

6.0 CUMULATIVE IMPACTS

6.1 OTHER PROJECTS IN THE VICINITY OF THE GUADALUPE RIVER CORRIDOR

Nine major projects are proposed, approved, under construction, or recently completed by other public agencies within the Guadalupe River system. The cumulative impact analysis considers the impacts of these projects combined with the impacts of the proposed action alternatives, both the Channel Widening and Bypass Channel Plans. Potential cumulative impacts on resources within the Guadalupe River system are discussed in section 6.2 with particular emphasis on cumulative effects on riparian systems.

The major areas of potential cumulative impacts are vegetation, wildlife and fishery resources. Impacts on shaded riverine aquatic (SRA) cover were not specifically addressed in the environmental analyses for the projects discussed below, except for the Downtown Guadalupe River Flood Control Project. Impacts on riparian habitat for other projects include some habitat that is adjacent to the Guadalupe River.

6.1.1 Guadalupe River Flood Control Project from I-880 to I-280

This approved project (the Downtown Guadalupe Project) will be constructed in three phases. Construction at the first reach (Hedding Street to I-880) began in August 1992. The project will be completed in 1998 or later (personal communication, William DeJager, 1997). The U.S. Army Corps of Engineers (Corps) prepared an Environmental Impact Statement (EIS) for the project in 1985. In January 1991, the Corps prepared an Environmental Assessment (EA) that incorporated some recreational aspects of the Guadalupe River Park Project (January 2, 1991) and addressed additional impacts on riparian corridor vegetation and fish and wildlife habitat resulting from trail construction and recreational use. In 1992, the Corps prepared a final mitigation and monitoring plan to address project-related impacts. This plan is being revised to address a number of issues, including impacts on SRA cover (Hoover and Mitchell 1993). Some mitigation for the downtown project may be located within the upper Guadalupe River project area; this is still being determined and will be handled by a separate NEPA/CEQA document for the entire SRA mitigation plan for the downtown project.

Project construction activities will eliminate 15.3 acres of riparian habitat and 25,000 square feet of potential anadromous salmonid spawning gravels. Wetlands will not be affected. The project will affect approximately 9,800 linear feet of SRA cover; however, impacts on SRA cover and mitigation sites are being reevaluated. Other impacts include potentially elevated instream temperatures and anadromous salmonid staging/resting area losses (Mitchell and Schoenberg 1993).

Mitigation for the loss of riparian habitat requires planting 22.5 acres of riparian vegetation. For loss of potential spawning gravels in the project area, 25,000 square feet will be replaced and maintained. Mitigation for losses of SRA cover is being re-evaluated and could be located in various reaches of the Guadalupe River and tributaries. Mitigation measures for fish impacts include providing a low-flow channel and replacement of spawning gravels. A 10-year mitigation evaluation will determine the success of mitigation measures and whether additional corrective measures and monitoring are necessary (Hoover 1993).

6.1.2 Guadalupe River Park

The approved Guadalupe River Park Project, sponsored by the City of San Jose Redevelopment Agency, is adjacent to the Corps' Downtown Guadalupe flood control project, at the top of bank and beyond and includes the River Walk Project and the Confluence Point and West Project. The River Walk Project between Woz Way and Park Avenue consists of a river walk system along the top of banks. The Confluence Point and West Project is at the confluence of Los Gatos Creek with Guadalupe River. This project includes riverbank gabions and a pedestrian bridge over Los Gatos Creek (Talbot 1992).

In addition to the impacts associated with the Corps flood control project along the same reach of the Guadalupe River (Reach 3), this project will affect 0.8 acre of riparian habitat. The Corps prepared an EA/EIS for the I-280 to I-880 flood

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control project (dated January 2, 1991) to address additional impacts on riparian corridor vegetation and fish and wildlife habitat resulting from incorporation of trail construction and recreational use from the River Park Project. Mitigation for loss of riparian habitat as a result of adopting the locally preferred flood control plan will consist of 4.7 acres of native riparian habitat plantings.

