CHAPTER 5
ALTERNATIVES ANALYSIS

5.1 INTRODUCTION

The California Environmental Quality Act (CEQA), Section 15126(a), requires an Environmental Impact Report (EIR) to describe a reasonable range of alternatives to a proposed project. The alternatives selected should feasibly attain most of the basic project objectives and avoid or substantially lessen any of the significant effects. This section discusses a range of alternatives to the proposed project including, the No Project, the Levee Setback and the Reduced Project Alternatives.

Criteria used to evaluate the range of alternatives and remove certain alternatives from further consideration are addressed in the CEQA Guidelines Section 15126.6. Specifically, this section requires that the Alternatives Analysis include:

- Description of "...a range of reasonable alternatives to the project, or to the location of a project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." [Section 15126.6(a)]

- A setting forth of alternatives that "...shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project." [Section 15126.6(f)]

- Discussion of the "No Project" alternative, and "...If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives." [Section 15126.6(e)(2)]

- Discussion and analysis of alternative locations: "Only locations that would substantially lessen any of the significant effects of the project need to be considered for inclusion in the EIR." [Section 15126.6(f)(2)(A)]

Given the CEQA guidelines listed above, this section (1) describes the range of reasonable alternatives to the project; (2) examines and evaluates resource issue areas where significant adverse environmental effects have been identified and compares the impacts of the alternatives to those of the proposed project; and, (3) identifies the Environmentally Superior Alternative.

5.2 THE 2006 EROSION, SEDIMENTATION, AND FLOODING ALTERNATIVES STUDY

Prior to development of the proposed project the San Luis Obispo County Flood Control and Water Conservation District (District) provided funding to the San Luis Coastal Resource Conservation District (RCD) to prepare an "Erosion, Sedimentation, and Flooding Alternatives Study" (Alternatives Study). This study, prepared by Swanson Hydrology and Geomorphology was completed in 2006. The document has provided substantial background for this EIR. The focus of the study was to evaluate alternatives that reduce flood risk along Arroyo Grande Creek and minimize human-induced erosion that may contribute to flooding. The flood protection goal identified was to "equal or exceed the design capacity of 7,500 cubic feet per second (cfs) with

two feet of freeboard". Initially eighteen alternatives were developed. The number of alternatives further evaluated in any detail was limited to those which appeared to implement the goals of the Zone 1/1A advisory committee and the anticipated funding. Six alternatives emerged for further evaluation; however only two of those met the flood protection goals (refer to Table 3.13, in the Alternatives Study). A third, Alternative 4, met the cfs goal (7,500 cfs) but did not provide 20-year protection. These three alternatives are described below:

Alternative 3 Levee Raise 3C with Vegetation and Sediment Management: This alternative could provide protection from a 20-year flood event and provided capacity for 8,600 cfs. It also provided 2 feet of freeboard, and appeared to address budgetary constraints. It evolved into the proposed project. Without freeboard, it provides protection from a 37-year flood event.

Alternative 4 Levee Raise with Vegetation Management: This alternative resembles Alternative 3 although it does not include the sediment management. It provides 16.6-year protection and provided capacity for 7,500 cfs. It also provides two feet of freeboard. Without freeboard, it provides protection from a 34-year flood event.

Alternative 5 Overflow Weir and Storage: This alternative provided flood protection by controlling the overflow and directing it to managed flood storage areas adjacent to the levee system. In this alternative, specific properties would be designated flood storage areas, and 5-foot tall levees would be constructed around them. These properties would be subject to more intensive flooding; however, the total acreage within Zone 1/1A subject to flooding would be reduced. Flood protection would only be limited by the size of the overflow areas.

The Alternatives Study is available at the Department of Public Works in its entirety. An electronic version can be downloaded at: *http://www.slocountywater.org*. A table developed previously to facilitate discussion of the preliminary alternatives in the Alternatives Study is included as Appendix G in this EIR. The table includes a qualitative and brief discussion of pros and cons of each alternative.

