992 winter season, only one truck was used to haul stockpiled gravel to the Giuntoli site. Traffic from the Blue Lake bar accesses Taylor Way through the City of Blue Lake Industrial Park, which currently has a high percentage of chip and lumber truck traffic. No traffic or access conflicts were noted by RSE (1993).

Site No. 4 Eureka Sand and Gravel - Christie Bar
Vehicles must cross under 299 on a private access road to reach the Eureka Sand & Gravel operation, which lies on the south side of Highway 299. This private road intersects Glendale Drive which accesses Highway 299 a short distance to the west. During the summer construction season, an average of 35-50 truck loads per day leave the site. This is reduced to an average of five truck loads per day during winter or wet periods. Of the total loads, approximately half are aggregate materials, with the other half readymix concrete.

Site No. 5 Redwood Empire Aggregates - Johnson Bar
Trucks use the same access road for the Johnson bar as for the Simpson-Zabel bar (Site No. 9). Transport loads during the 1991 extraction season were estimated at 100 per day. Very little activity, if any, occurs during the non-extraction season at the Simpson-Zabel and Johnson bar locations. No traffic or access conflicts were noted by RSE (1993) from this project site.

Site No. 6 Mercer Fraser - Essex Bar
Essex yard extraction levels have been reduced in recent years because of the drought and market conditions. Site access is by Glendale Drive from Highway 299 at the Essex Road interchange. In addition to gravel bar material, this site has historically been used for storage of other aggregate/rip rap materials, which creates importation and exportation traffic. No traffic or access conflicts were noted by RSE, 1993, at this project site.

Site No. 7A and 7B Arcata ReadiMix - Johnson-Spini Bar & Arcata ReadiMix Bar
During summer months, there are approximately 50-60 loads per day leaving the processing site, with a maximum of 110 loads per day. In addition approximately 100 loads per day are transported from Site No. 7A, the Johnson-Spini bar, along Boyd Road to the processing site. During winter months, trips leaving the processing site are reduced to an average of 20 loads per day.

In addition to material transported to the site from the Johnson-Spini bar, Arcata ReadiMix also imports gravel from their extraction operation on the Eel River. The Boyd Road/Giuntoli Lane and the private access road/Boyd Road intersections operate at acceptable Levels Of Service (LOS). Access to both Highway 101 or Highway 299 from Boyd Road is easy. No traffic or access conflicts were noted by RSE (1993) at this project site.

Site No. 8 Redwood Empire Aggregate - Graham Bar
During the extraction season, Redwood Empire Aggregate's (REA) Giuntoli processing site receives gravel from the Johnson, Blue Lake and Emmerson bars, as well as Graham bar. In

addition, during winter months, there is importation from the stockpile at Site No. 3 - Blue Lake bar and Nicholls Trucking yard stockpiles. Exportation of materials from the Giuntoli site averages about 50 loads per day during the summer months, with maximum loads approximating 120 per day. In addition, approximately 30-50 customers a day bring their private vehicles to be loaded with various aggregate materials. During winter months, the number of loads is reduced to an average of approximately 12 per day. Access onto Giuntoli Lane is at the intersections of Giuntoli Lane with Valley East or Valley West Boulevards, both a short distance from Highway 299 or Highway 101. All intersections are qualitatively operating at an acceptable LOS. No traffic or access conflicts were noted from this project site by RSE (1993).

Site No. 9 Simpson - Simpson-Zabel Bar
The Simpson Zabel bar is used solely for extraction. As material is extracted, it is loaded onto trucks and removed from the site, usually to construction sites. Therefore, traffic is limited to extraction months. The number of trucks leaving this site is limited to both the number of trucks available and the ability of the front-end loader to fill the trucks. A substantial amount of material was removed between April to October in 1990 which resulted in approximately 10-15 trucks per hour or 110-130 loads per day from the Simpson Zabel bar.

The access drive is steep and narrow and may cause hazards for two-way traffic; however, radio communication generally prevents this from occurring. Trucks leaving the site can access Highway 299 by turning left or right on Glendale Drive. Traffic must cross the railroad tracks; however, trains, which currently run in the evening or late at night, are not a source of traffic conflict. No traffic or access conflicts were noted by RSE, 1993, at this project site.

Site No. 10 Simpson Timber - Simpson Bar
This operation involves extraction only; no stockpiling or processing occurs on-site. Access to this site is from a private road that intersects Hatchery Road, approximately 3/4 mile south of West End Road. This bar has not been mined in recent years. No traffic or access conflicts are anticipated at this project site.

Analysis
All sites reviewed have adequate access to public roads and sufficient sight stopping distance clearance. All intersections function adequately during winter observations made in the study period. The proportion of Highway 101 and 299 truck traffic to total traffic is consistent with that of other areas, at approximately 13-18 percent. Gravel truck traffic represents a small percentage of the total truck traffic.

Operations are located close to suitable transportation routes and are dispersed so that there is minimal concentration of traffic. However, one area of conflict does exist on the truck route through the City of Blue Lake (see Map 5.10-1). Aggregate materials or products from the Blue Lake bar, Emmerson bar and Mad River Sand & Gravel processing site are all transported from Hatchery Road to Railroad Avenue to Greenwood Avenue to Blue Lake Boulevard. This route passes developed residential areas, offices, a church, a public library and an elementary school.

When material is removed from the sites for large construction projects, such as in the 1960's and 1970's with the construction of Highway 299, high levels of truck traffic passed through the town of Blue Lake. This also occurred in 1990 and 1991 when trenching was implemented, which removed large volumes of material. If the 197,000 total cubic yards extracted in 1991 were transported in an eight-month period, five days per week with 15-yard dump trucks,

approximately 82 truck trips (one way) per day would occur. With round trips this would amount to 16-20 trucks per hour.

UltraPower, Inc., in the City of Blue Lake Industrial Park generates a substantial amount of chip truck traffic. A 1988 Conditional Use Permit Amendment estimated that this operation requires approximately 34 one-way truck trips per day, year-around. Other industrial uses in the industrial park also generate truck traffic. Furthermore, in recent years, Simpson Timber Company has conducted timber activities on the west side of the Mad River where logs were transported along Hatchery Road through the City of Blue Lake. When all truck traffic occurs at the same time, it can create significant traffic impacts for the City of Blue Lake.

The City's 1986 General Plan Circulation Element noted that Blue Lake's truck traffic was 6.5 percent of total traffic, which was barely lower than Highway 101's truck traffic through Eureka at 7-8 percent. At that time it was estimated that 33 percent of the 6.5 percent truck traffic originated from outside the City of Blue Lake. A separate truck route was considered, but postponed until truck traffic makes up 30-40 percent of the total traffic.

In 1986, Greenwood Avenue carried 370 vehicles per hour during peak hour traffic (8:00 - 9:00 a.m.). Based on the City's 1986 General Plan Circulation Element, approximately 1,200-1,300 vehicles per hour would be a high level of traffic for Greenwood Avenue. Total traffic levels have increased on Greenwood Avenue from 3,764 vehicles per day in 1985 to 4,000 per day in 1992. Comparing the percent truck traffic with traffic volume would indicate 245 per day in 1985. Extrapolating this to 1992 volumes would indicate 260 truck-trips per day on Greenwood Avenue.

The percentage of truck traffic through town is an important factor in road maintenance. Based on the CalTrans Highway Design Manual, the load of one three-axle truck is equivalent to 1,840 passenger car trips in relation to street degradation. This has less of an impact when streets are constructed to handle truck traffic, as has the City of Blue Lake truck route.

The Industrial Park Environmental Impact Report recognized that the increased traffic volumes and accompanying degradation of city streets from the Industrial Park was a significant environmental affect which could not be avoided. It was also noted that the additional truck traffic proposed was not more than that which occurred when the MacNamara and Peepe Mill was in operation at the same location.

Mitigation measures proposed to minimize traffic impacts in the Industrial Park EIR included development and extension of Chartin Road and directing truck traffic through the less-developed western portion of town. This project has not occurred and funding is not likely to be made available.

A condition of the Industrial Park's use permit requires chip trucks to comply with the 25 m.p.h. speed limit through the City of Blue Lake. No similar mechanism exists for projects outside of the City Industrial Park, including the gravel operations. The City has recently expanded its police department, which is now equipped with radar to enforce the speed limit through town.

Blue Lake does not receive funds from property or sales tax from operations outside of the City, which could be utilized in the continued maintenance of the truck route through town. Another associated impact is the noise generated by the truck traffic. This issue and proposed mitigation measures are discussed in the "Noise" section.

The City of Blue Lake does not have the control to regulate the number or hours of truck trips for projects outside of City Limits. The Nicholls Trucking facility could be regulated for truck traffic by the City of Blue Lake as part of the use permit process, if a processing operation was further developed. The Mad River Sand & Gravel operation is outside the regulatory control of the City. Therefore, such regulations would need to be developed by the County, if found necessary.

Impact Statements and Mitigation Measures

Impact

Traffic-1: Extraction operations use the existing Truck Route through the City of Blue Lake. The City of Blue Lake responded to the Notice of Preparation that the City has concerns that the project will add to an existing traffic, access, maintenance and safety problem within the City of Blue Lake.

The truck route through the City of Blue Lake is developed to acceptable industrial road standards. Traffic generated by the project is only a small portion of the total traffic using the Blue Lake truck route. The extraction/processing projects are ongoing and the preferred alternative does not significantly increase the level of truck traffic within the City. However, the cumulative impact of the project traffic in combination with other traffic that may be increasing could potentially be significant. If so, it is unavoidable. (PS/PS)

Mitigation Measures

Mit-14: The City of Blue Lake will regulate traffic within its boundaries.

Mit-15: The City of Blue Lake has asked that gravel operators operating out of Blue Lake Bar, Emmerson Bar, and Guynup Bar to regularly advise and remind their drivers to drive through Blue Lake at reduced speed and in such a manner as to minimize noise and road wear.

Monitoring

City of Blue Lake

Significance after Mitigation

Significant. Even though the project does not significantly increase truck traffic through the City of Blue Lake, the PEIR adopts the conservative approach that even after mitigation the cumulative impact remains potentially significant.

5.11 Noise

The County retained Rising Sun Enterprises (RSE) to gather and analyze information on viewsheds, recreation, noise and traffic resulting from Mad River gravel extraction operations. Portions of the following section were adapted from the Rising Sun report. See Appendix E for the complete report.

Noise Measurement

Decibels (dB) are a numerical expression of the relative loudness of a sound. Decibels are measured by sound meters in dBA.

Noise is generally defined as unwanted sound by the receiver. Land uses considered noise-sensitive include residential, educational and health facilities, research institutions, certain recreation and entertainment facilities, and churches. Uses considered less sensitive to noise include commercial and industrial facilities, and certain noise generating recreation facilities such as playground and gymnasiums. See Table 5.11-1, Community Noise Exposure, for a index of acceptable and unacceptable noise levels for varying activities.

Setting

The Hatchery area is generally a quiet resource area. Noise measurements taken in these quiet areas, away from gravel extraction and processing activities, were approximately 43-45 dBA, rising occasionally to 48-55 dBA from the sounds of wind or rushing water. Periodic agricultural and non-gravel-related industry noises also affect this area.

The primary noise generating sources from the Mad River Fish Hatchery to Highway 101 bridge, including the developed land uses that lie adjacent to the river and within the valley slopes, are: 1) the Mad River Fish Hatchery ; 2) the Mad River Sand & Gravel processing plant; 3) Hatchery Road traffic; 4) City of Blue Lake commercial and industrial processing including UltraPower, Inc., J & S Stakes and Calgon Carbon; 5) Glendale industrial and commercial operations; 6) Glendale Drive traffic; 7) the Humboldt Municipal Water District pump stations; 8) West End Road traffic; 9) the Eureka Sand & Gravel processing plant; 10) Highway 299; 11) Giuntoli Lane's industrial and commercial activity (including REA and Arcata ReadiMix processing plants); 12) North Bank Road traffic; 13)Giuntoli Lane traffic; 14) U.S. Highway 101 traffic; 15) air traffic; and 16) train traffic.

Noise on the river includes gravel extraction equipment and occasional recreational off-road vehicles. Gravel extraction and processing involves the use of noise-generating heavy equipment, crushing and processing equipment, batch plants, and transporting trucks. Noise measurement and analysis requires the consideration of the ambient noise levels, contributions from other noise sources, distance to the nearest receptor, and the types, times and duration of noise.

Extraction, processing, and other industrial, commercial and traffic noises in this area have been ongoing since the 60's. During this time, the human populations affected by noise impacts have increased. There has been a substantial increase in residential development consisting of trailer parks and urban residential subdivisions over the past 35 years. An increase in noise impacts is not reflective of an increase of industrial activities, but is indicative of the increase in the number of residences and recreationists impacted by noise.

For the purpose of this study, noise measurements were taken by Rising Sun Enterprises, at and adjacent to the processing and extraction areas and nearby receptors. Table 5-11.2 contains a summary analysis of all the sites. Site specific noise measurements for each of the extraction and/or processing sites has been discussed.

Table 5.11-1 Community Noise Exposure Standards in Decibels; assuming single pane windows. From Humboldt County Framework Plan.

Site use	Clearly acceptable	Normally acceptable	Conditionally acceptable	Normally unacceptable	Clearly unacceptable
Low Density Residential	45-55	55-60	55-65	60-70	70-80
High Density Residential	45-55	55-60	60-70	65-70	70-80
School/Churche Libraries	45-55	55-60	55-65	65-70	70-80
Playgrounds and Parks	45-60	55-65	60-70	70-80	75-80
Water Recreation	45-60	60-70	65-75	70-80	
Commercial Retail Office	45-60	55-65	60-75	70-80	
Industrial & Agriculture	45-65	65-75	70-80	75-80	

Clearly Acceptable - The activities associated with the specified land use may be carried out with essentially no interference from the noise exposure.

Normally Acceptable - Noise should be considered in proposed land use plans, but under most circumstances conventional construction without any special noise insulation requirements is satisfactory.

Conditionally Acceptable - New construction should make analysis of noise reduction requirements and needed noise insulation features should be included in the design. Conventional construction with closed windows will normally suffice.

Normally Unacceptable - New construction should generally be discouraged. any new construction would require noise analysis, and noise insulation features should be included.

Clearly Unacceptable - New construction should generally not be undertaken.

Table 5.11-2 - Noise Analysis

Operation	Distance to Receptor (ft.)	Receptor	Approx. Noise Level (dBA)	Source of Prominent Noise
Guynup	650	1 residence	66	Processing Plant
Emmerson	1,100	1 residence	54	Truck Traffic
Blue Lake	100	1 residence (south)	74	Processing Plant
	400	1 residence (north)	62	Processing Plant
	900	Blue Lake M H Park	55	Processing Plant
Christie	1,300	1 residence (south)	52	Extraction
Johnson	100	Glendale Trlr. Pk.	68-70	Truck Traffic
	1,200	2 residences (south)	53	Extraction
Essex	450	1 residence (south)	62-65	Extraction
Johnson-Spini	100	Town & Country	74	Processing Plant
	75	RV Park	80	Truck Traffic
Graham	200	1 residence (south)	65	Processing Plant
Zabel-Simpson	100	Glendale	68-70	Truck Traffic
	400	Trailer Park	60-62	Extraction
All	100	River users	67-74	Extraction

Individual Sites

Site No. 1 Mad River Sand and Gravel, Guynup Bar

Noise measurements taken 50' from the screen plant/crusher were approximately 88 dBA. This was slightly higher than other screen plants since this material is washed and sorted at the same time. The closest residence is a house owned by the operator approximately 650'

southwest of the processing plant which would be subjected to exterior noise levels of 66 dBA. Residences on Hatchery Road at West End Road are approximately 1,700' from the processing plant and would be more affected by truck traffic leaving the site. Residences directly west of the processing site are approximately 900' from the processing plant. During operations, these residences would receive exterior noise levels of approximately 63 to 65 dBA. Noise levels of processing equipment running adjacent to the river increased from 45 to 49 dBA.

Anglers and recreationists would be subjected to noise levels from processing and extraction operations, ranging from 67-74 dBA at 100'. This may decrease by 5-10 dBA, depending on the location of equipment in relation to the river, and the recreationists.

Site No. 2 REA, Emmerson Bar
Gravel extraction and transport are the noise-generating activities at this site. Traffic-related noise is discussed under REA's Blue Lake bar (Site No. 3).

The closest residences to this site are located approximately 1,100' to the northwest and 1,200' to the south. There are also approximately 20 houses off West End Road within 2,000' of the extraction and stockpiling area. The noise levels received at these residences from extraction activities and gravel transport would be less than 55 dBA, slightly higher than ambient levels.

This bar is popular for use by anglers, during fishing season, which generally occurs in October after extraction activities are completed. Boaters and swimmers enjoy this section of the river in the summer months, and would be subjected to noise levels.

Consultants on this project have commented that the use of motorcycles and off-road vehicles on the Blue Lake Bar and in the adjacent riparian forest during a typical summer weekend have a great impact from a noise and visual perspective and that these impacts far outweigh those that are associated with gravel extraction.

Site No. 3 REA, Blue Lake Bar
Ambient noise levels at the Nicholls industrial/stockpile area, off of Taylor Way, are approximately 56-60 dBA. Major noise sources include industrial operations in the City of Blue Lake Industrial Park. Activities within the Nicholls Trucking facility would be 55-80 dBA within the industrial land area, primarily from loading equipment and truck noise. If a portable processing plant was set up at this location, it is anticipated that it would generate noise levels of 73 dBA at 100'. The closest residences are two houses owned by REA, 100' and 400' from the truck yard and 800' to 1,000' from the gravel bar. These residences would receive noise levels of 54 dBA and 55 dBA from extraction activities, and 74 dBA and 62 dBA from processing respectively. The next closest residences are within and adjacent to the Blue Lake Rancheria, approximately 1,000' from the levee and 900' from the truck yard. There are also approximately 17 trailers located at the end of Rancheria Road which would be subject to noise levels of less than 55 dBA. West End Road residences to the south of Blue Lake bar are approximately 1,200'-1,400' from the edge of the extraction area, depending on current river conditions. These residences could hear the extraction activity occurring but noise levels would be approximately 52 dBA.