6.1.3 Guadalupe River Park South Corridor Master Plan (I-280 to Coleman Avenue)

This proposed project is a park master plan for development of recreational facilities along the Guadalupe River. Potential impacts from trail system development and recreational use will be addressed in an EIR when the park master plan is finalized. Although no riparian habitat removal would result, buildout of the master plan could include disturbances to sensitive wildlife and trampling of existing riparian vegetation and riparian revegetation areas. Elements of the master plan are included in the feasibility study Bypass Channel Plan alternative evaluated in this EIR/S, including the through multi-use trail, picnic facilities, par courses, and associated safety features (e.g., call boxes, security lighting). Additional recreational amenities may be included in the final master plan and be constructed by the City along the Bypass Channel Plan alignment.

6.1.4 SR 87 Freeway Upgrade Project (Highway 101 to Julian Street)

Freeway widening and bridge construction has affected 4.54 acres of riparian habitat and 1.09 areas of Corps jurisdictional wetlands. No long-term impacts occur on fishery resources have occurred. Mitigation for loss of riparian habitat and wetlands required planting 7.29 acres of riparian habitat adjacent to the east side of the Guadalupe River and 1.09 acres to mitigate impacts on wetlands (USDOT and Caltrans 1992; Vincent 1992, 1993).

6.1.5 SR 85 Transportation Corridor Project

The project has directly affected 0.1 acre of riparian vegetation on the Guadalupe River mainstream and indirectly affected 4.5 acres on Los Gatos and Ross creeks. Mitigation for loss of riparian habitat requires planting 12.1 acres of riparian vegetation on site and 0.2 acre off site (Monette 1992). Bridge construction did not adversely affect fisheries, and fish passage was provided to ensure that adverse impacts would not occur on fishery resources in Ross Creek (Monette 1992).

6.1.6 San Jose International Airport Expansion Plan

The airport expansion plan proposes the replacement of the Airport Parkway Bridge, addition of a new bridge south of Airport Parkway Bridge, and the widening of Airport Boulevard.

6.1.7 San Jose Riparian Corridor Policy Study

The City of San Jose Riparian Corridor Policy Study could affect the Guadalupe River watershed. This study provides policy and development guidelines for riparian areas along all creeks in the City, including defining the riparian corridor and development guidelines for setbacks, access control, landscaping and lighting, and compatible land uses. The City is reviewing the study and may propose its adoption in the future. Adoption and implementation of riparian corridor development guidelines could help to reduce the severity of cumulative impacts in the Guadalupe River watershed.

6.1.8 Santa Clara Valley Water District Upper Guadalupe River Flood Control Project

The SCVWD proposes to construct additional flood control improvements in Reach A and Reach 6 of the upper Guadalupe River north (downstream) of the proposed project addressed in this feasibility study area EIR/S.

Reach A includes a stretch nearly 2 miles long between U.S. 101 and U.S. I-880, approximately 2 miles north and downstream of Reach 7, which would be improved with widened channels, some floodwalls, and levees.

Reach 6 includes a 2,800-foot stretch of the river from I-280 to the SPRR Bridge, and would include a bypass channel lined with steep gabions. Construction of the bypass channel would require removal of one block of McLellan Avenue (between West Virginia Street and Willow Street) and modification of the West Virginia/Harliss Avenue and the McLellen/Edwards Avenue intersections. The construction would necessitate removal of 54 homes and one partial backyard. Existing utilities would be relocated at the District's expense. A new bridge would be constructed for the West Virginia Street crossing of the bypass channel (Parsons Engineering Science 1997).

The SCVWD also proposes floodwalls on both banks of Canoas Creek between Guadalupe River and the Nightingale culvert. These improvements would be constructed as related elements to the proposed project development on Reaches 7 through 12.

The SCVWD would also provide fisheries improvements in Reach 13, upstream of the feasibility study area Reach 12, including fish passage improvements (a fish ladder) at the Blossom Hill drop structure. The fish ladders are not mitigation for any other impact. Riparian forest would be planted in Reach 13 also. The improvements may address losses of SRA cover associated with the Downtown Guadalupe Project (see section 6.1.1) and SCVWD project-related impacts.

6.1.9 Almaden Road Widening

The City of San Jose plans to widen Almaden Road within the feasibility study area. Widening of the road would require disturbances very close and likely within the proposed Bypass Channel Plan recreational trail corridor. In Reach 9, the recreational trail would not be constructed in advance of construction work for the road widening project, and the road widening and channel widening work would be done concurrently due to their interdependence and space limitations.