5.3 ALTERNATIVES FOR USE IN THIS EIR

The three factors guiding the development of alternatives in the EIR include:

1. Project Objective: Alternatives were rejected for further review if they could not feasibly attain the project objectives. The project objective identified in the Project Description is as follows: ". . . to develop a comprehensive set of actions designed to restore the capacity of the leveed lower three miles of Arroyo Grande Creek Channel and the Los Berros Creek Diversion Channel to provide flood protection from up to a 20-year storm event while simultaneously enhancing water quality and sensitive species habitat within the managed channel."

2. Potential to Reduce Environmental Impacts: Alternatives were limited from further review based on their ability to avoid or reduce potential environmental effects that may be associated with the proposed project. For the proposed project, the most significant environmental effects are associated with biological resources. In particular, potential impacts to the habitat of listed species including the California red-legged frog, the south-central coast steelhead, and the tidewater goby were identified. Impacts associated with sensitive habitat include those to wetlands and riparian vegetation. Other significant impacts identified are associated with agricultural resources and air quality.

3. Regulatory Environment/Resource Conservation: The project location is intensely regulated because of its location, function, and environmental value. It is located within the jurisdictions of the County of San Luis Obispo, the City of Arroyo Grande, and the California Coastal Commission (CCC). Numerous other agencies, including the United States Army Corps of Engineers (USACE), United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), National Marine Fisheries Service (NOAA Fisheries), and Regional Water Quality Control Board (RWQCB), also may have permitting authority over the project. In general, flood control improvements and resource conservation have historically been mutually exclusive activities. For example the construction of dams, levees, undergrounding of streams and creeks, have resulted in increased flood protection and preservation of the built environment, but in many cases resulted in significant impacts to environmental conditions, through loss of habitat, increased stormwater runoff, decreased water quality, etc. For this EIR, efforts were made to identify alternatives that meet the project objective and the objectives of the various responsible agencies. In some cases that meant revisiting alternatives rejected during preparation of the 2006 Alternatives Study.

The 18 preliminary alternatives identified in the Alternatives Study have been re-evaluated in the context of this EIR. Of those eighteen, four appeared to warrant further review in the EIR. The selection of alternatives to be evaluated in detail in this EIR differed from the one used for the Alternatives Study for the following reasons:

- A project has been proposed and the specific project impacts have been identified;
- The proposed project objective differs from the goals identified in the Alternatives Study;
- The CEQA Guidelines prohibit economic feasibility from being the lone factor used to reject an alternative to the proposed project; and
- Resource agencies, including the RWQCB and NOAA Fisheries commented on the Alternatives Study and suggested an alternative (levee setback) that could meet the individual agency objectives in addition to the project objectives.

5.4 PROJECT ALTERNATIVES

Based on a re-evaluation of the preliminary alternatives in the Alternatives Study in the context of this EIR and the three factors discussed above, the following five alternatives (the No Project alternative, and four variants of the alternatives from the Alternatives Study) to the proposed project were considered for additional review:

- *No Project Alternative*. This alternative considers impacts based on the existing conditions without further development such as the proposed project. CEQA requires a No Project alternative be included in every EIR.
- *Levee Raise and Setback*. This alternative would widen the existing channel to 200 feet along most of the project area by relocating the southern levee. It would require rebuilding the Union Pacific Railroad (UPRR) Bridge, the 22nd Street Bridge, and the Highway 1 Bridge, and purchasing agricultural land on the south side of the existing levee to accommodate a widened channel. Relocation of existing structures would be required as well to accommodate the new levee.

- *Controlled Overflow and Flood Storage.* This alternative would integrate off-channel flood storage areas into the flood control system to provide additional flood protection through controlled overflow of flood waters. The areas for off-channel storage would be along the south bank of Arroyo Grande Creek, between the confluence of Los Berros Creek and the UPRR Bridge, areas currently in agricultural use. The flood storage areas would be created by constructing 5-foot high levees around portions of existing agricultural fields to provide an average storage depth of 4 feet. Flood protection would only be limited by the size of the overflow storage areas.