This site, as well as the Emmerson and Guynup sites upstream from this location, all contribute to truck traffic onto Hatchery Road which proceeds along the Greenwood Avenue to Blue Lake Boulevard truck route. This truck route goes through a residential area with adjacent school offices, a public library, and a church.

Noise levels measured in October, 1992, 50' from the centerline of Greenwood Avenue, averaged 62 dBA over a 10 minute period. Noise levels from cars and pickup trucks range from 60 to 65 dBA. Flat bed trucks, chip trucks, dump trucks and belly dump trucks produce noise levels from 72 to 77 dBA. It was estimated by City personnel that trucks passing City Hall are less than 10% of total traffic in the winter and up to 50-66% in the summer, primarily due to gravel and logging trucks. Utilizing the above percentages, adjacent residences and the school would be subject to estimated exterior noise levels of 55-60 dBA during the winter and 61-66 dBA during the summer daytime at 100' distance. The winter noise levels are clearly acceptable; and the summer noise levels are conditionally acceptable for schools.

Gravel transporting occurs year-round, and coincides with construction jobs, which generally occur during the summer or during the dry periods in the fall or early winter. Because of summer transportation the school and the entire community will be subjected to more noise impacts during the summer.

Site No. 4 Christie Bar/Eureka Sand and Gravel Plant

Noise levels from the Eureka Sand & Gravel processing plant measured 85 dBA, 50' away from the screen. This was reduced to 65-68 dBA adjacent to Highway 299 approximately 200' north of the plant at times with no traffic. However, noise levels increased to 63 dBA when cars passed the site and 73 dBA when trucks passed the site. The closest residence to the north is approximately 1,600' from the processing site and would be affected by traffic on Highway 299, rather than the processing plant. The noise levels received by residences from processing would be less than 60 dBA.

The processing plant can be heard from the river. Ambient sound measurements taken adjacent to the river at the Glendale interchange were between 45 and 50 dBA, but increased to 59 dBA from Highway 299 traffic.

Extraction equipment on the gravel bar produces noise levels audible to residents, especially those to the south of the site. Noise levels of 80 dBA taken adjacent to the river would be reduced to 52 dBA at the closest residence approximately 1,300' to the southwest and to 48 dBA 2,100' to the southeast. The County, during the Notice of Preparation for this EIR, received a complaint about the noise from a resident to the south. The resident specified that it was not the processing plant, but the extraction activity that occurred early in the morning and during weekends in 1992. The 1992 extraction season was compressed to less than two months, requiring operators to work extended hours in the 36 days of extraction. In addition, since the operating season did not begin until July 24th, the previous year's stockpile of riverrun material had been depleted and there was an immediate need to extract and process larger volumes of gravel as quickly as possible.
These are generally short-term intermittent impacts that have occurred in the past and, unless regulated in some manner, would be expected to occur in the future depending on extraction limitations and contract needs. Nevertheless, resulting noise levels at nearby residences were within acceptable published standards.

Site No. 5 Johnson Bar

No processing occurs on-site. Warren Creek Road residences, approximately 1,200'-1,800' southwest, receive noise levels of less than 55 dBA from extraction equipment at Johnson bar. Anglers and recreationists on the river and adjacent river bar would be subjected to noise levels of 67-74 dBA at 100'.

Site No. 6 Essex Plant and Gravel Bar

Historically this site had a plant processing large amounts of gravel. The nearest occupied structures, approximately 450' to the south, would receive exterior noise levels of 62-65 dBA.

Highway 299 divides the processing site from several residences to the north. Noise levels generated by passenger cars and trucks on the freeway are higher than those of the processing and extraction operations.

Anglers and recreationists utilizing the river bar south of the site would be subjected to sound levels of 67-74 dBA during extraction periods. Although no direct public access is available, the site is adjacent to a popular swimming hole. Most access to this swimming hole is made by trespassing across the Essex site.

Site No. 7A/B Arcata ReadiMix Processing Plant and Associated Gravel Bars
The Arcata ReadiMix site has processing equipment, a cement batch plant, front end loaders, dump trucks and mixers. Developed in 1951, the site is located within an industrial area. It is also located adjacent to and directly north of the Town and Country Trailer Park, built in 1955. In previous years, there were some complaints about the noise generated at abnormally early morning operating hours.

Noise levels, measured adjacent to the trailer park ranged from 55 dBA, with no equipment running, to 80 dBA, when a gravel truck passed within 75 feet. The average noise level for a one hour period was 63 dBA. When the cement batch plant operated (10 minutes for one load), noise levels increased to 73.5 dBA.

Noise levels would not affect those residents with normal working hours who work outside the home. Those who are home during normal working hours would be affected. Furthermore, since many requests for readymix products are made for early morning deliveries, some processing occurs very early in the morning (before 7:00 a.m.). Trailer Park residents are impacted from this operation. Other noise in the area includes Highway 299 traffic and overhead air traffic, to or from the Arcata/Eureka Airport.

Anglers and recreationists utilizing the river bar to the north are subjected to noise levels of 51 to 52 dBA when mixer trucks are in high idle. Commercial air flights overhead at this location registered 55 dBA. Further upstream at the Johnson-Spini bar, no processing occurs. Operations are limited to gravel extraction. Equipment on the gravel bar would range from 67-74 dBA at 100'. This is a significant noise impact.

Site No. 8 Redwood Empire Aggregates Graham/Zanzi Bar
Historically, this site processed large volumes of gravel with its processing and asphalt batch plant. The nearest occupied structure is a residence, approximately 200'-300' south of the processing equipment. Noise measurements of 68.5 dBA were taken from the north sidewalk along Giuntoli Lane approximately 350 feet south of the processing equipment with no traffic influences. Levels increased to 73.3-79.9 dBA when traffic passed on Giuntoli Lane. Noise levels at the residence would be 65 dBA for the processing plant, and 67-74 dBA for Giuntoli Lane traffic. The nearest residence to the east is approximately 500' away, receiving noise levels of 67 dBA. Residences west and north were 1,400' and 1,800', respectively; noise levels would be reduced to less than 55 dBA at each residence (see Photo 5.11-1).

Anglers and recreationists utilizing the river bar north of the plant would be subjected to sound levels of 48 dBA during operations. The primary noise along the river bar at this location is the Highway 101 bridge traffic, which generates levels up to 52 dBA. During extraction, noise levels along the river range from 67-74 dBA at 100'.

Site No. 9 Simpson-Zabel Bar

Although, no gravel removal has occurred in recent years, there have been historic operations at this site. Presently, there is no processing or stockpiling (see Photo 5.11-2). Although Zabel Trucking plans to continue extraction at this site, no permits have been issued by the Humboldt County Planning Department.

Glendale Trailer Park, approximately 400 feet to the north, is the nearest residential area with about 35 trailers (see Photo 5.11-2). These trailers would be subjected to noise from Highway 299. Extraction could generate noise levels of 60-62 dBA in the trailer park. The primary activity affecting nearby residences would be hauling of gravel by trucks along Glendale Drive, resulting in noise levels of 68-70 dBA at 100'.

Residences located on the south side of the river off of Walnut Creek Road, within 600' of extraction equipment, would be subjected to noise levels of approximately 55-60 dBA during extraction.

Summary

While some people may be intrigued by gravel operations and not mind the noise, it would be considered a negative impact on passive recreation. Noise impacts from gravel operations are significant and unavoidable. Even if mitigation measures are proposed to regulate operating periods or noise levels from equipment, the impacts of gravel extraction processing and transporting will remain significant to both nearby residents and recreationists.

River users are the most impacted receptors as a result of gravel extraction. During extraction periods, sound levels of 67-74 dBA at 100' would be too high to permit high quality passive recreation and could be perceived as an annoyance and impact by people recreating in that area. The primary impact from noise would occur from extraction activities located adjacent to the river when anglers and recreationists are also utilizing the river's edge. Currently, most operations occur during daylight hours with the vast majority of the activity occurring weekdays during periods of dry weather. The majority of family recreational use occurs in the summertime on weekends. However, when school is out, young people are seen utilizing the river bar and river at all times, even when extraction occurs.

During processing, the Town and Country RV Park adjacent to the Arcata ReadiMix operations (and close to the REA Giuntoli site and other industrial and commercial sites), one residence south of the Essex processing site and the REA owned residence at the Nicholls Trucking facility could be adversely affected by noise levels. The Town and Country RV Park adjacent to Arcata ReadiMix, the Glendale Trailer Park to the north of the Simpson and Johnson bars and adjacent residences along the City of Blue Lake truck route could be adversely affected by the high noise levels of truck traffic. Impact would also depend on the duration and hours of the noise-generating activity.

It is anticipated that these impacts will increase, not because of increases in noise levels, but because of increased residential developments and recreational uses. It should be noted that noise impacts resulting from the existing processing and extraction operations are status quo. Although noise impacts resulting from the operations have occurred for many decades, each year the specific impacts may change.

Impact Statements and Mitigation Measures

Impact
Noise-1: The closest residence to the Mad River Sand & Gravel processing operation (Site No. 1) is a house owned by the operator approximately 650' southwest of the processing plant which would be subjected to exterior noise levels of 66 dBA. This noise level is Normally Unacceptable for low density residential and normally acceptable for industrial and agriculture (Table 5.11-1). Because the house is located in an agricultural/industrial setting the noise is considered normally acceptable and insignificant.

Residences directly west of the processing site are approximately 900' from the processing plant. During operations, these residences would receive exterior noise levels of approximately 63 to 65 dBA. These levels are considered Conditionally Acceptable for low density residential (Table 5.11-1). Conventional construction, with closed windows will normally suffice. Both the operation and the residences are existing and owned by the operator.

The existing noise levels are judged insignificant with respect to the residences. The project will not increase existing noise impacts. Therefore the impact at this location is less than significant. (LS/LS)

Mitigation Measures
Since no significant impact was identified, no mitigation is necessary.

Monitoring
None Required

Impact
Noise-2: The closest residences to the Emmerson bar (Site No. 2) are located approximately 1,100' to the northwest and 1,200' to the south. There are also approximately 20 houses off West End Road within 2,000' of the extraction and stockpiling area. The noise levels received at these residences from extraction activities and gravel transport would be less than 55 dBA. This level is Clearly Acceptable (Table 5.11-1) and is considered less than significant.

The project will not increase existing noise impacts at this site. Therefore the impact at this location is less than significant. (LS/LS)

Mitigation Measures
Since no significant impact was identified, no mitigation is necessary.

Monitoring
None required

Impact
Noise-3: The closest residences to the Blue Lake bar (Site No. 3) are two houses owned by REA, 100' and 400' from the truck yard and 800' to 1,000' from the gravel bar. These residences would receive noise levels of 54 dBA and 55 dBA from extraction activities (Clearly Acceptable). Processing does not occur at this site; but, if it did these two residences would receive 62 dBA (Conditionally Acceptable) and 74 dBA (Clearly Unacceptable) from processing.

The project will not increase existing noise impacts at this site. Therefore the impact at this location is less than significant. (LS/LS)

Mitigation Measures
Since no significant impact was identified, no mitigation is necessary.

Monitoring
None required

Impact
Noise-4 The closest residence to the Eureka Sand and Gravel processing site (Site No. 4) is approximately 1,600' to the north, and would be affected by traffic on Highway 299, as well as the processing plant. The noise levels received by residences from processing would be less than 60 dBA and Normally Acceptable for low density residential (Table 5.11-1).

The project will not increase existing noise impacts at this site. Therefore the impact at this location remains less than significant. (LS/LS)

Mitigation Measures
Since no significant impact was identified, no mitigation is necessary.

Monitoring
None required

Impact
Noise-5: Extraction equipment at Johnson bar (Site No. 5), would produce noise levels of less than 55 dBA at Warren Creek Road residences, approximately 1,200'-1,800' southwest of the site. This is Clearly Acceptable (Table 5.11-1) and less than significant.
The project will not increase the current existing noise impacts at this site. Therefore the impact at this location is less than significant. (LS/LS)

Mitigation Measures
Since no significant impact was identified, no mitigation is necessary.

Monitoring
None required

Impact
Noise-6: The nearest occupied structure to Essex bar (Site No. 6), is approximately 450' to the south; it would receive exterior noise levels of 62-65 dBA. This is Conditionally Acceptable for low density residential (Table 5.11-1). Conventional Construction with closed windows will normally suffice.

The project will not increase existing noise impacts at this site. Therefore the impact at this location is less than significant. (LS/LS)

Mitigation Measures
Since no significant impact was identified, no mitigation is necessary.

Monitoring
None required

Impact
Noise-7: The Arcata ReadiMix (Site No. 7) site has processing equipment, a cement batch plant, front end loaders, dump trucks and mixers. Developed in 1951, the site is located within an industrial area. It is also located adjacent to and directly north of the Town and Country Trailer Park, built in 1955. In previous years, there were some complaints about noise generated by early morning operations.

Noise levels, measured adjacent to the trailer park range from 55 dBA (Clearly Acceptable), with no equipment running, to 80 dBA (Clearly Unacceptable for high density residential and Conditionally Acceptable to Normally Unacceptable for industrial areas), when a gravel truck passes within 75 feet. The average noise level measured at the trailer park, for a one hour period is 63 dBA (Conditionally Acceptable for high density residential and Clearly Acceptable for industrial). When the cement batch plant operates (10 minutes for one load), noise levels increase to 73.5 dBA (Clearly Unacceptable for high density residential and Normally Acceptable for industrial). Noise levels generated by this operation could be considered an unavoidable significant effect of an existing use, particularly with reference to the adjacent high-density residential use.

The project will not increase the existing noise impacts at this site. However, the existing noise at this site is significant and unavoidable. (SU/SU)

Mitigation Measures
Mit-10: Although the project will not increase the noise impact at this site, the existing noises are significant. If the exhaust systems of all internal combustion engines owned or maintained by the operator are kept in good repair and as manufactured at least a portion of the existing noise will be minimized.

Monitoring
Cal-OSHA
Humboldt County Planning and Building Department
Humboldt County Public Works Department

Significance after Mitigation
Noise impacts at this site will remain significant even though the project impacts are less than significant.

Impact
Noise-8: The existing facility at Graham bar is located in an industrial and commercial area. The nearest occupied structure to Graham bar (Site No. 8), is a residence, approximately 200'-300' south of the processing equipment. Noise levels at the residence would be 65 dBA (Conditionally Acceptable for high density residential) for the processing plant, and 67-74 dBA (Normally Acceptable for industrial) for Giuntoli Lane traffic. The nearest residence to the east is approximately 500' away, receiving noise levels of 67 dBA (Conditionally Acceptable for high density residential and Normally Acceptable for industrial).

Residences west and north were 1,400' and 1,800' respectively; noise levels would be reduced to less than 55 dBA at each residence (Clearly Acceptable for low density residential).

The noises generated by Highway 101 and Giuntoli Lane at this site are high but Normally Acceptable for industrial areas (Table 5.11-1). The combined highway and processing noises are at least conditionally acceptable for this zoneing and therefore not significant. The project will not increase existing noise impacts at this site. Therefore, the noise impact at this location would be less than significant. (LS/LS)

Mitigation Measures
Mit-10: Although the project noise impact is insignificant the existing noises are high. If the exhaust systems of all internal combustion engines owned or maintained by the operator are kept in good repair and as manufactured at least a portion of the existing noise will be minimized.

Monitoring
Cal-OSHA
Humboldt County Planning and Building Department
Humboldt County Public Works Department

Significance after Mitigation
Less than significant.

Impact
Noise-9: Glendale Trailer Park, approximately 400 feet to the north of the Johnson-Zabel bar (Site No. 9), is the nearest residential area with about 35 trailers. These trailers are

subjected to noise from Highway 299. Extraction could generate noise levels of 60-62 dBA in the trailer park. This is considered Conditionally Acceptable for both low and high density residential (Table 5.11-1). With conventional construction and closed windows, this is considered acceptable and less than significant.

The project will not increase existing noise impacts. Therefore the impact in this location is less than significant. (LS/LS)

Mitigation Measures
Since no significant impact was identified, no mitigation is necessary.

Monitoring
None required

Impact
Noise-10: River and river bar users are impacted by noise generated by the existing operations and by noise from adjacent roadways. During extraction, noise levels reach 67-74 dBA at 100'. This is considered Normally Acceptable to Normally Unacceptable for water recreation uses (Table 5.11-1) but may not be acceptable to river recreationists and fishermen.

The primary impact from noise would occur from extraction activities which occur outside the main fishing periods and this will help reduce the significance of the impact. While some people may be intrigued by gravel operations and not mind the noise, others perceive it as a significant impact. With current technology, this impact is unavoidable.

The project will not increase existing noise impacts along the river. However, the existing noise impacts at the river are sometimes significant and unavoidable. (SU/SU)

Mitigation Measures
Mit-10: Although the project noise impact is insignificant the existing noises are sometimes significant. If the exhaust systems of all internal combustion engines owned or maintained by the operators are kept in good repair and as manufactured at least a portion of the existing noise will be minimized.

Monitoring
Cal-OSHA
Humboldt County/Scientific Design and Review Committee

Mit-16: Although most approved reclamation plans provide for longer hours of operation, gravel bar extraction operations will normally occur between the hours of 7:30 a.m. and 5:30 p.m. Monday through Friday. This helps reduce conflicts for early morning, and evening anglers, and weekend recreational users. However, if environmental or other circumstances create a shorter than normal extraction season it may sometimes be necessary to extend the operating hours in order to complete the permitted extraction within the allowable time.