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6.2 CUMULATIVE IMPACTS AND MITIGATION MEASURES

The cumulative impact assessment evaluates the contributions of both the Channel Widening Plan and Bypass Channel Plan alternatives. The plans' contributions to cumulative impacts are discussed separately where appropriate.

Geology, Soils, and Seismicity

During the construction period, all of the cumulative projects in the vicinity have the potential to contribute to erosion and resultant sedimentation in the river. All projects would be subjected to seismic hazards such as ground shaking. These impacts are feasibly mitigated to less than significant with implementation of construction-period erosion control programs, and with standard seismic safety measures incorporated in design (see section 4.2.4). No significant long-term cumulative impacts would occur.

Hydrology

Ultimately, the proposed cumulative project flood control improvements would provide increased protection against future flood events. This impact is considered beneficial.

Potential changes in recharge rates that could result from other flood control improvement projects, such as the construction of upstream dams or percolation ponds, or from highway construction or development projects, could affect the amount of available water supply. The magnitude of the cumulative impact on recharge areas would depend on the net affect of the project on recharge rates and the effectiveness of mitigation measures proposed for this project and other projects identified in section 6.1, above. Both Channel Widening Bypass and Channel Plans would increase the size of channel surface areas, increasing groundwater recharge potential. This would be a minor but beneficial contribution to regional hydrology.

Water Quality

The Channel Widening or Bypass Channel Plan's contribution to cumulative construction impacts on water quality would be mitigated to insignificance with implementation of the required Storm Water Pollution Prevention Program (see section 4.3.4). Other flood control and transportation system improvement projects would also be subject to program implementation, ensuring that their impacts were mitigated to insignificance. Creation of recreational amenities and riparian corridor studies would have no effect on water quality. Cumulative project impacts on water quality are therefore insignificant.

Hazardous Materials

Neither the Channel Widening nor Bypass Channel Plans would directly contribute to cumulative hazardous materials impacts because they would not include the long-term use, storage, or disposal of significant quantities of hazardous materials. The alternatives could, as discussed in section 4.11.3, affect groundwater conditions and could result in changes to site characterization investigations or remedial activities (groundwater cleanup) at known hazardous waste sites in the vicinity. Other construction activities within the cumulative project area (projects identified in section 6.1, above) could have other adverse or beneficial impacts on groundwater flow directions and potential impacts on surface and groundwater quality.

Land Use and General Plan Considerations

Construction of cumulative projects would contribute to short-term land use impacts such as dust and noise generation during construction. Under the Bypass Channel Plan, the character and cohesion of some residential neighborhoods within the feasibility study area would be substantially changed by removing houses for bypass channel construction.

The Channel Widening Plan would not require removal of residences so this impact would not result. Although revegetation of the riparian corridor would mitigate the loss of vegetation, over the long term the loss of residential community cohesion would be a significant contribution to regional land use impacts.

Other cumulative impacts on residential land use character and cohesion include 408 units displaced by the State Route [SR] 85 project [Caltrans 1987] and 41 units removed by SR 87 [Caltrans 1991]). The Corps flood control project between I-880 and I-280 would displace 24 units [COE 1985]). Three approved city-sponsored projects in San Jose would displace a total of nine residences. Five would be removed by the San Pedro Street project; two would be displaced by the Parole Office project and by the Sierra Road extension (Zia 1992). The Relocation Report prepared by the SCVWD indicates that adequate replacement housing stock is available. SCVWD policy is designed to permit displacement only after replacement housing is located. Therefore, no long-term significant cumulative impacts on land use would result from the project.

Socioeconomics

Cumulatively, other projects proposed in the area would generate a significant number of construction-related jobs. This would be a beneficial impact for the local economy. The revised *Relocation Assistance and Last Resort Housing Plan* (SCVWD 1993) indicates that adequate replacement housing stock is available for residents displaced by the Bypass Channel Plan. SCVWD policy is designed to permit displacement only after replacement housing is located. Therefore, the Bypass Channel Plan's long-term contribution to socioeconomic cumulative impacts would be less than significant. The Channel Widening Plan would have no effect on residential displacement issues.