- *Los Berros Creek Overflow.* This alternative would use the old Los Berros channel as a potential storage area for floodwaters emanating from the Los Berros Creek watershed. An existing flood gate located at the inlet of the old Los Berros channel would be retrofitted to allow flood flows to enter the old channel and bypass the existing flood control reach. Floodwaters would enter Arroyo Grande Creek downstream, near the lagoon.

- *Levee Raise and Vegetation Management.* This alternative would include the levee raise components of the proposed project, and the vegetation management, but would not include the sediment removal component, in an attempt to limit activities within the channel.

The *Controlled Overflow and Storage Alternative* was eventually rejected because while it could provide flood protection for many of the properties in Zone 1/1A, and would avoid extensive in-channel activities, it would do so at the expense of the properties where floodwaters would be accommodated. And given the rapid willow growth in the channel, vegetation management on a regular basis would still likely be necessary, although perhaps less than the proposed project. Further, the project objectives include restoring the capacity of the flood control channel, which this alternative does not necessarily meet. NOAA Fisheries (2005) also raised concerns that this alternative could potentially trap steelhead in the off-channel areas, stranding them when floodwaters receded.

The *Los Berros Creek Overflow Alternative* was discussed as possible alternative as it appeared to avoid impacts to the biological resources of the Arroyo Grande Creek Channel, and could provide increased flood protection through restoration of the "natural" drainage system. Upon further review, however, this alternative was rejected as it became apparent that while it avoided biological resource impacts to the Arroyo Grande Creek channel, restoring the old Los Berros Creek in a way that allowed for substantial capacity would require grading and vegetation management similar to that proposed for the Arroyo Grande Creek channel. Further, the old Los Berros Creek channel is not continuous and is likely to be inundated with local drainage waters at the time the storage volume would be most necessary (Swanson 2006). As a result this alternative may have significant biological resource impacts and increase flooding impacts at the southern end of the valley.

Therefore, of the five alternatives selected for further review, the following three were brought forward for substantial review and comparison to the proposed project in the EIR:

1. No Project Alternative

2. Levee Setback Alternative

3. Levee Raise and Vegetation Management Alternative

5.5 ALTERNATIVES ANALYSIS

The following is a qualitative analysis of the alternatives brought forward for further review. The analysis provides a more specific project description for the three alternatives, identifies the level of impact that would result if the alternatives were to be implemented, and how they compare to the proposed project. These alternatives would either have comparable impacts or would reduce environmental impacts when compared to the proposed project, would meet most of the basic objectives of the proposed project (other than the No Project Alternative), and are considered feasible for implementation. CEQA does not require the alternatives evaluation to be at the same level of detail as the proposed project, but does require the EIR to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project (CEQA Guidelines Section 15126.6(d)).

5.5.1 No Project Alternative

The No-Project Alternative would result in a flood control system which operates as it currently does, providing protection from flood events that happen on average every 4.6 years. As a result, a flood event would likely affect the area within the next five years. Currently, the District maintains the channel through periodic vegetation removal and small scale repair and maintenance of the levees. In recent years, the District has received permits and approvals to perform this work from the CDFG and the CCC. These recent approvals have been made with an understanding among agencies that a management program for the channel was being developed and a subsequent comprehensive CEQA and National Environmental Policy Act (NEPA) review and permitting process would occur. For example the most recent application to the Coastal Commission has not been acted upon due to the development of the proposed project. Because of the sensitive species and habitats that exist in the project area, the resource agencies have indicated that additional permits for even the existing maintenance efforts may become increasingly difficult to obtain.

Therefore, it is reasonable to expect the No Project Alternative would at most result in some periodic vegetation and levee maintenance, although nothing as significant as included in the WMP. No sediment removal could occur without a streambed alteration agreement and Section 401/404 permits from the USACE and RWQCB. In the event that catastrophic failure of the levees occurred, large-scale repair of the affected levees would most likely occur through an emergency permit, and would potentially be exempt from environmental review.