Monitoring
Humboldt County Planning and Building Department

Significance after Mitigation
Extraction noise impacts on the river will sometimes be potentially significant even though the project impacts are less than significant.

Photo 5.11-1
Processing Facilities
(looking upstream)

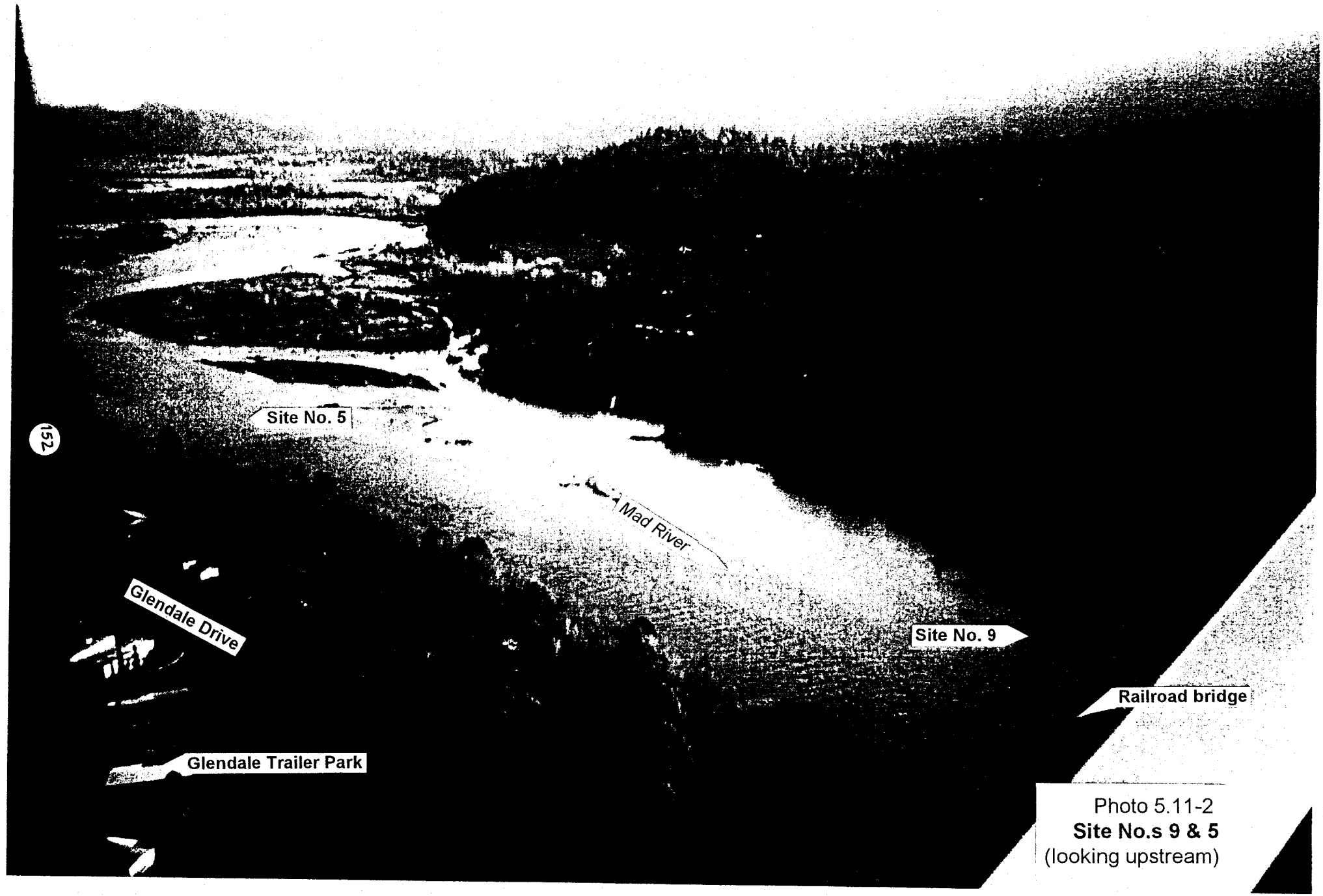


Photo 5.11-2
Site No.s 9 & 5
(looking upstream)

5.12 Public Utilities and Structures

This is a description of public utilities and significant structures in or near the project area which might possibly be impacted by the project (does not include gravel processing sites, see General Location Map 5.12-1)

Table 5.12-1 - Public Structures and Utilities within the Project Area.

Structure	River Mile	Caltrans Bridge Number	Date Built
Former Sweasey Dam Site	19.6		1938
Mad River Hatchery Weir & Left Bank RSP	14.5		
Blue Lake Hatchery Road Bridge	12.8		1982
Blue Lake Right Bank Levee & RSP	12.8-13		1965
Blue Lake Sewage Treatment Pond and Right Bank RSP	11.7		1971
Hwy 299 Mill Creek Bridge	10.5	414-188	1965
North Coast Railroad Bridge	9.8		1914
Glendale Drive Bridge at Lindsay Creek	9.8		1926
Hwy 299 Bridge at Lindsay Creek	9.8	4-187	1965
Railroad Trestle at Warren Creek	9		
Warren Creek Road Bridge	9		1927
Diversion Structures at HBMWD Five Raney-Type Wells & Collectors, One Surface Diversion	7.8-9.5		
Upper HBMWD Pipe Crossing	8.7		1960
Lower HBMWD Piipe Crossing	7.8		1960
U.S.G.S. Stream Gaging Station	7.8		1951
Hwy 299 Eastbound (Right)Bridge	7.8	436R	1948
Hwy 299 Westbound (Left) Bridge	7.8	436L	1965
PG&E Upper Gas Line Crossing	7.8		
Sewage Effluent Pipe Crossing	7.8		
MCSD Water Pipe Crossing	7.25		
Hwy 101 Northbound (Right) Bridge	5.6	4-25R	1929
Hwy 101 Southbound (Left) Bridge	5.6	4-25L	1958
PG&E Lower Gas Line Crossing	5.6		
Hammond Trail Bridge	3.9		1905
McKinleyville Community Sewage Treatment Plant	2.1		
Mad River Beach Left Bank RSP	3.3-3.4		
Humboldt County Boat Ramp	3.2		
Clam Beach Mad River Mouth RSP	0		

Former Sweasey Dam Site (19.6 miles)

The dam was built in 1938, filled with 3,000 acre feet (4,840,000 cubic yards) of sediment by 1964, and removed with dynamite in August, 1970. Portions of the dam remain keyed into the channel (see Photo 5.12-1). This marks the up-stream limit of the project area for this PEIR. Following the removal of the dam, an abnormally large sediment wave began moving downstream toward the middle and lower project area. This sediment wave helped supply the gravel industry for an undetermined period of time following 1970. Although some degradation

is now taking place at the dam site, the channel between the dam site and the Mad River Hatchery remains aggraded.

The weir at the Mad River Fish Hatchery acts as a vertical control point in the river profile. If extraction is expanded to permitted or proposed levels or sustained at recent levels, the weir at the mad River Hatchery (described below) will likely fail and the channel between the hatchery and the dam site will begin to rapidly degrade. If extraction is limited to volumes less than the average net recruitment rate, the integrity of the hatchery weir should remain intact and the river between the dam site and the weir will remain in dynamic equilibrium with its sediment supply and available stream power.

Mad River Fish Hatchery (14.5 miles)
The Mad River Fish Hatchery is located on the left bank between Blue Lake and the Sweasey Dam site (see Photos 5.12-2 - 5.12-5). The hatchery maintains a weir and fish ladder in the river. There has been some channel degradation below the weir and the river scoured under the weir during the winter of 92-93. At this time the river is too high to allow an evaluation of the situation. The Department of Fish and Game needs to evaluate, quantify, and monitor this potential problem.

Along the left bank, adjacent to the hatchery, there is some RSP (rock slope protection) against bank erosion. During installation the toe of the RSP was buried in a trench. Channel degradation can undermine the supporting toe and destroy the integrity of the RSP. The plans or cross sections for this project have not been located and the elevations along the toe are not known. The Hatchery should locate documents that will determine the foundation elevations. These elevations are needed to evaluate, quantify, and monitor this potential problem.

If extraction is expanded to permitted or proposed levels, the hatchery weir and RSP could fail. If extraction is sustained at recent levels the integrity of these two structures will be at risk and they will eventually fail. If extraction is below average net recruitment, the integrity of these structures should be secure.

Blue Lake Hatchery Road Bridge (12.8 miles)
This bridge crosses the Mad River and connects the City of Blue Lake with the West End Road area. An earlier bridge built in 1956 at this site was washed out during the flood of December 19, 1981 (see Photo 5.12-6). The current bridge was constructed in 1982. The bridge constricts the channel and increases channel scour. The increased scour, along with gravel extraction and low recruitment, has caused the bed at this site to drop about 1.6 feet between 1982 and 1991 (See Figure 5.12-1). This bridge provides access to Hatchery road and West End Road. The Blue Lake fire department and other emergency vehicles depend on this bridge and would like to see it remain open year round. However, because the south side approach to the bridge is essentially in the river bed the County Department of Public Works considers this to be a "summer bridge".

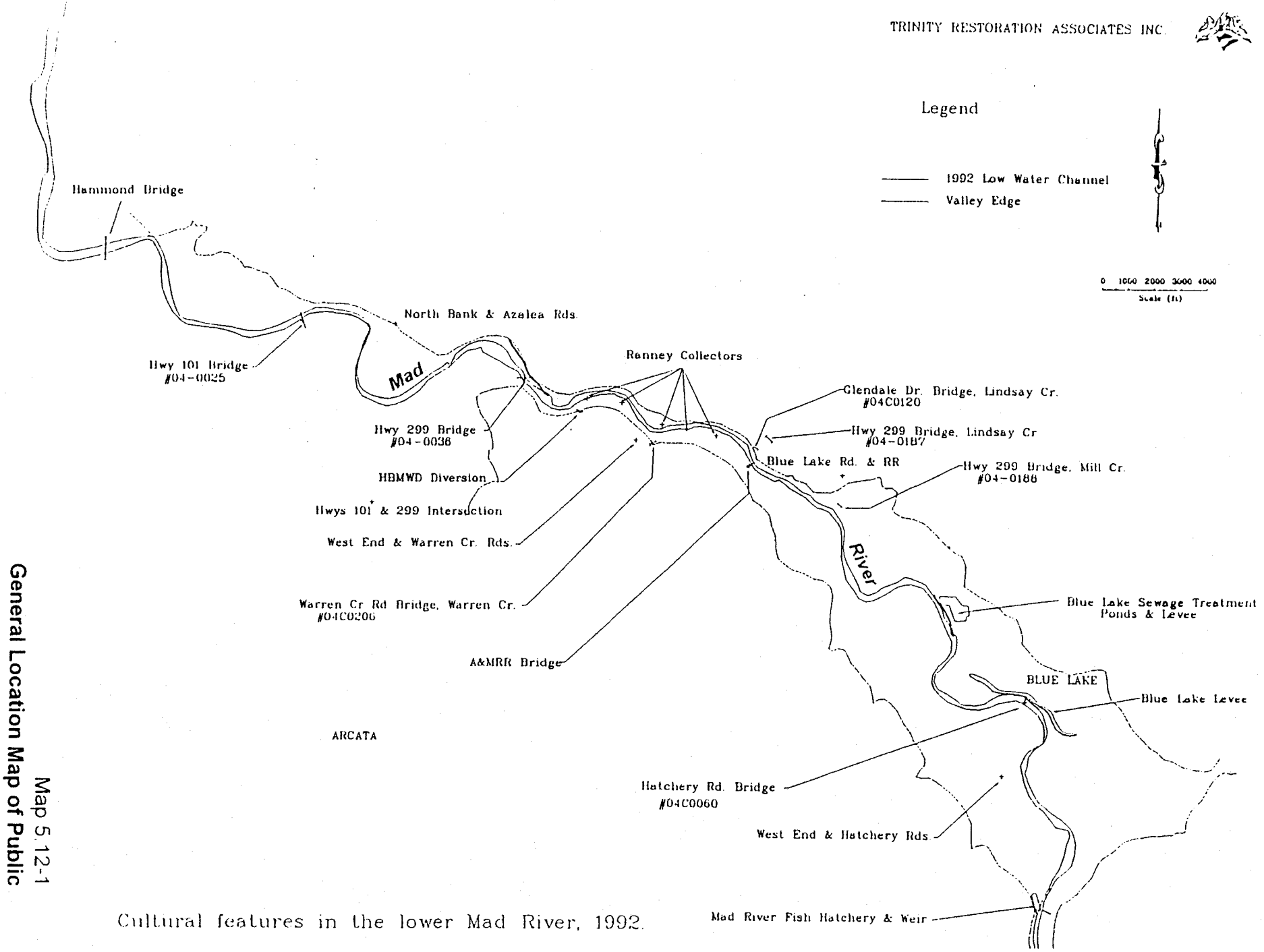
If extraction is expanded to permitted or proposed levels or sustained at recent levels it is anticipated that scour will continue at this site and the bridge will fail. If extraction is below average net recruitment, and an annual review is required, gravel extraction can be monitored and modified as needed in order to minimize the risk of bridge failure.

Blue Lake Right Bank Levee and RSP. (12.8 - 13 miles)
This right-bank levee extends from approximately one mile upstream of the Hatchery Road Bridge to about 0.5 mile downstream from the bridge (see Photo 5.12-7). The levee is

protected with RSP. During installation, the toe of RSP was buried in a trench. Channel degradation can undermine the supporting toe and destroy the integrity of the RSP.

Data from June 1965 USACOE Job Number 65-80, Maps and Cross Sections indicates that the trench bottom elevations near the lower end of the levee vary from approximately 56 to 59 feet, MSL. Near the upper end of the levee, the trench bottom elevations are approximately 71 feet MSL.

Humboldt County needs to monitor the river bed elevations in this reach in order to evaluate the risk of undermining the RSP. If extraction is expanded to permitted or proposed levels or sustained at recent levels the RSP will eventually be undermined and the integrity of the levee system will be placed at risk. Through an annual review, gravel extraction can be monitored and modified as needed in order to minimize the risk of RSP and levee failure.



Cultural features in the lower Mad River, 1992.

Map 5.12-1

General Location Map of Public Utilities and Structures

(adapted from: River Institute Consultants Report, Appendix F)

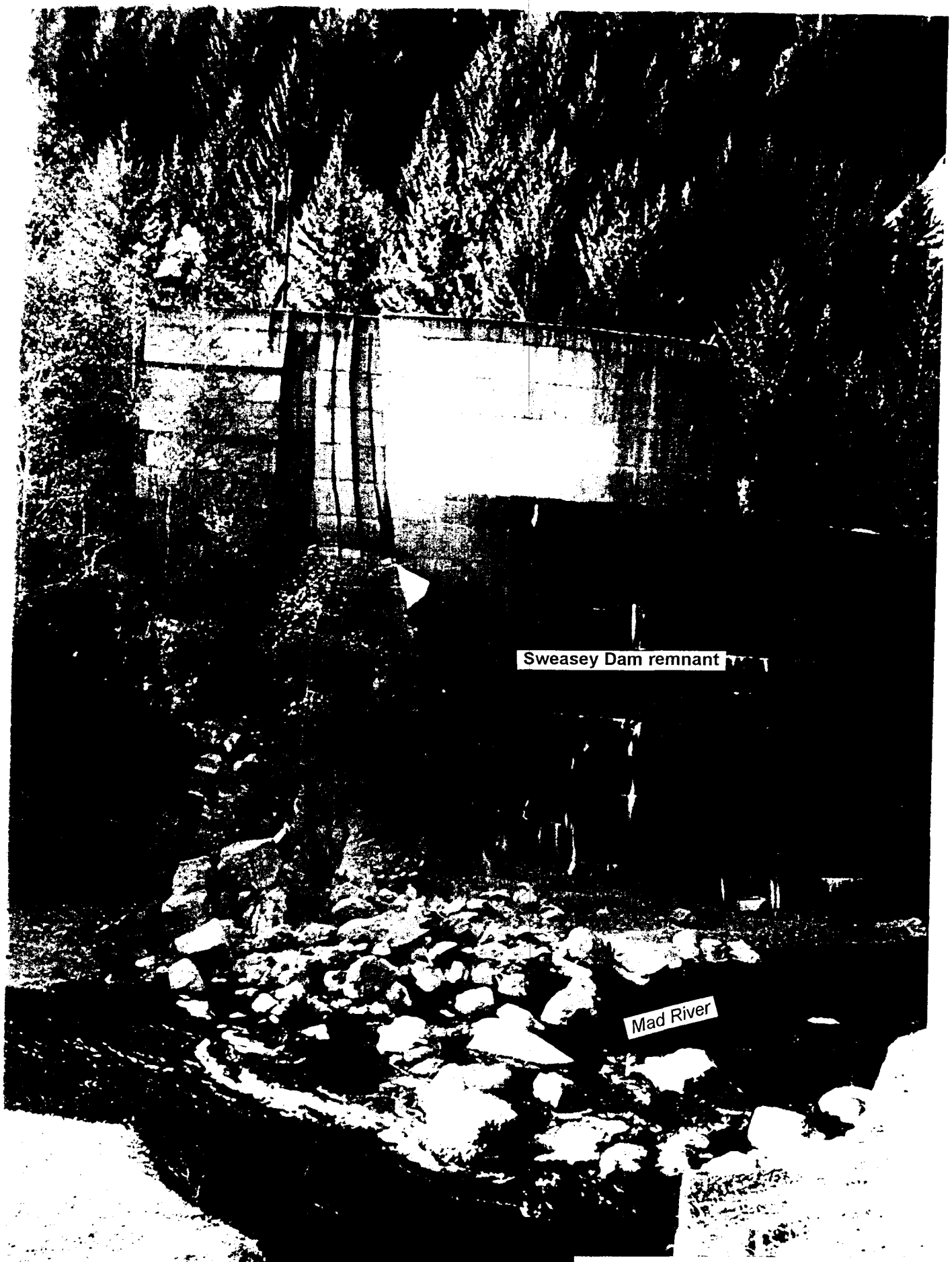
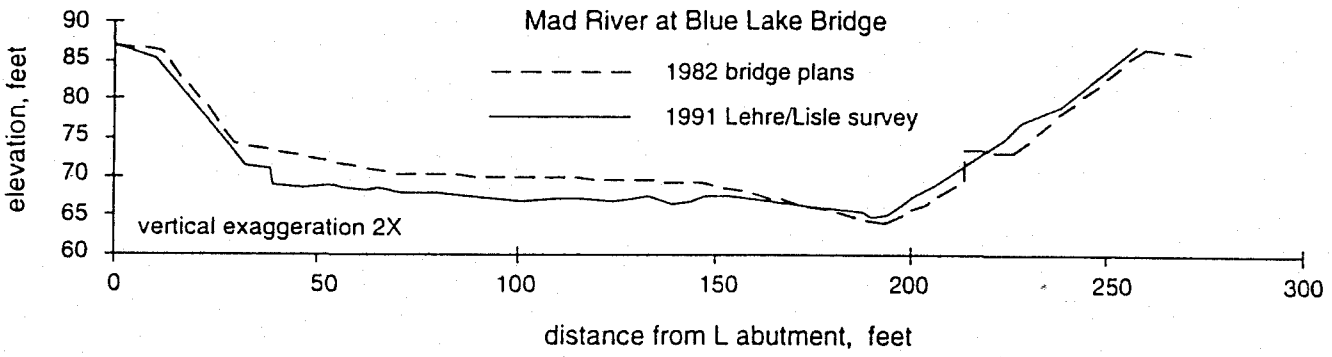


Photo 5.12-1
Former Sweasey Dam site
(looking at left bank)



Cross-sections of the Mad River at Blue Lake (Hatchery Road) Bridge

View is downstream.