Transportation

Either the Channel Widening Plan or the Bypass Channel Plan would contribute to cumulative traffic impacts when considered with the SCVWD-proposed construction of flood control improvements in Reach 6 of the upper Guadalupe River (see section 6.1.8). These cumulative traffic impacts would be short-term and less than significant. During construction of a new West Virginia Street bridge over the bypass channel, traffic normally using West Virginia Street would be redirected to Willow Street or West Alma Avenue. Willow Street has sufficient unused capacity to absorb the West Virginia Street traffic during construction (see Table 4.7-3). Even if the construction schedules for West Virginia and Willow streets overlap, West Alma Avenue has sufficient unused capacity to accept the traffic from both streets during construction (Parsons Engineering Science 1997). The proposed Construction Management Traffic Plan would further reduce the proposed action's contributions to short-term impacts during construction.

With construction of either one of the project alternatives along with the SCVWD-proposed Reach 6 project, flood-caused blockages of SR 87 and the light rail line in Reach 6 would be nearly eliminated. This would be a cumulative long-term transportation benefit.

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Noise

San Jose International Airport has prepared an airport expansion plan for the year 2000, which includes noise contours for airport operations. Noise from aircraft operations is estimated to increase approximately 1 dBA in the long term.

The Guadalupe Corridor Transportation Facility (GCTF) will affect noise environments in Reaches 6, 7, and 8. The EIS for that project (UMTA 1988) analyzes operational noise impacts from SR 87 and light rail transit operations. Results indicate that existing noise levels with the project will be increased by 2 to 7 dBA after mitigation. The most significant future noise increase from GCTF would occur at the residences on Mills Court and the end of Atlanta Avenue in Reach 7. For these cases, the existing noise level is estimated to increase from 58 to 63 dBA (L_{eq}) in future years. The Channel Widening or the Bypass Channel Plan alternatives would increase ambient short-term noise levels during construction no more than 2 dBA. This would be an insignificant contribution to short-term noise levels.

Other major roadways in the study region will experience a significant increase in traffic volumes due to regional growth. Noise increase from regional growth is expected to be 2 dBA or less near major arterials and 2 to 4 dBA in areas remote from major arterials in the next 20 years. Proposed flood control improvement alternatives would not generate significant noise over the long-term. Contributions to cumulative impacts are therefore insignificant.

Air Quality

Since the proposed flood-control improvement alternatives would not have operational air quality impacts, potential contributions to cumulative impacts would occur only during short-term construction periods. Implementation of BAAQMD fugitive dust control measures would reduce cumulative PM_{10} emissions impacts to less than significant (see section 4.1.4). Combustive emissions from construction equipment would be intermittent and would be an insignificant contribution to short-term cumulative impacts.

Public Services and Utilities

Both Channel Widening and Bypass Channel Plan alternatives would have short-term impacts during construction on public services and utilities that would be reduced to less than significant with proposed mitigation measures (see section 4.9.4). No long-term contributions to cumulative public services and utilities impacts would occur. Other cumulative project impacts on public services and utilities would be short-term and reduced to less than significant.

Public Safety

The flood control project improvements are designed to protect public safety. Public safety would be protected by appropriate construction and operational safety measures, including Bypass Channel Plan measures to limit public access to the immediate vicinity of the recreational trail. Access provided by the recreational trail proposed as part of the Bypass Channel Plan (and as envisioned in the Guadalupe River South Corridor Master Plan) may, however, pose concerns associated with increased access to the river corridor. The City of San Jose should evaluate the trail and park system with respect to any additional safety concerns it may create. The Channel Widening Plan would not generate additional public safety concerns relative to the recreation trail. The plan's impacts would be limited to creating new flood control facilities that could entice trespassing hazards, similar to other flood control improvement projects in the vicinity. These impacts would be reduced to less than significant with proposed mitigation (see section 4.12.4).

Vegetation

The following cumulative impact analysis is based on a reconnaissance-level field inventory of riparian habitats throughout the Guadalupe River system by The Habitat Restoration Group in 1990 and a review of existing documents describing proposed and approved projects (Parsons Engineering Science 1997, Appendix C-A).

For the purposes of this assessment, the Guadalupe River system encompasses the Guadalupe River mainstream from the mouth at Alviso Slough in South San Francisco Bay to its confluence with Alamitos Creek, and major tributaries of

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the Guadalupe River: Los Gatos Creek, Canoas Creek, Ross Creek, Guadalupe Creek, Alamitos Creek, and Arroyo Calero Creek. The study areas for Los Gatos Creek, Guadalupe Creek, Alamitos Creek, and Arroyo Calero Creek extend upstream to their reservoirs (Table 6-1).

Table 6-1. Stream Segments included in the Cumulative Impact Assessment for Biotic Resources

<i>Stream</i>	<i>Segment</i>	<i>Total Stream Miles^a</i>
Guadalupe River	Alviso Slough (SPRR) to confluence with Alamitos Creek	18.8
Los Gatos Creek	Confluence with Guadalupe River to Lexington Reservoir	11.0
Canoas Creek	Confluence with Guadalupe River to Cottle Avenue	7.6
Ross Creek	Confluence with Guadalupe River to Kennedy Road	5.6
Guadalupe Creek	Confluence with Guadalupe River to Guadalupe Reservoir	5.5
Alamitos Creek	Confluence with Guadalupe River to Arroyo Calero to Almaden Reservoir	7.2
Arroyo Calero	Confluence with Alamitos Creek to Arroyo Calero Reservoir	4.0
Total		59.7

Note: a. Bank miles = stream miles x 2.

Source: The Habitat Restoration Group 1991 (unpublished data).

No previous studies have analyzed the cumulative impacts of this and other planned projects relative to the historical extent and distribution of riparian habitat along the Guadalupe River system. Substantial

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Table 6-2 Historical Projects that have Affected the Nature, Extent, and Distribution of Riparian Habitat in the Guadalupe River System

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portions of the system have been highly disturbed. Table 6-2 lists previously constructed water management projects that may have reduced the extent of riparian habitat along the Guadalupe River and its tributaries. Because many small urban, residential, and agricultural development projects have occurred within the Guadalupe River system, only major projects are included in Table 6-2. Historical changes in the Santa Clara Valley (in agriculture, urban development, and water development) have resulted in substantial loss of riparian forest within the Guadalupe River system. Much of the remaining forest has been degraded by fragmentation, disturbance, reduced flooding, and introduction of non-native species.

Currently, riparian forest occurs along 60.9 bank miles of the Guadalupe River system (51.0 percent of the system total of 119.3 bank miles). Approximately 16.5 bank miles of riparian forest occurs along the Guadalupe River (44.0 percent of the Guadalupe River; total of 37.5 bank miles). Approximately 4.0 bank miles (3.3 percent of the system total) have been modified through the installation of gabions, concrete lining, riprap, and underground culverts. The remaining areas have been converted to ruderal vegetation, upland landscaping, and bare areas. Existing amounts of major habitats in the Guadalupe River system are summarized in Table 6-3.

Under either the Channel Widening Plan or the Bypass Channel Plan, the extent of hardened bank along the Guadalupe River would be increased. This increase would occur primarily along the middle to upper parts of banks widened to provide increased channel capacity. Small-scale, incremental increases in the acreage of hardened banks may also occur where less damaging bio-engineered erosion control measures are attempted but fail. An extensive area of channel bank habitat will also be hardened as part of the downtown Guadalupe River project. The cumulative extent of bank hardening along the river has not been quantified, but this may be an important aspect of the cumulative impact of riparian forest habitat loss, possibly resulting in the degradation of residual habitat values beyond what is measured in terms of lost acreage of riparian forest or other vegetation types.

IMPACT: Direct Removal of Riparian Forest and Near-Term Reduction in Mature Riparian Forest. Implementing several projects that are close together or overlap in time and space amplifies the effects of riparian forest removal. Although the direct impacts of each project would be mitigated by planting, maintaining, and monitoring replacement vegetation, the combined impact on riparian forest condition would be greater than the sum of the incremental effects because the interim loss of shade, habitat, and self-sustaining vegetation would affect wildlife more than if the projects were widely separated in time and space. The majority of the impact would be on cottonwood/willow forest, which possesses high botanical and wildlife values.

This is considered a significant cumulative impact, because historically the amount, condition, and continuity of riparian forest in the Santa Clara Valley, especially along the Guadalupe River, has been substantially reduced, thereby increasing the regional importance of remaining riparian habitats to fish and wildlife. The SCVWD will minimize its contribution to this impact by implementing the following mitigation measures.

The SCVWD currently participates in watershed management planning for the Guadalupe River watershed in coordination with other responsible agencies. This effort will help guide the long-term management of biotic and other resources within the Guadalupe River system.