Figure 5.12-1
Cross-sections of the Mad River at the Blue Lake Bridge

(adapted from: River Institute Consultants Report, Appendix F)

Photo 5.12-2
Mad River Fish Hatchery
(looking upstream)

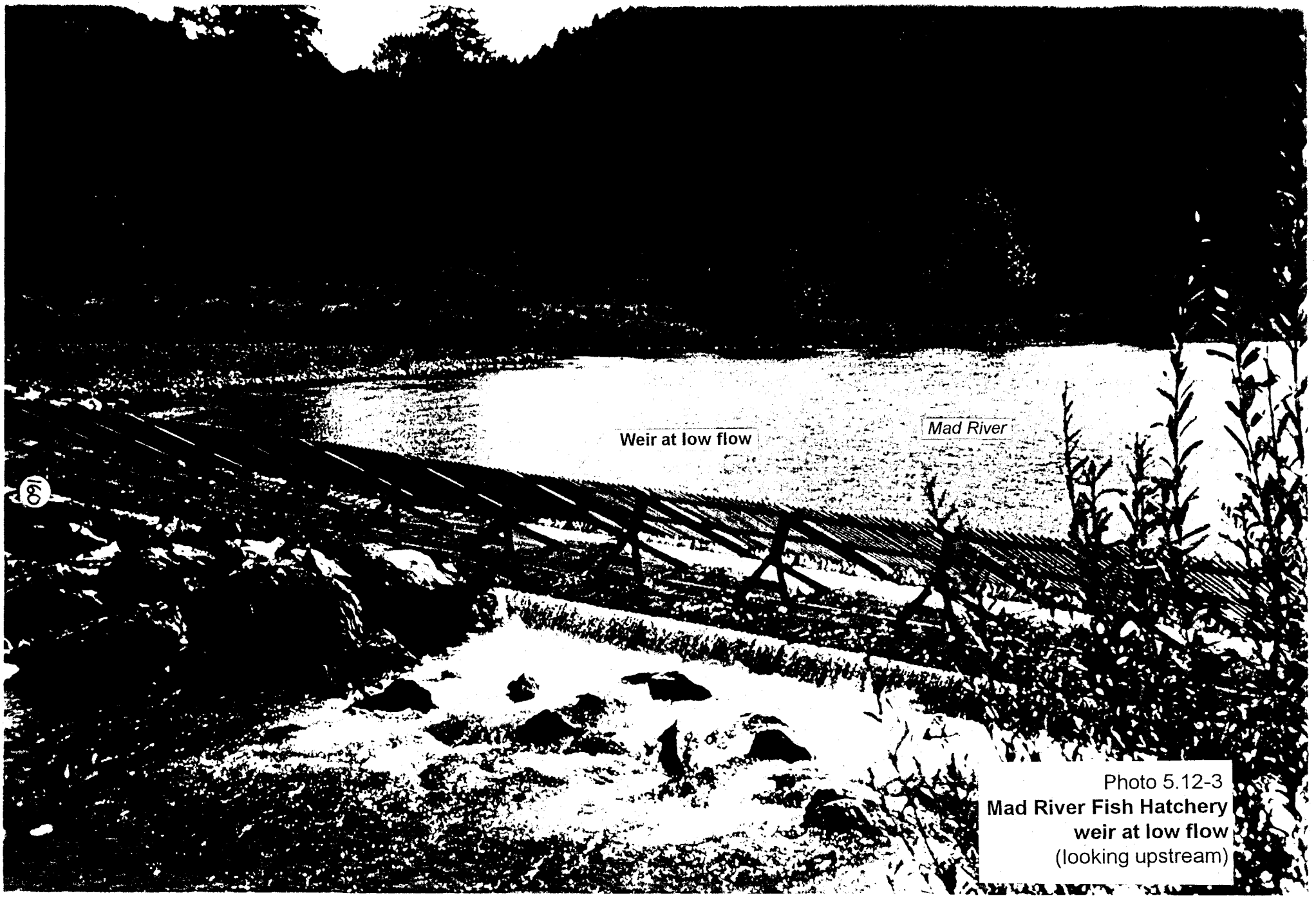


Photo 5.12-3
Mad River Fish Hatchery weir at low flow
(looking upstream)

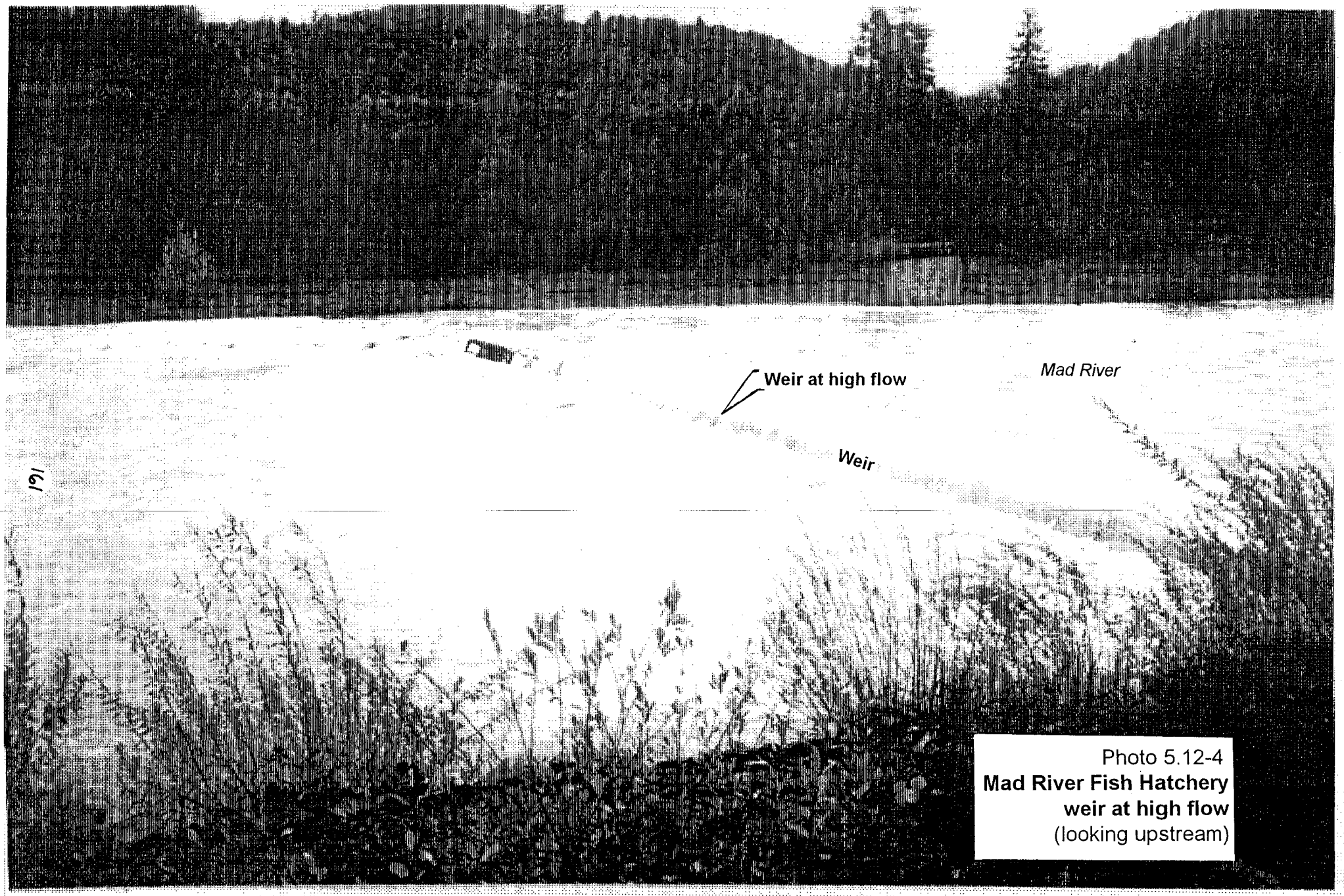


Photo 5.12-4
Mad River Fish Hatchery weir at high flow
(looking upstream)

Photo 5.12-5
Mad River Fish Hatchery
(looking downstream)

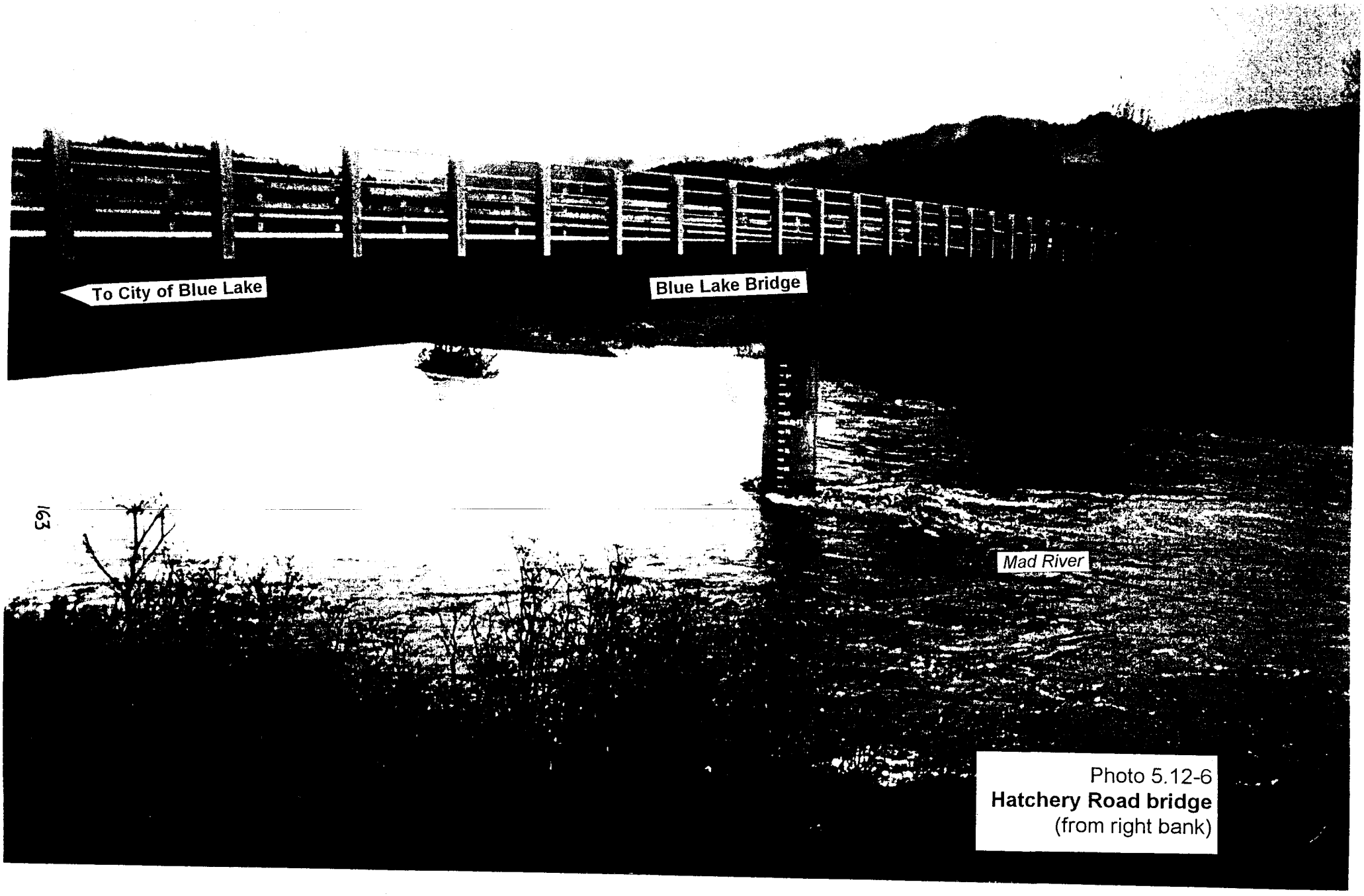


Photo 5.12-6
Hatchery Road bridge
(from right bank)

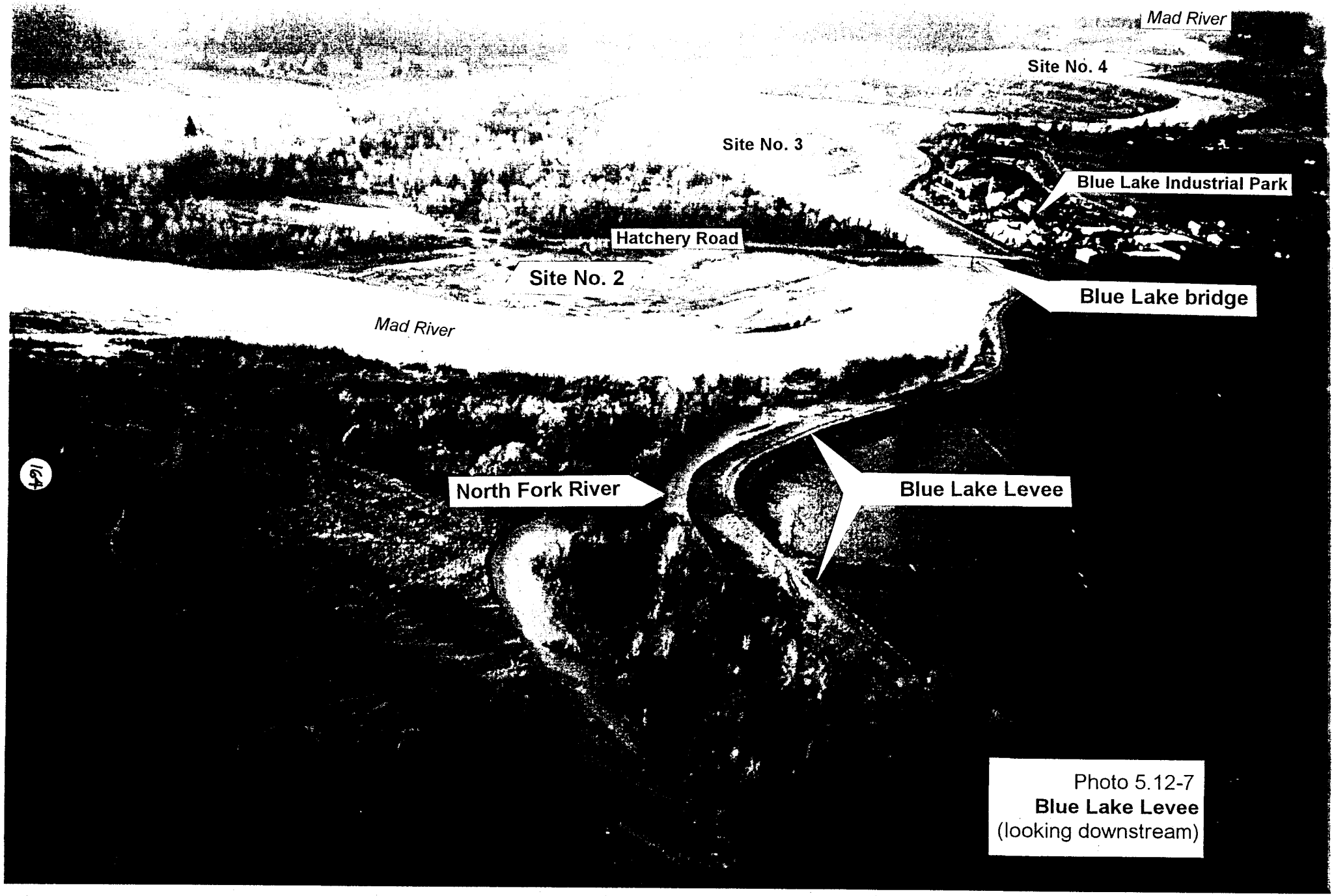


Photo 5.12-7
Blue Lake Levee
(looking downstream)