Table 6-3 Summary of Fish Habitat Accessible by Removal of Fish Barriers on the Guadalupe River and Alamitos, Calero, and Guadalupe Creeks

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MITIGATION: Minimize Recreational Impacts on Riparian Forest. To minimize indirect impacts on remaining riparian forest vegetation and revegetation areas, the Corps would incorporate the following measures into the project.

- The permanent maintenance road would not be sited within the revegetation areas in Reach 12 to avoid disturbance of mitigation plantings.
- The perimeters of riparian forest mitigation revegetation sites accessible to recreational users would be fenced and posted with "Mitigation Area, Please Do Not Disturb" signs until the vegetation has become well established (an estimated 5-8 years).
- Where possible, dense vegetative screening would be planted between trails or maintenance roads and revegetation sites.
- The SCVWD would continue to be fully involved in the planning of the trail system for the Guadalupe River Corridor South Park so as to protect the mitigation sites and natural areas.

MITIGATION: Implement Revegetation during the First Fall Planting Season after Reach Construction. To minimize the delay between project impacts on riparian forest habitat and the attainment of full compensation in revegetation areas, the Corps would revegetate during the first fall planting season after completing construction in each reach

In addition, the construction schedule would begin improvements in Reaches 7 and 12 early in the project phasing. Because Reaches 7 and 10B contain much of the mitigation vegetation, completing construction in these reaches would allow for the earliest possible establishment of mitigation vegetation and for providing compensation for temporary loss of habitat.

Wildlife

Implementation of several projects would result in substantial long-term increases in human activity within the Guadalupe River riparian corridor. In addition, the SCVWD has a policy governing joint public use of SCVWD facilities (Resolution No. 74-38) that would allow future park projects to utilize floodway maintenance roads for trails. After completion of construction, increased human activities would include revegetation monitoring, floodway maintenance work, and recreational uses. These activities could increase disturbance of wildlife over current levels, especially during the breeding season.

This cumulative impact would be greater than the sum of the impacts of each project separately, because the impacts would be close together or overlapping in time and space, reducing the potential for wildlife to tolerate or avoid the disturbance.

This impact is considered less than significant because wildlife in the affected areas are already subjected to substantial disturbance from urban activities outside the project areas, and urban and recreational disturbances would increase even in the absence of the major projects listed above. No mitigation is required; however, the Corps would minimize its contribution to wildlife disturbance by implementing mitigation measures recommended to reduce impacts on vegetation.

Fisheries

The preferred project and other major projects would modify the stream channel and riparian corridor of the Guadalupe River, removing streamside vegetation that shades the stream channel and provides fish escape cover. These major channel modifications could be initiated within a few years of each other and span a significant portion of the channel of the Guadalupe River. However, construction of much of the preferred project could occur 10-20 years after the other major projects.

Implementation of the Downtown Guadalupe project was determined to affect approximately 9,800 linear feet of SRA cover; however, impacts on SRA cover are being reevaluated. Implementing the proposed upper Guadalupe project would result in the direct removal of 3,959 linear feet of overhead cover in the form of overwater riparian vegetation and 359 linear feet of undercut banks.

Loss of SRA cover from implementing the downtown Guadalupe project will be fully mitigated according to efforts that are currently underway. The downtown project will not receive permits to allow completion until referenced mitigation plans are deemed acceptable by regulatory agencies. Impacts on SRA cover from the preferred project would be fully mitigated. Mitigation measures required for the SRA impacts of the preferred project are discussed under "Fisheries." Mitigation for removal of riparian habitat is also discussed under "Vegetation." Required mitigation to compensate for removal of riparian forest and SRA cover includes preparing and implementing an integrated vegetation mitigation plan. The separated timing of the project and the SCVWD's participation in watershed management planning will also help to minimize cumulative impacts on the riparian corridor of the Guadalupe River.

The cumulative impact of removing streamside vegetation is therefore considered less than significant, and no mitigation is required.

IMPACT: Blocked Access to Optimum Fishery Habitat Upstream. Construction impacts of the proposed project are increased by the continued effects of previous projects. An impassable drop structure upstream of Blossom Hill, constructed as part of a SCVWD flood control project in 1977, blocks access by steelhead and salmon to spawning and rearing habitat in Alamitos, Arroyo Calero, and Guadalupe creeks. Two downstream barriers at Hillsdale Avenue and Branham Lane have restricted the migration of steelhead and salmon upstream to the drop structure except when flows exceed approximately 100 cfs.

The project proposes to remove the fish barriers at Hillsdale Avenue and Branham Lane. Further, the SCVWD will modify the weir at stream gauge Station No. 23B to improve fish passage conditions. Measures to improve fish passage would be implemented by the SCVWD as part of separate but related projects (Parsons Engineering Science 1997). These measures, described below, would result in improved fish passage to upstream areas. As a result this impact is fully mitigated and no additional measures are needed.

In accordance with a September 1995 settlement agreement, the SCVWD has committed to construction of a step pool fish ladder at the Blossom Hill drop structure that will be fully operational by October 15, 1999 (see "Settlement Agreement" in Chapter 3, "Preferred Project and Alternatives"). This will provide access to an additional 2.9 miles of fish habitat from the drop structure to potential fish barriers at Mason Dam on Guadalupe Creek and the gabion structure on Alamitos Creek upstream of Mazzone Drive (Table 6-3).

Even with these mitigation measures, construction of the proposed project and other projects on the Guadalupe River, addressed earlier in this chapter, would result in cumulative impacts on anadromous fish habitat, water temperatures, and potential sedimentation of spawning and food producing areas. These cumulative impacts are considered significant.

The SCVWD proposes to provide fish passage at the gabion structure on Alamitos Creek upstream of Mazzone Drive. This improvement would provide access to approximately 10.7 miles of upstream fish habitat (Table 6-3), which is more than the total miles of the Guadalupe River included in the project areas for the Upper Guadalupe River Flood Control Project (approximately 6.4 miles) and the Downtown Guadalupe River Flood Control Project (approximately 2.6 miles).

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Fish passage devices would be designed in consultation with CDFG and USFWS and incorporate engineering considerations and biological criteria developed for fish passage to ensure that adequate fish passage is maintained.

Successful implementation of this measure, in conjunction with other mitigation measures, would allow anadromous species (such as chinook salmon and steelhead trout) access to more suitable spawning habitat in the upstream tributaries.

Other measures include improving fish passage conditions at Mason Dam, Stream Gauge Station No. 43, and the concrete channel on Guadalupe Creek and would provide access to 2.6 miles of higher quality fish habitat upstream of the project.

Implementing the foregoing measures would allow access to approximately 13.3 miles of more suitable upstream spawning and rearing habitat, which would result in a significant, long-term beneficial impact on fishery resources. With the step pool ladder at the Blossom Hill drop structure and modifications to the partial barriers in the Upper Guadalupe River, a total of approximately 19 miles or more suitable habitat would be available.

The SCVWD would implement a two-phase monitoring program of the fish passage improvements at Alamitos Creek to determine the success of the improvements: intense annual surveys (phase one) to determine whether fish are using the structures and ongoing surveys in perpetuity (phase two) to ensure that structures are operating as designed. The SCVWD would develop an appropriate monitoring program in coordination with CDFG and USFWS to document the successful passage of migratory fish (primarily chinook salmon and steelhead trout) at the gabion structure on Alamitos Creek. Phase one of the monitoring program would commence in the fall following completion of fish passage improvements. Monitoring would be conducted from October 1 to April 30 when migrating adult chinook salmon and steelhead trout are expected to occur.

Potential monitoring activities could consist of visual surveys at the improvement location; carcass, redd, and juvenile surveys in reaches upstream of the improvement location; automated fish counting systems mounted at each fish passage structure; or a combination of two or more methods to document the successful passage of adults. The precise sampling protocol would be developed in consultation with CDFG and USFWS and would depend on the opportunities and constraints governed by the local conditions (e.g., high turbidity levels during storm runoff periods may preclude the use of visual observations as a sampling method).

In addition to visual observations to determine successful fish passage, the SCVWD would look for indicators of passage problems, such as fish congregating downstream of the ladder or failed attempts by fish to negotiate the ladder.

The SCVWD would submit an annual monitoring report to CDFG for up to 5 years after modification of the gabion structure on Alamitos Creek. If the objective of attaining fish passage has not been met and is not due to factors beyond the SCVWD's control (e.g., drought, natural downstream barrier, or limited numbers of fish), remedial actions would be initiated and monitoring would continue for up to an additional 5 years. Remedial actions could include redesign of structural improvements or further negotiations with CDFG and USFWS regarding other appropriate mitigation.