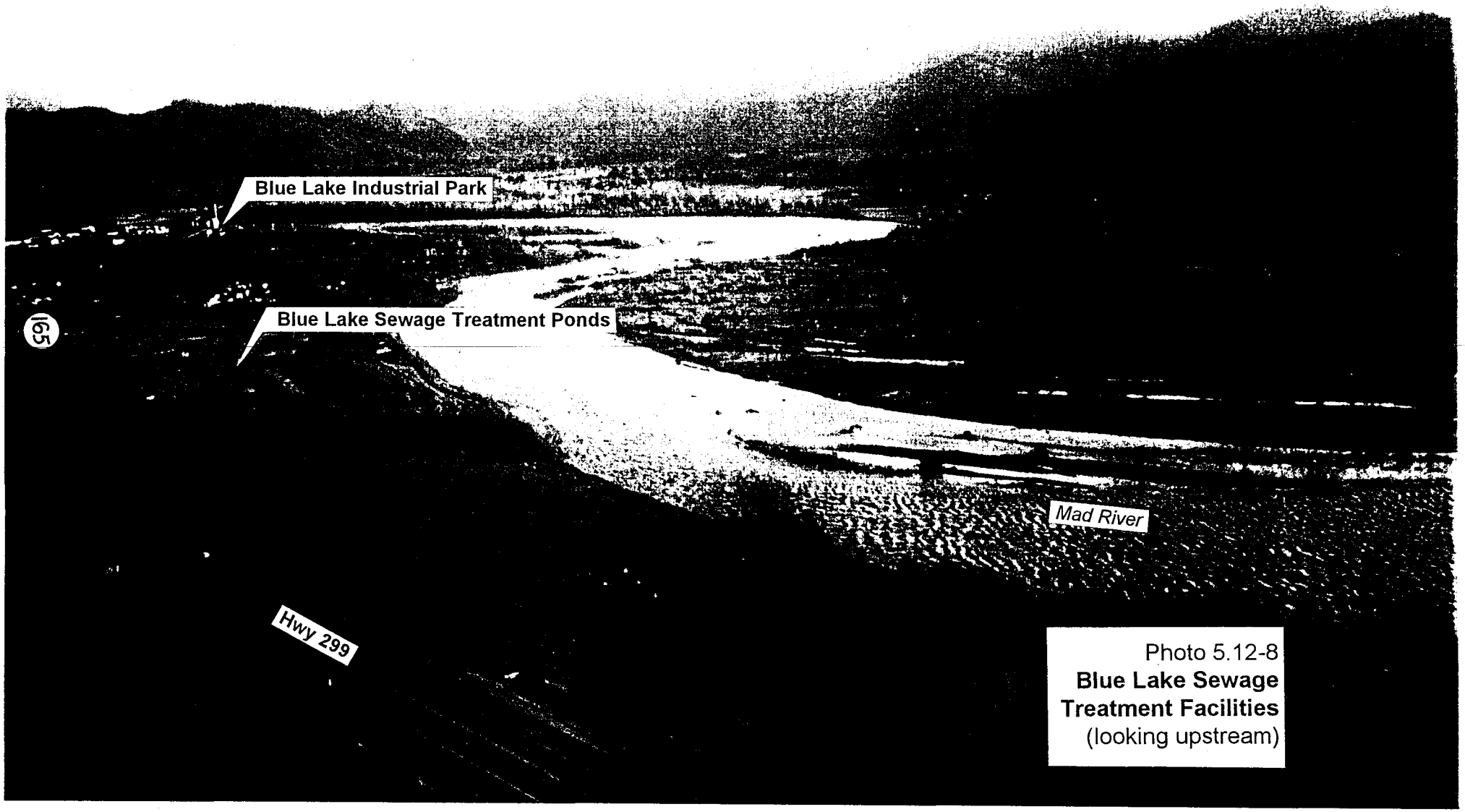


Photo 5.12-8
Blue Lake Sewage Treatment Facilities
(looking upstream)

Blue Lake Sewage Treatment Ponds (11.7 miles)
The Blue Lake sewage treatment ponds are located about 150 feet from the right channel bank (see Photo 5.12-8). Water from these ponds percolates into the aquifer. If the channel continues to degrade at this site, the surrounding water table will decline which will help maintain high percolation rates. If the channel agrades significantly at this site, the water table will rise and the percolation rate from these ponds will likely decrease.

A 1700-foot levee has been installed to protect the ponds and adjoining land from bank erosion. This levee was first built in 1971 and it has been rebuilt or repaired twice since 1971. Concerned parties need to monitor this levee and consider potential impacts when reviewing near-by gravel extraction proposals. In particular they need to direct their attention to proposals that may focus stream energy towards this site.

If the extraction is expanded to permitted or proposed levels or sustained at recent levels, the RSP will eventually be undermined and the integrity of the levee system and ponds will be placed at risk. Through an annual review, gravel extraction can be monitored and modified as needed in order to minimize the risk of RSP and levee failure.

Highway 299 Mill Creek Bridge (10.5 miles)
Mill Creek is a tributary to the Mad River and this bridge does not span the project area. However, it is located nearby and degradation in the Mad River channel could move up this tributary and undermine the bridge supports. The bridge was built in 1965 and a large rip rap sill was placed downstream to control bed degradation. No cross sections have been taken since that time. Concerned parties need to schedule new cross section measurements and monitor this bridge support. Channel degradation at the mouth of tributary streams can impair fish migration. The steep boulder cascade at the mouth of this stream may be a partial barrier.

If extraction is expanded to permitted or proposed levels or sustained at recent levels channel degradation may undermine the rip rap sill, endanger bridge supports, and impair fish passage. If extraction is below average net recruitment, channel degradation in this reach will be reduced and the integrity of these riverine resources will likely be preserved.

North Coast Railroad Authority Bridge (9.8 miles)
The Arcata and Mad River Railroad is registered as a California Historical Landmark (No. 842). The Arcata and Mad River Railroad Company contracted to have the first bridge built at this site in 1888. In 1896 a train fell through the bottom of the bridge and seven people were killed. The bridge was repaired and used until 1914 when the present steel bridge was built. According to the Arcata Union (June 25, 1914) the new bridge consists of three spans of 165 feet each with solid re-enforced concrete piers resting on a platform of 70 piles driven down to bedrock. The concrete extended down to a depth of 15 feet below low water. After the new bridge was completed the old bridge (located a few feet upstream) was demolished. A 16-inch water line is attached to the railroad bridge. It takes water to the north side of the river to service the community of Fieldbrook and the city of Blue Lake.

This bridge has in-channel supports and these supports increase local channel scour. Local channel scour and overall bed degradation have eroded the gravel bed around these bridge supports. The lowered bed appears to be threatening the integrity of the mid-channel bridge supports.

During the summer of 1992, a portion of one of the bridge supports appeared to be partially suspended above the gravel bed (see Photo 5.12-9). No evidence of pier support for the foundation was observed. An evaluation of this condition placed the bridge at risk. Further

investigations are needed to verify the extent of this problem and to look for signs of the piles that are supposed to be under the concrete supports.

It appears that some gravel replenishment occurred around these bridge supports in the winter of 1992-1993. Regardless, if extraction is expanded to permitted or proposed levels or sustained at recent levels this bridge may fail in the near future. If extraction is sustained at a level which is below net recruitment and replenishment, gravel replenishment at this site will be encouraged at this site and the integrity of the bridge may be enhanced.

Regardless of gravel extraction, localized scour around these bridge supports may continue to threaten the integrity of the bridge. There may be some engineering solutions that can be used to reduce the risk of localized scour.

Glendale Drive Bridge over Lindsay Creek (9.8 miles)
This bridge does not span the project area but it is located a short distance upstream on Lindsay Creek. This bridge was built in 1926 and about 10 feet of channel bed erosion has occurred since then. Some repairs have been made periodically and it appears that additional work is necessary now. Humboldt County needs to monitor bed elevations at this site and program appropriate repairs as needed. Fish access does not seem impaired at this tributary.

If extraction is expanded to permitted or proposed levels, average annual degradation at this site will increase along with increased risk to the bridge and fish passage. If extraction is sustained at current levels the long-term average channel degradation rate will be maintained, with increased risk to the bridge and fish passage. If extraction is below average net recruitment, channel degradation at this site will be reduced and some aggradation may occur to help minimize risk to the bridge. Fish passage into Lindsay Creek should remain unimpaired.

Photo 5.12-9
North Coast Railroad Bridge

Highway 299 Bridge over Lindsay Creek (9.8 miles)
This bridge is upstream from the Glendale Drive. It was built in 1965 and inspected in 1972. No scour problems were reported in 1972. This bridge does not span the project area but channel degradation can migrate up tributaries and it would be prudent to remeasure and evaluate bed elevations at this site in the near future.

If extraction is expanded to permitted or proposed levels or sustained at recent levels we can assume that channel bed erosion will migrate upstream and create scour problems at this bridge. If extraction is below average net recruitment, with channel monitoring and frequent review of extraction levels, the river will likely sustain the channel bed near its present position.

Railroad Trestle over Warren Creek (9 miles)
The Arcata and Mad River Railroad is registered as a California Historical Landmark (No. 842). There is two or three feet of channel scour beneath this trestle and one of the pier footings has been exposed. A large concrete slab located about 200 feet downstream from the trestle may be restricting further bed degradation at this site. This trestle does not span the project area but channel degradation can migrate up tributaries and it would be prudent to remeasure and evaluate bed elevations at this site in the near future. Fish passage into Warren Creek does not seem to be impaired.

The concrete slab may limit scour at this site for some time. Consequently, expanding the project to permitted levels or sustaining it at recent levels may not produce an immediate noticeable effect. However, it is possible that the concrete sill could become undermined which would allow channel bed erosion to migrate upstream and place the trestle and fish passage at risk.

If the extraction is below average net recruitment, the risk of channel degradation at this site will be substantially reduced. Consequently, fish passage and the integrity of the trestle supports would be maintained.

Warren Creek Road Bridge (9 miles)
This bridge was built in 1927, and is located upstream from the railroad trestle. No scour problems were noted during an investigation in 1979. This bridge does not span the project area but channel degradation can migrate up tributaries and it would be prudent to remeasure and evaluate bed elevations at this site in the near future.

The concrete slab located below the trestle may limit scour at this site also. Consequently, expanding the project to permitted levels or sustaining it at recent levels may not produce an immediate noticeable effect at this site. However, it is possible that the concrete sill could become undermined which would allow channel bed erosion to migrate upstream and place this bridge at risk. If extraction is below average net recruitment, the risk of future channel degradation at this site will be substantially reduced.

Structures in the HBMWD Reach (7.8 - 9.5 miles)
The HBMWD reach extends from just below the railroad bridge to just above the U.S. Geological Survey Mad River, Arcata stream gaging station at Highway 299. In this reach the District has five Ranney Wells, one surface water diversion structure, two underwater pipe crossings and various instream structures to provide protection against bank erosion and river bed degradation (see Photo 5.12-10). The most recent (1992) structure is a rock dike which has been placed downstream of the surface diversion (Pump Station Six) in an attempt to maintain an adequate low-flow surface water elevation at the pump inlet. Rock slope protection (RSP) was also added to the right bank just upstream from Highway 299 in 1992.

HBMWD cross sections indicate that the river bed throughout this reach has degraded an average of four to five feet since 1960 (see Figure 5.12-2). As expected, scour around at least some of the Ranney Wells has been greater than the average four to five feet. Although the recent closure of a Samoa Peninsula pulp mill may reduce the demand for water and provide some temporary relief, channel degradation in this reach has hampered the District's ability to provide an adequate quantity of water from Pump Station Six.

Channel degradation around the Ranney wells has limited the depth of gravel above the collector intakes, and consequently reduced the filtering effects of the gravel. The increased turbidity in the collected water increases the need for treatment and purification.

The dike placed in the river in 1992 may provide a temporary limit to further channel bed degradation, with or without supplemental structures. But, if extraction is expanded to permitted or proposed levels or sustained at recent levels the facilities of the HBMWD will continue to suffer the effects of channel degradation. If extraction is below average net recruitment, monitoring and adjustment of extraction levels and techniques could encourage gravel deposition in this reach with the purpose of maintaining the present grade line.

Upper HBMWD Water Pipe Crossing (8.7 miles)
The HBMWD has two 51-inch water pipe crossings buried in the Mad River Channel. Both pipe crossings are encased in concrete. The upper crossing is located just downstream from Ranney Well No. 1. The bottom of the trench (pipe invert) was at minus 6 feet MSL in 1960. At that time the stream thalweg was at approximately 24 feet. In 1992 the thalweg at this location was at 20 feet. At this time channel degradation has not created an immediate threat to this pipe crossing.

If extraction is expanded to permitted or proposed levels or sustained at recent levels scour will continue to occur and the risk of exposing this pipe will increase. If extraction is below average net recruitment, monitoring and adjustment of extraction levels and techniques could encourage gravel deposition in this reach with the purpose of maintaining the present grade line.

Lower HBMWD Water Pipe Crossing (7.8 miles)
The lower pipe crossing is just upstream from the Highway 299 bridge. This pipe also has a diameter of 51-inches and is encased in concrete. The pipe invert was laid at one foot MSL in 1960. At that time the stream thalweg was 18 feet. In 1992 the thalweg was 12 feet above MSL. At this time channel degradation has not created an immediate threat to this pipe crossing.

There is substantial large rock in the reach which limits any near-future degradation at this site, regardless of extraction or degradation rates elsewhere in the river. Therefore, none of the proposed alternatives are likely to create any immediate problems at this pipe crossing.

U. S. Geological Survey Stream Gaging Station (7.8 miles)

The U.S. Geological Survey has a stream gaging station located just above the Highway 299 bridge. This station has been monitoring streamflow continuously since 1951. An instrument shelter is located high on the right bank. The gage is a bubbler gage which requires very little instream paraphernalia. Although changes in channel aggradation and degradation at this station will not threaten this facility, constant monitoring is required to keep the station calibrated. Other than calibration problems, none of the project alternatives will have any significant impact on this installation.