This measure would be considered successful when fish passage was documented and no indicators of passage problems are present. After successful fish passage was documented, phase one of the monitoring program would be considered complete.

Phase two of the monitoring plan would include repeated surveys during the rainy season (i.e., October 1 through April 30) to ensure that the fishway is free of obstructions and debris that could preclude their normal operation. The SCVWD would follow the same maintenance and inspection procedures as outlined in an existing MOU with CDFG and take reasonable and appropriate measures to remove accumulated debris in a timely manner to restore to normal the operation of the fishway. The current Memorandum of Understanding requires the SCVWD to inspect all fish ladders once every workday and at least once per day during high flow events on nonworking days during the migration period. This phase of the monitoring program would continue for the life of the improvement structure.

This measure would provide fish access to an additional 10.7 miles of stream habitat. Successful implementation of this measure, in conjunction with other measures, would provide chinook salmon and steelhead trout access to a combined

total of 13.3 miles of additional spawning and rearing habitat. Together, these measures will result in a long-term benefit to the anadromous fishery of the Guadalupe River because of the increase in habitat availability and the anticipated benefits associated with the improved habitat conditions found in these tributary streams. With the step pool ladder at the Blossom Hill drop structure and modifications to the partial barriers in the Upper Guadalupe River, a total of approximately 19 miles of more suitable habitat would be available.

Aesthetics and Recreation

During construction, either the Channel Widening or Bypass Channel Plan alternative would contribute to a temporary change in the visual character of the project area. Successful implementation of revegetation and other mitigation measures discussed in section 4.5.4 would restore the long-term aesthetic character of the riparian corridor. Beneficial recreational impacts would result from development of the river trail. The proposed project alternatives would not result in long-term significant contributions to cumulative impacts on visual/aesthetic resources.

The City of San Jose's proposed widening from Malone Road to the southbound lanes of the Almaden Expressway would encroach within the Bypass Channel Plan recreational trail corridor. A wider right-of-way for this segment of Almaden Road and partial reconstruction of portions of the road within this stretch of the feasibility study areas would be necessary to build the recreational trail. The City of San Jose would coordinate its land acquisition and road reconstruction with construction of the Bypass Channel Plan (William DeJager 1997). This would eliminate any conflicts between Almaden Road Widening and the Bypass Channel Plan recreational trail.

Cumulative Impacts

Historic and Archaeological Resources

Urbanization has had an adverse effect on the various cultural resources located along the Guadalupe River. Prehistoric cultural resources such as habitation sites, food processing areas, and Native American cemeteries have been affected by construction projects such as housing developments, roadwork, and utility installation. In addition, historic properties have been affected by modernization, demolitions, and general effects of urbanization. In particular, Spanish and Mexican period cultural resources and late 19th century and early 20th century housing areas or structures have been altered, removed, or lost.

Both Channel-Widening and Bypass Channel plans could affect cultural resources along the Guadalupe River and could contribute to cumulative impacts on archaeological, historical, and Native American heritage resources found within the Santa Clara Valley. The alternative plans' direct impacts on archaeological sites would be mitigated to insignificance (see section 4.10.4), but would contribute to a general loss of the existing data base, impacting research potential and Native American heritage values. The potential to impact human burials in unmapped areas of CA-SCL-690 would be of particular concern to local Native Americans. This data base in the Santa Clara Valley includes intact prehistoric and historic resources such as midden deposits, Native American burials, historic structures, and historic archaeological deposits. Cultural resources located along the Guadalupe River are important to understanding the development of the area since the river had been an important factor in shaping the prehistoric and historic development of the area.

Development of Canoas Creek improvements under the SCVWD Upper Guadalupe Flood Control project could impact two archaeological sites with human remains. If human remains were disturbed, the effect on Native American heritage values would be particularly adverse. In this case, cumulative impacts would be significant, but mitigated to insignificance by involving Native Americans in formulation of cultural resource treatment plans and in their implementation.

Removal of the remaining components of the Valley View Packing Company (if still remaining on site at the time of construction), and other historical structures (bridges and residences) under the Bypass Channel Plan and the historic redwood retaining wall under both alternative plans would be a significant contribution to impacts on historical resources that would be reduced to less than significant with proposed mitigation measures (see section 4.10.4).