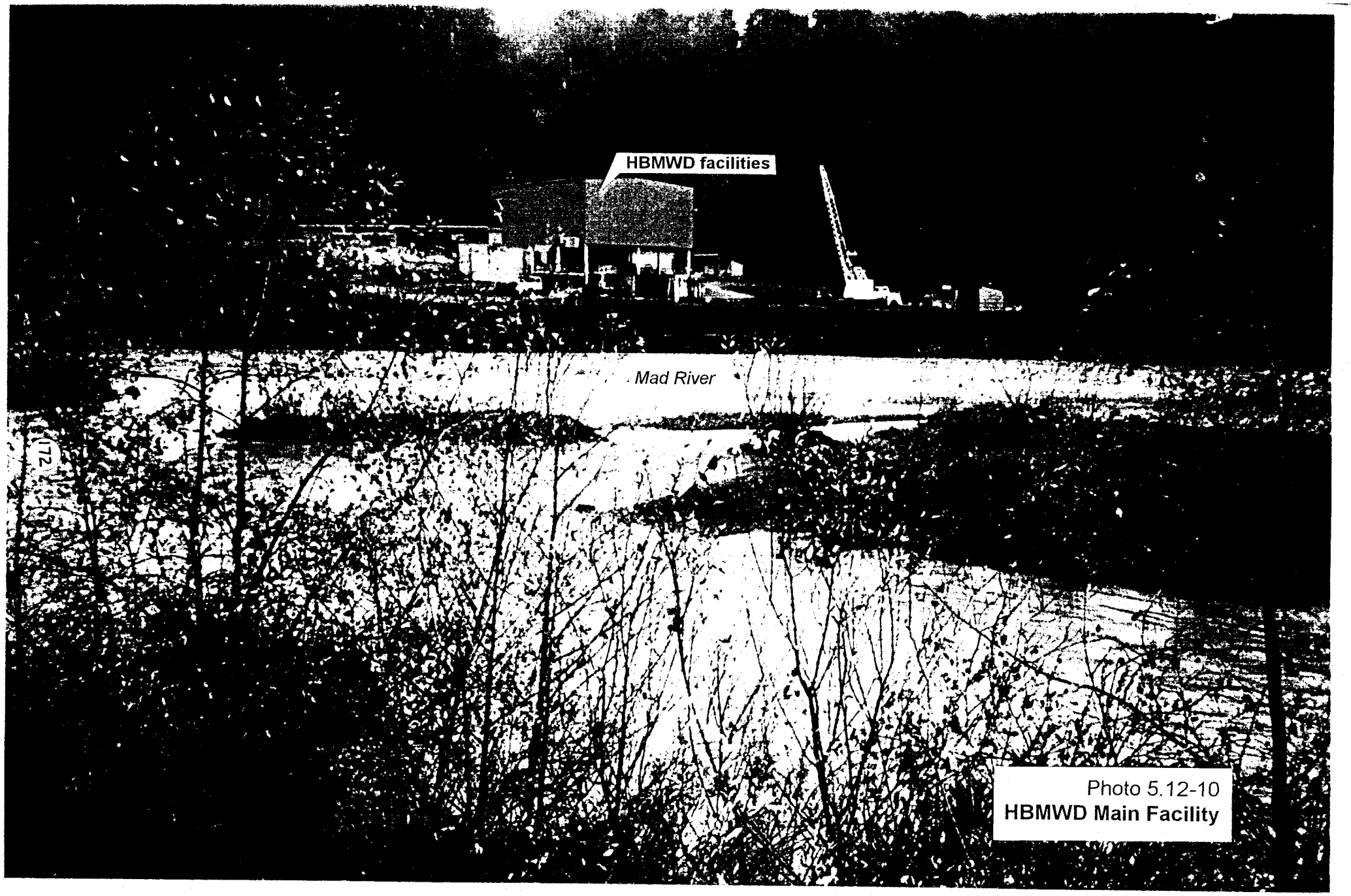
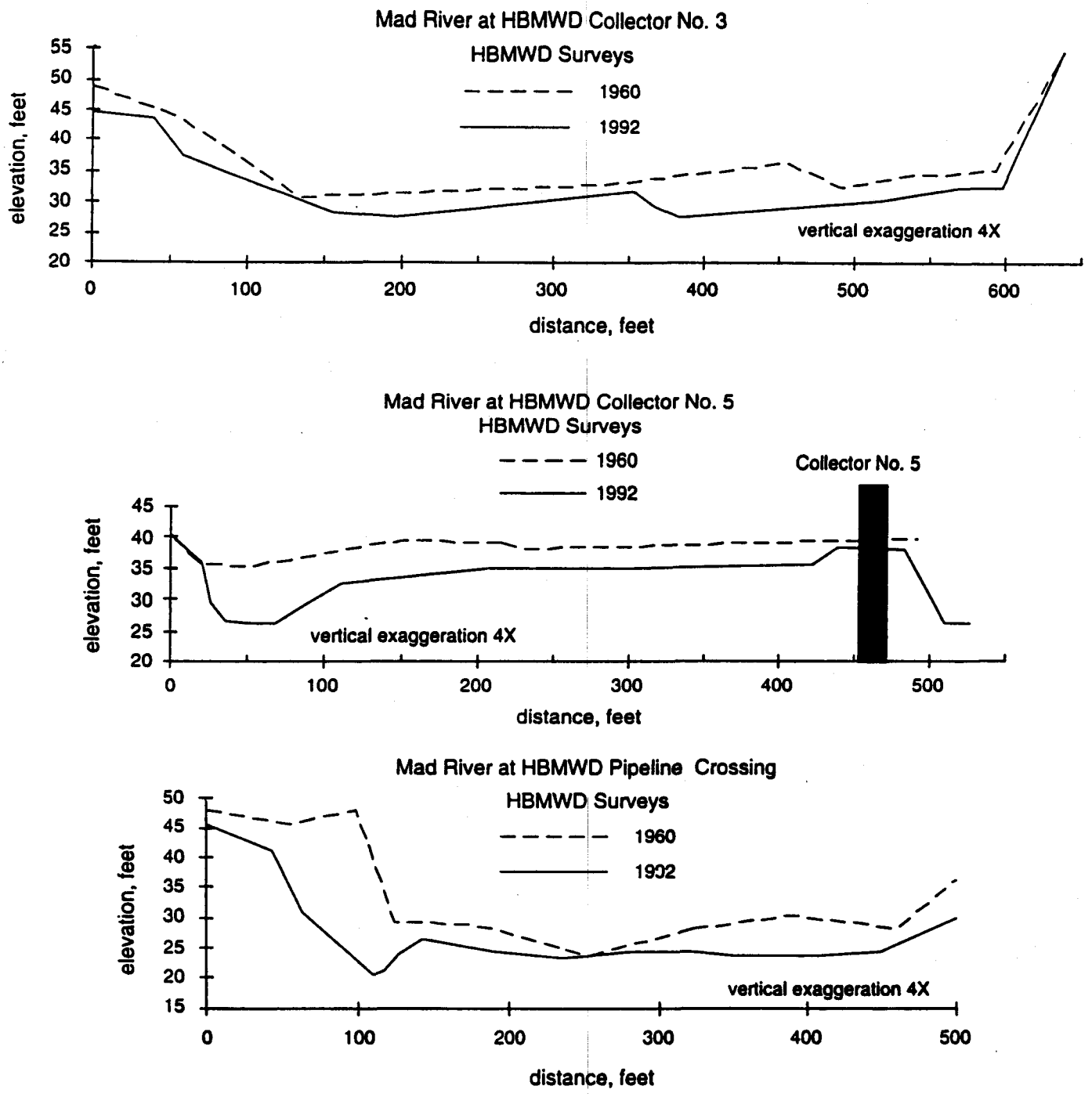


Photo 5.12-10
HBMWD Main Facility

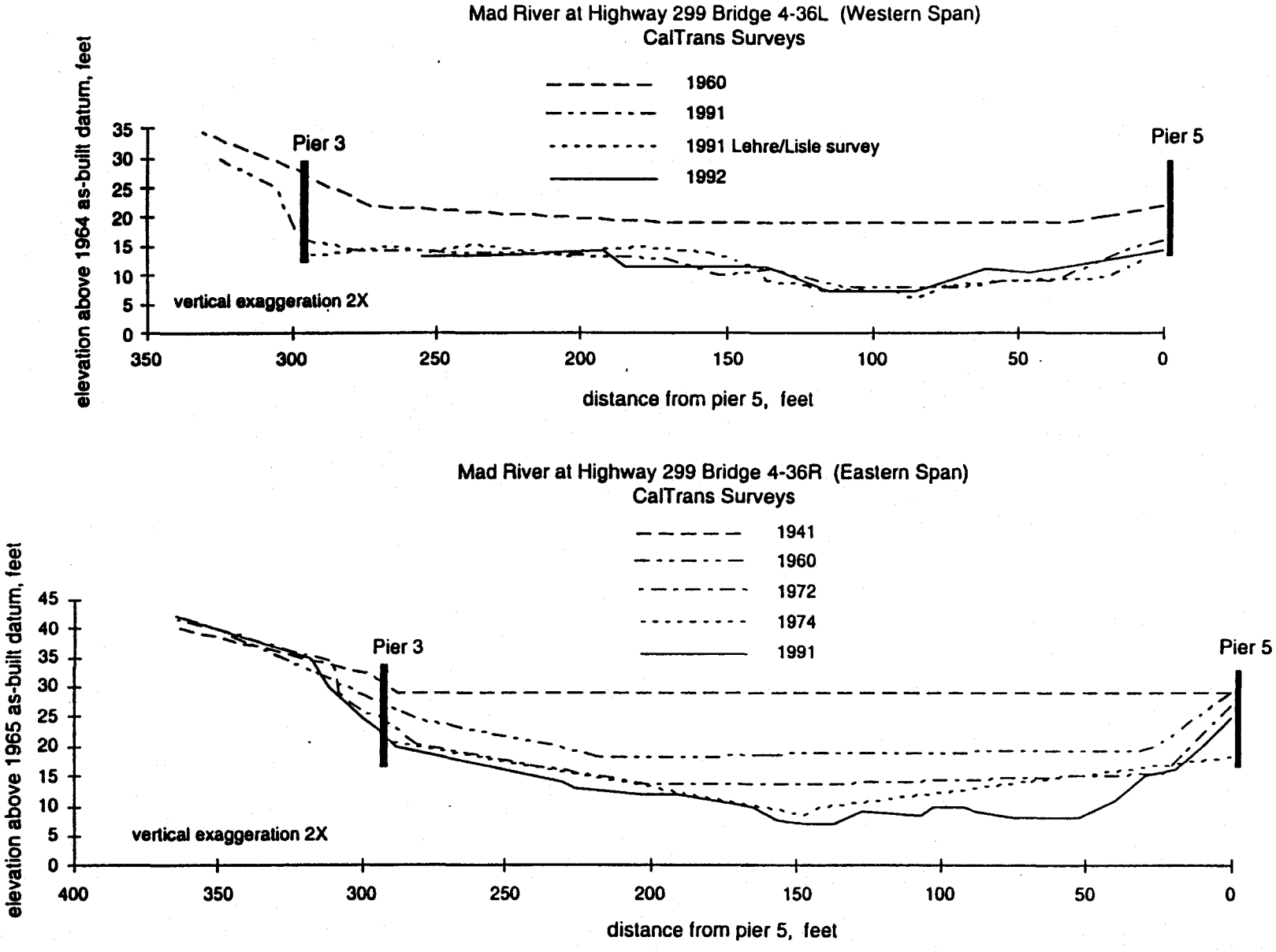


Cross-sections of the Mad River in the HBMWD reach

View is downstream.

Figure 5.12-2
Cross-sections of the Mad River in the HBMWD Reach

(adapted from: River Institute Consultants Report, Appendix F)



Cross-sections of the Mad River at Highway 299 bridge

View is downstream.

(adapted from: River Institute Consultants Report, Appendix F)

Figure 5.12-3
Cross-sections of the Mad River at the Highway 299 Bridges

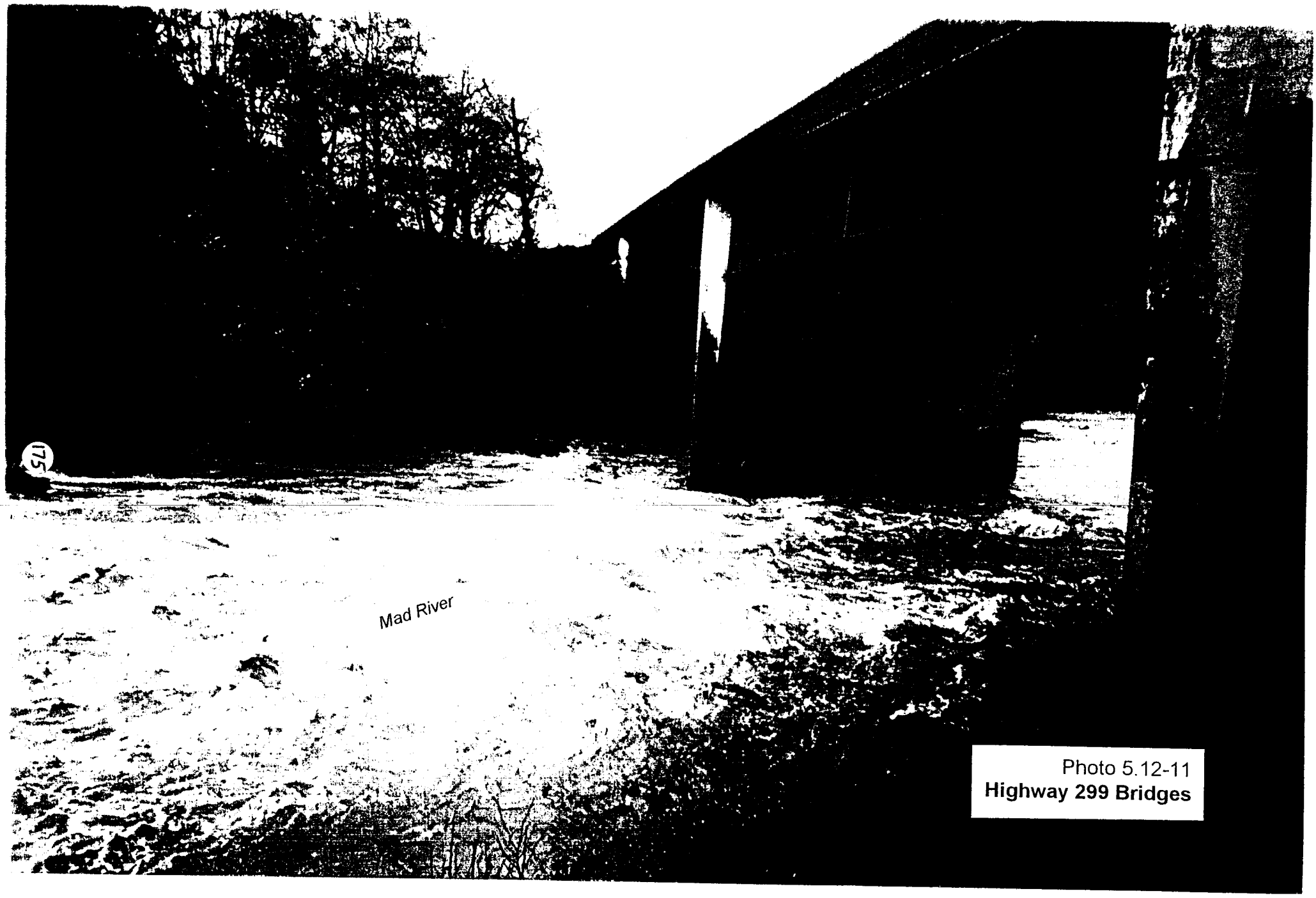


Photo 5.12-11
Highway 299 Bridges

Highway 299 Eastbound (Right) Bridge (7.8 miles)
This bridge was constructed in 1948. CalTrans' surveys at this site indicate a maximum bed lowering of 21 feet since 1941 (see Figure 5.12-3, and Photo 5.12-11). During the summer of 1992, the thalweg elevation was 3.5 feet. The footings of Pier 4 have been exposed and the concreted right bank at Pier 5 has been undercut. The underlying rock is weak and easily erodible. Channel scour during high flows may expose this underlying rock. To restore the structural integrity of this bridge the thalweg would have to be raised approximately 15 feet.

Just upstream from the bridge there are four-foot boulders and a massive bedrock outcrop in the channel. The combined effect is excessive turbulence which adds to the scour taking place at this site. Some people suspect that the boulders were placed in the channel to protect the HBMWD lower pipe crossing or to reduce upstream channel degradation. Others say the rocks are natural and have only recently been uncovered by channel degradation. As of this writing we have not resolved this issue.

Caltrans is considering protecting the existing piers, repairing the foundations, or replacing the entire bridge. It may take 10 years or more to schedule and fund the repairs or replacement. In the meantime Caltrans has requested that an aggregate management plan be initiated which will maintain or raise the level of the thalweg at this site.

If extraction is expanded to permitted or proposed levels or sustained at recent levels channel degradation at this site will continue and add to the risk of bridge failure. If extraction is below average net recruitment, sediment transport into this reach will be encouraged and the thalweg may raise somewhat.

Highway 299 Westbound (Left) Bridge (7.8 miles)
This bridge was constructed in 1965. The average elevation of the channel beneath this bridge has lowered by about 8 feet since 1960. The maximum degradation for the same period at this site is 14 feet (see Figure 5.12-3, and Photo 5.12-11).

Caltrans is planning to repair the foundations on this bridge. It may take 10 years or more to schedule and fund the repairs. In the meantime CalTrans has requested that an aggregate management plan be initiated which will maintain or raise the level of the thalweg at this site. If extraction is expanded to permitted or proposed levels or sustained at recent levels channel degradation at this site will continue and add to the risk of bridge failure. If extraction is below average net recruitment, sediment transport into this reach will be encouraged and the thalweg may raise somewhat.

Had the engineers who designed these threatened bridges had a better understanding of fluvial processes, more funding, and better technology we might be better able to adapt to a degrading river. It is likely that the engineers did the best that they could with the resources that they had; and it is possible that they knew retrofitting and the cost of retrofitting would occur in the future.

PG&E Upper Gas Line Crossing (7.8 miles)
Pacific Gas and Electric Company has a 6-inch gas line attached to the bridge crossing at Highway 299. The pipe goes under Warren Creek Road and the railroad as it approaches the river from the south just upstream from the Highway 299 bridges. The pipe then rises up to the left (west) bridge and spans the river. On the north side of the bridge the pipe turns upstream and is buried in a low terrace.

In the past, bank erosion and a gravel extraction operation located just upstream from the bridge have occasionally exposed the pipe. There is little risk of that happening again as the terrace is now overgrown with vegetation and protected with RSP. Extraction will have no effect on the gas pipe crossing as long as the integrity of the bridge is protected.

Sewage Effluent Pipe Crossing (7.8 miles)
Pressurized sewage effluent from the Glendale area is carried across the river through a pipe that is suspended from the Highway 299 bridge. Extraction will have no effect on the sewer line crossing as long as the integrity of the bridge is protected.

McKinleyville Community Services Water Pipe Crossing (7.25 miles)
The McKinleyville Community Services District has an 18-inch water line that crosses under the river. The 18-inch pipe is encased in concrete. The crossing is located a short distance downstream from the Highway 299 bridge. The pipe enters the river on the south side in the vicinity of Dutra Trucking on Giuntoli Lane. It leaves the river and approaches North Bank Road in the vicinity of Hunt's Drive. The bottom of the trench (pipe invert) is at minus 10 feet MSL. Drawings indicate that the pipe is encased in bedrock. At the time of construction the thalweg elevation was about 8 feet MSL. At this time, channel degradation has not created an immediate threat to this pipe crossing. If extraction is expanded to permitted or proposed levels or sustained at recent levels channel scour at this site will be much more likely than if the recommended project is adopted. However, because of the proximity to the coast it is unlikely that this site could degrade to a point where the pipe crossing would be at risk.

Highway 101 Northbound (Right) Bridge (5.6 miles)
This bridge spans the project area. Cross sections illustrate that the bed has degraded 17 feet at this site since 1929 and the current bed elevation is 0.0 feet, MSL (see Figure 5.12-4). Although the bridge is pile-supported the structural integrity of this bridge is threatened. A high flow event could expose eight to ten feet of the 1929 piles. CalTrans considers this bridge to be functionally obsolete and hopes to replace it within ten years.

Sediment removal at upstream sites will encourage hungry water and scour at this site, thus adding to the risk of losing this bridge. If extraction is expanded to permitted or proposed levels or sustained at recent levels channel scour will be much more likely than if extraction is below replenishment.

Highway 101 Southbound (Left) Bridge (5.6 miles)
This bridge spans the project area. Cross sections indicate that the bed has degraded 8 feet since construction in 1957. The current bed elevation is 0.0 feet, MSL. Although the bridge is pile-supported the structural integrity of this bridge is threatened (see Figure 5.12-4). A high flow event could expose eight to ten feet of the 1957 piles. CalTrans would have to widen this bridge and improve the foundation in order to meet their transportation goals. Because of the expense they plan to replace the structure rather than widening and repairing it. They hope to replace this bridge within the next ten years.

Sediment removal at upstream sites will encourage scour at this site and add to the risk of losing this bridge. If extraction is expanded to permitted or proposed levels or sustained at recent levels channel scour will be much more likely than if extraction is below average net recruitment.

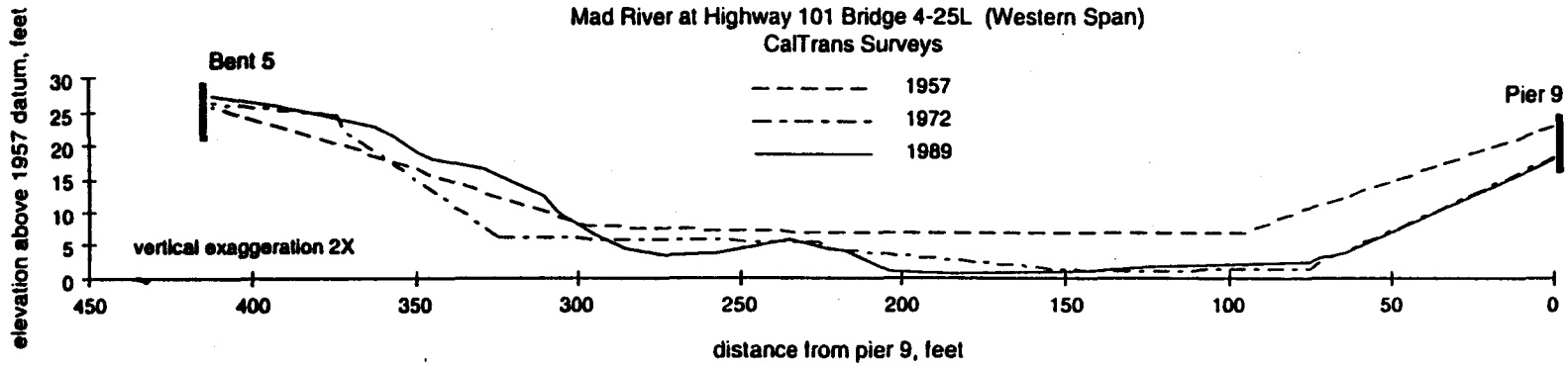
PG&E Lower Gas Line Crossing (5.6 miles)

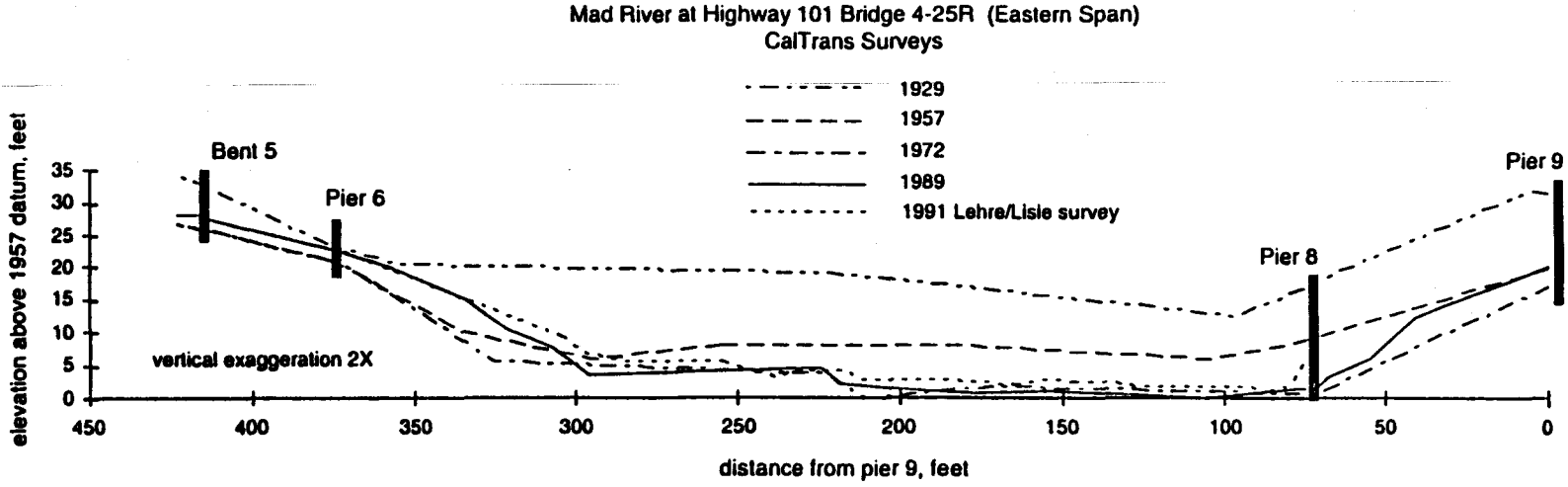
Pacific Gas and Electric Company has an 8-inch gas line crossing the river at Highway 101. The pipe is suspended from the west bridge. Extraction will have no effect on the gas pipe, as long as the integrity of the bridge is protected.

Hammond Trail Bridge (3.9 miles)
This bridge marks the downstream extent of the project area for the PEIR. There has been a bridge at this site since 1905. However, it is not known if the current bridge is the one built in 1905. The railroad has abandoned this line and the bridge now belongs to the McKinleyville Community Service District. It is presently a part of a county trail system. An 18-inch sewer effluent line goes across the bridge and is used to irrigate pastures south of the river during the summer months when the river flow is too low to allow sewage effluent to be directly discharged into the river.

At the base of the north bridge support there is a flexible pipe that is used to discharge treated sewage effluent into the river. Effluent may not be discharged into the river between May 1st and October 1st or at any other time when the streamflow is less than 200 cfs. As of this writing there is no information as to the structural integrity of this bridge.

Cross-sections used in calculation of bed degradation.





Cross-sections of the Mad River at Highway 101 bridge

View is downstream.

(adapted from: River Institute Consultants Report, Appendix F)

Figure 5.12-4
Cross-sections of the Mad River at the Highway 101 Bridges

McKinleyville Community Sewage Treatment Plant (2.1 miles)
The sewage treatment plant is located on a high terrace on the right (north) side of the river. The plant and percolation ponds are close to but outside of the project area. Extraction should have no impact on these facilities. A flexible sewage effluent discharge pipe is attached to the Hammond Trail Bridge north abutment. Because the pipe is flexible, it can adjust to the level of the river. Consequently, channel aggradation and degradation should not have an impact on the sewage outfall.

Mad River Beach Road Left Bank RSP (3.3 - 3.4 miles)
This RSP is under the jurisdiction of Humboldt County. There is no information on the elevations at the toe of this RSP.

Concerned parties need to monitor the river bed elevations in this reach in order to evaluate the risk of undermining the RSP. If extraction is expanded to permitted proposed levels, or sustained at recent levels hungry water may eventually undermine the RSP. If gravel extraction is below average net recruitment, the risk of RSP failure is minimized.

Humboldt County Boat Ramp (3.2 miles)
This ramp is under the jurisdiction of Humboldt County. There is no information on the design or construction of this ramp.

Humboldt County needs to monitor the river bed elevations in this reach in order to evaluate the risk of undermining the ramp. If extraction is expanded to permitted or proposed levels, or sustained at recent levels the ramp may eventually be undermined. If gravel extraction is below average net recruitment, the risk of ramp failure is minimized.

Clam Beach Mad River RSP Site (0 miles)
This project is designed to limit the northward migration of the river and protect the integrity of adjacent Highway 101. During high flows, suspended sand moves into and through the lower river reach. If extraction is expanded the future supply of suspended sand may be reduced and this could impact lower river resources. If an annual review is required, sand and gravel extraction can be monitored and modified as needed in order to minimize the risk of adverse impacts in this reach. Because the RSP is at a wave-dominated site it is unlikely that hungry water will create scour problems.

Impact Statements and Mitigation Measures

Impact
PU&S-1: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Mad River Fish Hatchery weir. This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and Review Committee
Mad River Fish Hatchery
California Department of Fish & Game

Significance after Mitigation
Less than significant

Impact
PU&S-2: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the RSP along the left bank, adjacent to the fish hatchery (river mile 14.5). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and Review Committee
Humboldt County Public Works Department
Mad River Fish Hatchery
California Department of Fish & Game

Significance after Mitigation
Less than significant

Impact
PU&S-3: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Blue Lake bridge (river mile 12.8). This could be a significant impact. (PS/LS)
Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and Review Committee
Humboldt County Public Works Department
City of Blue Lake

Significance after Mitigation
Less than significant

Impact
PU&S-4: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Blue Lake right bank levee (river mile 12.8-13). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department
City of Blue Lake

Significance after Mitigation
Less than significant

Impact
PU&S-5: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Blue Lake sewage treatment ponds and levee (river mile 11.7). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department
City of Blue Lake
Significance after Mitigation
Less than significant

Impact
PU&S-6: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Highway 299 Mill Creek bridge (river mile 10.5). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
CalTrans

Significance after Mitigation
Less than significant

Impact
PU&S-7: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the North Coast Railroad Authority bridge (river mile 9.8). A 16-inch water line is attached to the railroad bridge. It takes water to the north side of the river to service the community of Fieldbrook and the city of Blue Lake. The loss of this bridge would be a significant impact. (PS/PS)

Mitigation Measures
Mit-1 and Mit-2: In time, the combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
North Coast Railroad Authority

Significance after Mitigation
Potentially Significant. After mitigation measures Mit-1 and Mit-2 are implemented, scour around the mid-channel supports will continue to occur. Engineering features may be needed to reduce the impact of scour. It is not known how long it will take for the river to aggrade sufficiently to naturally enhance the structural integrity to the subject structure. Therefore, there is an unknown period during which the subject structure may be threatened. Because of the time involved, the impacts of channel degradation will temporarily remain potentially significant during mitigation.

Impact
PU&S-8: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Glendale Drive bridge over Lindsay Creek (river mile 9.8). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department

Significance after Mitigation
Less than significant

Impact
PU&S-9: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation

could jeopardize the integrity of the Highway 299 bridge over Lindsay Creek (river mile 9.8). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
CalTrans

Significance after Mitigation
Less than significant

Impact
PU&S-10: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Gravel extraction in volumes exceeding replenishment has the potential to cause bed degradation. Continued bed degradation could jeopardize the integrity of the Railroad trestle over Warren Creek (river mile 9). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
North Coast Railroad Authority

Significance after Mitigation
Less than significant

Impact
PU&S-11: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Gravel extraction in volumes exceeding replenishment has the potential to cause bed degradation. Continued bed degradation could jeopardize the integrity of the Warren Creek Road bridge (river mile 9). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department

Significance after Mitigation
Less than significant

Impact
PU&S-12: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the structures in the HBMWD reach (river mile 7.8 - 9.5). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department
Humboldt Bay Municipal Water District
California Department of Fish & Game

Significance after Mitigation
Less than significant

Impact
PU&S-13: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the upper HBMWD water pipe crossing (river mile 8.7). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department
Humboldt Bay Municipal Water District

Significance after Mitigation
Less than significant

Impact
PU&S-14: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the lower HBMWD water pipe crossing (river mile 7.8). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department
Humboldt Bay Municipal Water District
Significance after Mitigation
Less than significant

Impact
PU&S-15: Changes in bed level require periodic calibration of the U. S. Geological stream gaging station (river mile 7.8). This is not a significant impact. (LS/LS)

Mitigation Measures
None proposed since no significant impact was identified.

Monitoring
None required

Impact
PU&S-16: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Highway 299 bridges (river mile 7.8). This could be a significant impact. (S/S)

Mitigation Measures
Mit-1 and Mit-2: In time, the combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Caltrans

Significance after Mitigation
Significant. After mitigation measures Mit-1 and Mit-2 are implemented, scour around the mid-channel supports will continue to occur. Engineering features may be needed to reduce the impact of scour. After mitigation measures Mit-1 and Mit-2 are implemented, it is not known how long it will take for the river to aggrade sufficiently to naturally restore structural integrity to the subject structures. Therefore, there is an unknown period during which the subject structures may not be structurally sound. Because of the time involved, the impacts of channel degradation will remain temporarily significant during mitigation.

Impact

PU&S-17: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Highway 299 bridge. The PG&E upper gas line crossing (river mile 7.8) is connected to this bridge. As long as the bridge integrity is intact, there will be no related impacts to the PG&E pipeline. As discussed in PU&S-16, impacts to Hwy 299 bridge could be a significant, therefore the impacts to the pipeline could be significant. (S/S)

Mitigation Measures

Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring

Scientific Design and review Committee
Humboldt County Public Works Department
CalTrans
Pacific Gas and Electric

Significance after Mitigation

Significant. After mitigation measures Mit-1 and Mit-2 are implemented, scour around the mid-channel bridge supports will continue to occur. Engineering features may be needed to reduce the impact of scour. After mitigation measures Mit-1 and Mit-2 are implemented, it is not known how long it will take for the river to aggrade sufficiently to naturally restore structural integrity to the subject structures. Therefore, there is an unknown period during which the bridge and pipe line will be at risk. Because of the time involved, the impacts of channel degradation will remain temporarily significant during mitigation.

Impact

PU&S-18: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Highway 101 bridges (river mile 5.6). This could be a significant impact. (PS/LS)

Mitigation Measures

Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring

Scientific Design and review Committee
Caltrans

Significance after Mitigation
Less than significant

Impact
PU&S-19: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Hammond Trail bridge (river mile 3.9). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department

Significance after Mitigation
Less than significant

Impact
PU&S-20: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Mad River Beach Road RSP (river mile 3.3 - 3.4). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring
Scientific Design and review Committee
Humboldt County Public Works Department

Significance after Mitigation
Less than significant

Impact
PU&S-21: If the average annual gravel extraction rate exceeds average annual net recruitment and replenishment the bed will continue to degrade. Continued bed degradation could jeopardize the integrity of the Clam Beach Mad River RSP (river mile 0). This could be a significant impact. (PS/LS)

Mitigation Measures
Mit-1 and Mit-2: The combined implementation of these mitigation measure will limit gravel extraction to reduce this potential impact to a level of insignificance.

Monitoring

Scientific Design and review Committee
CalTrans

Significance after Mitigation
Less than significant

5.13 Archaeological Resources

The County retained James Roscoe to gather and analyze information on the effects of historic gravel extraction on the archaeological resources of the project area. Portions of the following section were adapted from James Roscoe's report. See Appendix G for the complete report.

The project area is located within the ethnographic territory of the Wiyot Indians. The three subgroups of the Wiyot were (1) the Patawat, who lived in the villages along the lower Mad River, (2) the Wiki on Humboldt Bay, and (3) the Wiyot along the lower Eel River. It is the name of the Eel River division which is now used in reference to the entire group.

The Wiyot population, estimated between 1,000 and 3,300, lived almost exclusively in villages along the protected shores of Humboldt Bay and near the mouths of the Eel and Mad Rivers. Ethnographic and archaeological data collected by L.L. Loud (1918) for Wiyot territory provides the best published record of prehistoric land-use of the project area.

It is probable that the abundance of fish made the project area attractive for resource procurement and settlement. Prehistoric-era archaeological remains which might be preserved in the project area include concentrations of chipped and ground stone artifacts found in poorly developed *midden and non-midden contexts*. These sites are most likely found on elevated terraces situated near rivers, creeks or springs. The gravel bars, which constitute the majority of the direct impact areas, would not have been archaeologically sensitive because any prehistoric sites or artifacts located there would have been completely destroyed or carried away by previous major floods (especially those in the 1950's and 1960's).

Pre-fieldwork research completed by James Roscoe for a Cultural Resources Study (Appendix G), included an examination of the archaeological site records, maps, and project files of the Northwest Regional Information Center of the California Archaeological Inventory. Historic maps, photographs, local newspapers, books and monographs, as well as oral history testimony were also used in the investigation.

Following the pre-fieldwork research, a mixed strategy archaeological field reconnaissance of the project area was conducted. The Chairman of the Table Bluff Rancheria was consulted regarding any specific Native American concerns for the project area, as were other local archaeologists.

Extant cultural resources were recorded on standard archaeological site record forms devised for California by the Department of Parks and Recreation. No artifacts were collected, and no subsurface testing was performed during the study.

Archaeological Sites

The Arcata and Mad River Railroad, known locally as the "Annie & Mary," is a previously recorded historic site (CA-HUM-827/H) located along the banks of the Mad River. The railroad crosses the Mad River on the North Coast Railroad Authority's Division Bridge downstream of site no. 5, at river mile 9.8. The railroad was recorded in 1987 as a historic archaeological site after being registered as California Historical Landmark No. 842 in 1970. The potential impacts to the railroad bridge and its piers from mining activities, are discussed in the "Public Utilities and Structures" section.

Two prehistoric archaeological sites were discovered and recorded on river terraces above gravel extraction areas near the Arcata and Mad River Railroad bridge (Roscoe investigation,

see Appendix G). The sites have been given the trinomials CA-HUM-930 and CA-HUM-931 by the Sonoma State University, Northwest Regional Information Center.

The precise locations of these two sites are not included in this report to preserve the confidentiality of known archaeological resources.

Impact Statements and Mitigation Measures

Impact

Arch-1: Two prehistoric archaeological sites are recorded on river terraces above proposed gravel extraction areas in the project area. The sites have been given the trinomials CA-HUM-930 and CA-HUM-931 by the Sonoma State University, Northwest Regional Information Center. The locations are not being disclosed in order to protect the sites. At least one of these sites may be at risk due to streambank erosion. If bed degradation, or other factors, cause bank failure in the area of the identified archeological resources, these resources could be significantly impacted. (PS/LS)

Mitigation Measures

Mit-17: There are two recorded archeological sites located near one of the potential operating sites. The SDRC shall examine these sites and become familiar with the potential bank erosion problem during 1994 and at least once per year in following years. If problems exist now the SDRC may be able to propose solutions. The SDRC will also be able to consider related potential impacts during site specific planning if gravel extraction is proposed on nearby gravel bars.

Monitoring

Humboldt County Scientific Design and Review Committee
Blue Lake Rancheria
Table Bluff Rancheria.

Mit-18: Although only two sites were found, the Mad River basin is known to contain significant archaeological resources, therefore, should concentrations of archaeological materials be encountered during operations, all ground-disturbing work in that vicinity shall be halted. Work near the archaeological finds shall not be resumed until a qualified archaeologist has evaluated the materials and offered recommendations for further action.

Monitoring

Scientific Design and Review Committee
Blue Lake Rancheria
Table Bluff Rancheria.
Gravel Operators
Humboldt County Planning and Building Department
California Department of Parks and Recreation

Significance after Mitigation

Less than significant

5.14 Recreation

The County retained Rising Sun Enterprises to gather and analyze information on viewsheds, recreation, noise and traffic resulting from historic gravel extraction operations; and to analyze the effect of historic gravel extraction operations on the recreational use of the project area. Portions of the following section were adapted from the Rising Sun report. See Appendix E for the complete report.

Setting

Recreational use of the Mad River and its river bars includes sports fishing, swimming, hiking, boating, horseback riding, hunting and off-road vehicle use. During low flows, off-road vehicle access is limited to controlled access at most extraction sites and to trespass at a few locations.

Designated recreational use areas include the Water District's two pump station parks and the Mad River Fish Hatchery. Handicapped fishing access is available at the Mad River Hatchery. Other public access includes the Hammond Bridge, the County Mad River Beach Park and Boat Ramp. See Map 5.14-1 for these locations. River access is made at other locations with or without the permission of landowners, see Map 5.14-2 for the general ownership within the Mad River basin.

Gravel extraction operations, as well as the effects of skimming and trenching on the bars are visible to recreational users of the river bars. Extraction is limited to 4-5 months of the year. Most operators do not operate on weekends, which is the time that most family recreational use occurs. Fishing commonly occurs in the early morning or evening hours, when processing activities rarely occur. However, anglers utilize the river at all times of the day.

Boating activities, primarily kayaking and inner tubing, occur in the summertime. Boaters traveling downstream from the Fish Hatchery to the Highway 101 bridge during the extraction season can be affected by as many as four summer bridge crossings. In addition, low flow conditions may require portages at several other places on the river, due either to channel configuration or artificial blockages such as the weirs at the Humboldt Municipal Water District and the Fish Hatchery. See Map 5.14-1 for some of these locations.

Any object in a river that water flows through rather than around is called a "strainer" by whitewater boaters and is extremely dangerous. Summer bridges or culverts that remain in the channel during high flows present a serious hazard to boaters. A flooded bridge can easily trap swimmers, boats, or people who fall out of boats.

Overview

The degree of significance of gravel induced impacts on recreation are, in part, based on the perception of the recreationalist. The PEIR takes the worst case scenario that the views, noise and dust generated by the project could be significant, or potentially significant, even though there may be equal feeling that these impacts are not significant.

Extraction Methods

During gravel extraction, certain portions of the river bar undergo an unnatural physical change. The resulting unnatural alterations may be apparent from May through October, or until the first substantial storm. As described above, extraction operations could be perceived as having an adverse affect on aesthetic values for recreation.

Operators may be required by CDFG under 1603 agreements, to stake and flag extraction areas . The placement of metal fence posts or rebar on the gravel bar may detract from the recreational experience, but would not be considered significant.

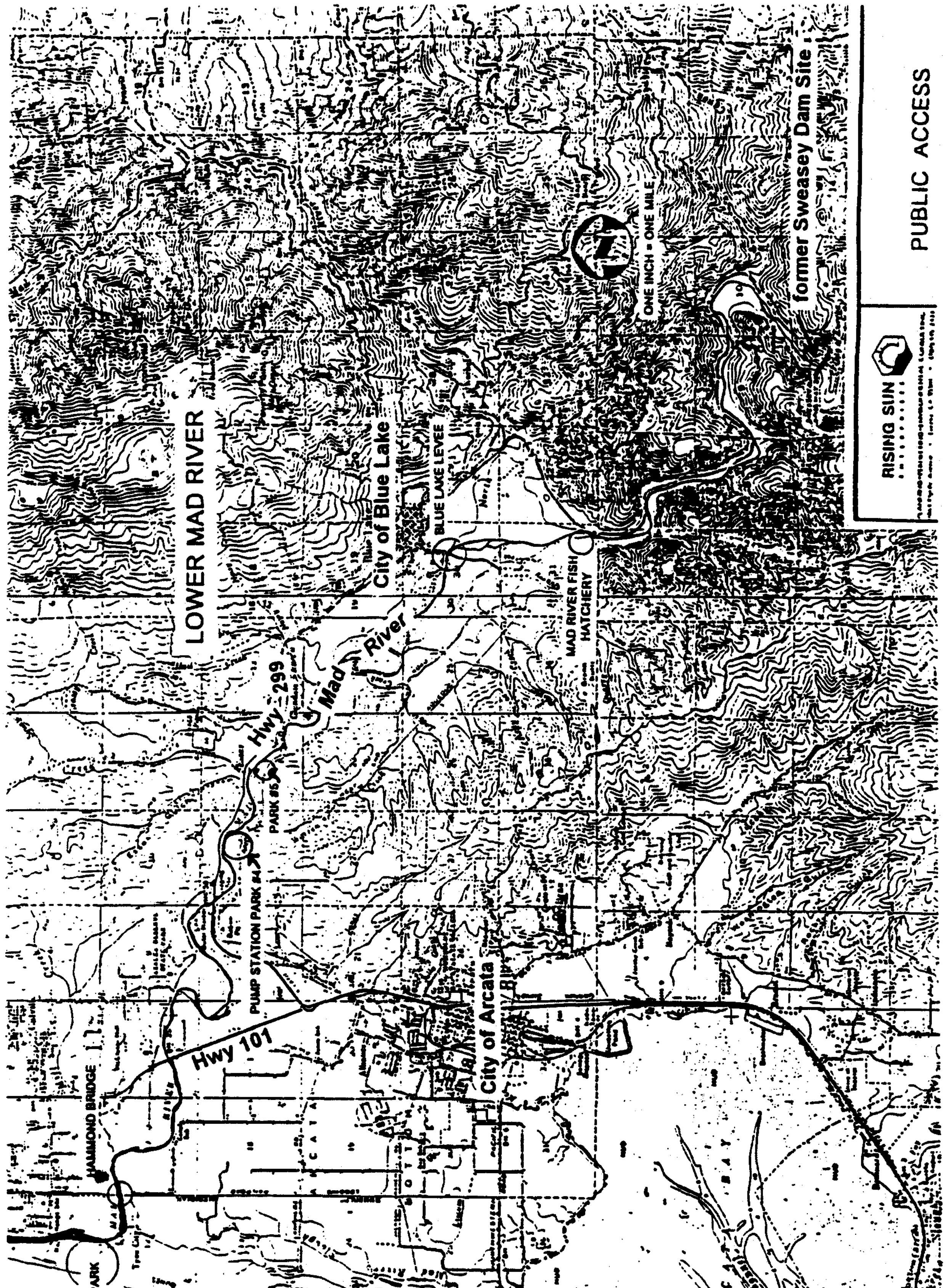
The U.S. Army Corps of Engineers has restricted the previous trenching practice of leaving stockpiles alongside a trench for several days. A nationwide permit for stockpiles below the area of high flow in an average year ("Ordinary High Water"), and for summer bridge crossings is required.

Trenches can be hazardous to recreational users of the river bars. On the Eel River, in 1991, a horse drowned in a trench. Most trenches have murky water and unstable, near vertical walls making it easy to misjudge trench and water depth. Unfortunately, many recreationists use poor judgment when trying to cross these trenches.

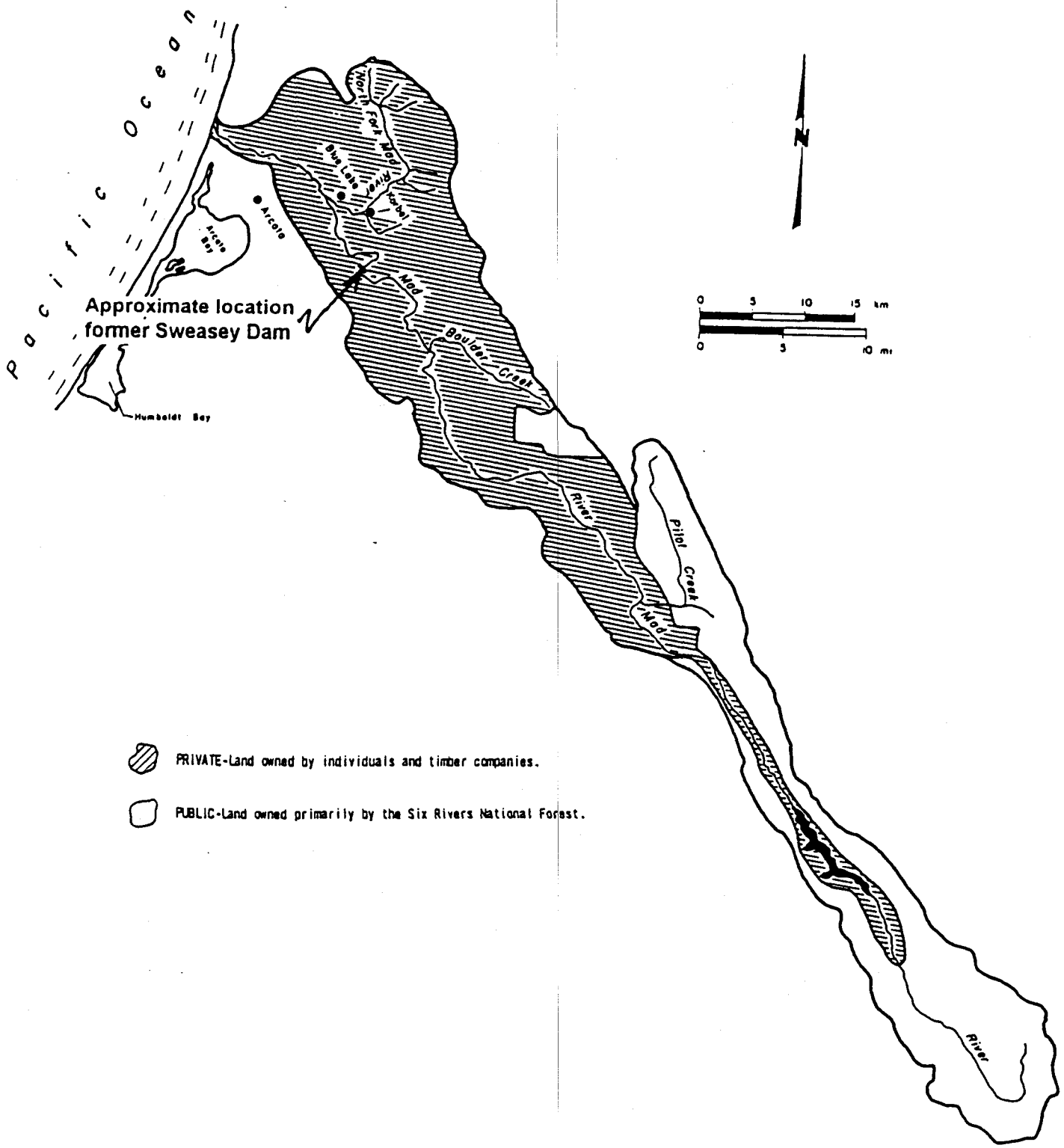
Beneficial Effects to Recreation

The trenches made in 1990 and 1991 are now mostly filled with gravel but, for a time, they were heavily used and preferred by bathers in the summertime, and by fish & anglers in the fall and early winter months. Gravel extraction access roads are often used by recreationalists.

The Emmerson Bar and surrounding riparian forest is heavily impacted by motorcycles and other off-road vehicle use. Bathers, anglers, and others also use this site. Often times these uses conflict with one another.



(adapted from: Rising Sun Enterprises Consultants Report, Appendix E)



Map 5.14-2
General Ownership Map
Mad River Basin

(adapted from: DWR, June 1982 "Mad River Watershed Erosion Investigation")

Photo 5.14-1
Extraction Operation

Impact Statements and Mitigation Measures

Impact
Rec-1: Trenches can be hazardous to recreational users of the river bars and are considered a potential significant impact. (PS/PS)

Mitigation Measures
Mit-19: A public safety plan, including signs posted adjacent to trench areas, shall be prepared by the operator and submitted to HCPD, for review and approval as part of the annual review process. Extraction design shall consider the length of the trench in relationship to recreational uses and access. This measure will assure that proper warning is given recreational users of the river bar.

Mit-20: Stockpiles adjacent to trenches shall contain breaks between piles to facilitate egress from trenches.

Mit-21: One of the long-walls of the trench shall be graded/excavated at such an angle as to facilitate emergency escape.

Monitoring
Scientific Design and Review Committee
Humboldt County Planning and Building Department
California Department of Parks and Recreation
State Lands Commission

Significance after Mitigation
Even with the mitigation measures, some recreational users of the gravel bar may not heed the warnings and may place themselves in danger with regard to the excavated trenches. The PEIR takes the conservative approach that even after mitigation the use of trenches remains a potentially significant impact.

Impact
Rec-2 Summer bridge crossings could impact recreational users of the river. If the crossings are low, kayakers and tubers will need to portage. This is considered less than significant. No mitigation is proposed for this impact. See Rec-3 for a related impact. (LS/LS)

Mitigation Measures:
None proposed

Monitoring:
None required

Impact
Rec-3: Low summer bridge crossings could present hazards to river users, especially kayakers and inner tubers. These can be especially dangerous if the water rises and is used by boaters before the bridges are removed. (PS/PS)

Mitigation Measures
Mit-22: A public safety plan, including signs posted warning of summer bridge crossings, shall be prepared by the operator and submitted for review and approval as part of the annual review process.

Mit-23: Summer bridges shall be removed according to schedule and shall not be allowed to remain in channel during high flows.

Monitoring
Humboldt County Planning and Building Department
California Department of Parks and Recreation
State Lands Commission

Significance after Mitigation
Even with the mitigation measures, some recreational users of the river may not heed the warnings and may place themselves in danger with regard to the summer bridges. The PEIR takes the conservative approach that even after mitigation the use of summer bridges remains a potentially significant recreational impact.

Impact
Rec-4: Noise can have an adverse impact on recreatinal users. Refer to Noise Impact-10 for discussion of this subject. (SU/SU)

Mitigation Measures
Mit-10: Although the project noise impact is insignificant the existing noises are sometimes significant. If the exhaust systems of all internal combustion engines owned or maintained by the operators are kept in good repair and as manufactured at least a portion of the existing noise will be minimized.

Monitoring
Cal-OSHA
Humboldt County/Scientific Design and Review Committee

Mit-16: Although most approved reclamation plans provide for longer hours of operation, gravel bar extraction operations will normally occur between the hours of 7:30 a.m. and 5:30 p.m. Monday through Friday. This helps reduce conflicts for early morning, and evening anglers, and weekend recreational users. However, if environmental or other circumstances create a shorter than normal extraction season it may sometimes be necessary to extend the operating hours in order to complete the permitted extraction within the allowable time.

Monitoring
Humboldt County Planning and Building Department

Significance after Mitigation
Extraction noise impacts on the river will sometimes be potentially significant even though the project impacts are less than significant.

6.0 PREFERRED ALTERNATIVE

The project is the development of an enforceable Mad River instream mining regulatory program that will operate under the authority of SMARA and any existing or future County procedures and ordinances. The purpose of the project is to enhance and protect the aggregate extraction-related environmental riverine resources of the Mad River corridor.

The prefferred project alternative is the development and implementation of a flexible Mad River aggregate management program, monitoring program, and reclamation plans using coordinated extraction prescriptions and reclamation standards which will provide for a moderate rate of recovery (aggradation) at critical sites while protecting or enhancing other river resource values. The details of this plan are presented below.

MAD RIVER ADAPTIVE GRAVEL MANAGEMENT and RESOURCE PROTECTION PLAN

6.1 Goals

The goals of this plan are:

1. to regulate aggregate resource mining on the lower Mad River in a manner that will enhance and preserve the local environment and quality of life,
2. to reduce or eliminate existing aggregate resource mining related cumulative adverse environmental impacts influencing the lower Mad River environs,
3. to encourage and support innovative mining techniques for the production of aggregate,
4. to use an annual in-stream mining reclamation program to annually reclaim, restore, and/or enhance the environmental habitat of the Mad River,
5. to encourage the joint participation of industry, agencies, residents, and interested parties in a well-defined and consistent regulatory process,
6. to provide for effective and systematic monitoring and reclamation of aggregate mining operations along the Mad River.

6.2 Objectives

The specific objectives of this plan are listed below.

1. Air Quality: To maintain the superior air quality of the Mad River valley and to assure that any adverse air quality impacts resulting from aggregate mining are reduced to a level of insignificance.
2. Archaeological: To protect sensitive archaeological sites, both known and undiscovered from adverse impacts resulting from aggregate mining operations.
3. Channel Morphology: To obtain a degree of dynamic equilibrium and channel stability in the lower Mad River channel and to assure that changes in dynamic equilibrium and channel stability resulting from aggregate mining are minimized.
4. Fisheries & Habitat: To safeguard fishery habitat and reduce any adverse agregate mining related cumulative or future impacts to a level of insignificance.
5. Groundwater: To maintain the existing quality of groundwater and groundwater supply and to assure that adverse impacts to or on groundwater that may result from aggregate mining are reduced to a level of insignificance.