The analysis that follows assumes that the No Project Alternative would result in periodic maintenance of vegetation in the channel, and small-scale repair and maintenance of the levees. This alternative does not meet the project objectives, which include providing 20-year flood protection, enhancing water quality and sensitive species habitat within the managed channel.

5.5.1.1 Agricultural Resources

This alternative would not increase the footprint of the levee system and would not permanently convert agriculture soils to another use. The No Project alternative would result in minimal incompatibilities with agricultural operations.

This alternative would leave the majority of the agriculturally productive areas in the lower Arroyo Grande Valley subject to flooding approximately once every five years. When compared to the proposed project which would leave the same area subject to flooding once every 20

years, this alternative would reduce productivity of the operations. Flooding can destroy crops, deposit sediment and other substances on agricultural fields, requiring significant maintenance by growers. As discussed in the Flooding section of this EIR, fields may be inundated for extended periods of time as drainage of the lower valley is slow. Compared to the proposed project, this is a different impact to agricultural resources, but a significant one as it makes agricultural production less feasible. However, when compared to existing conditions, there is no productivity-related impact.

5.5.1.2 Air Quality

This alternative would not result in any construction-related emissions (combustion and particulate). The No Project alternative would not include the UPRR bridge raising. This alternative would maintain the existing levee footprint so demolition of existing structures may not be necessary, reducing the potential for hazardous air pollutants from being airborne. Generally, this alternative would result in significantly less air quality impacts when compared to the proposed project, due to the substantially reduced area of disturbance and number of project components. It is likely that no mitigation beyond standard dust control, already required by ordinance would be required.

5.5.1.3 Biological Resources

The No Project alternative would result in limited vegetation removal within the channel system. Recent vegetation removal activities have been performed by the District and the California Conservation Corps. Work has been performed by hand. Willows are thinned and limbed up where determined appropriate by CDFG staff in the field. Work occurs intermittently depending upon where growth has been most significant. Based on anecdotal evidence, annual vegetation growth is outpacing management activities. Because this alternative would not significantly reduce riparian vegetation and would not disturb sediments in the channel, it would have limited impacts to sensitive species and habitats. This assume future activities would be conducted in accordance with CDFG standard management practices for vegetation management, such as avoiding nesting birds, minimizing use of heavy machinery, and allowing a buffer to grow between the low flow channel and removal activities, etc.

5.5.1.4 Cultural Resources

No known prehistoric or historic resources were identified in the proposed project area. This alternative would have a reduced project area compared to the proposed project and therefore the cultural resource impacts would be less than significant.

5.5.1.5 Flooding, Hydrology, and Water Quality

The No Project alternative would not significantly alter the existing flooding, drainage, or water quality conditions of the channels. However continued degradation of the levees, sediment accumulation and vegetation growth would further reduce flood capacity within the channel and increase the potential for flooding within Zone 1/1A.

5.5.1.6 Geology and Soils

This alternative would have fewer geology and soils impacts when compared to the proposed project as no levee improvements would occur. This alternative would also not include the UPRR bridge raise component, further reducing potential geology and soils hazards. The levees are old and were not constructed to the same engineering standards used now. In that

respect, the No Project Alternative would result in levees more prone to catastrophic failure, compared to the proposed project.

5.5.1.7 Hazards and Hazardous Materials

The No Project Alternative would not include the UPRR bridge raising, and as a result the potential to encounter hazardous materials associated with the railroad use would be less. The worker exposure to agricultural chemicals would still exist with this alternative, but to a much lesser extent as the scope of the work is significantly reduced. Impacts would be less than significant with mitigation.

5.5.1.8 Transportation and Traffic

The No Project Alternative would not require sediment removal and levee-related work would be much less substantial. It would not include the UPRR bridge project, and it would not require the importation of significant quantities of fill. As a result truck traffic would be insignificant compared to the proposed project. No mitigation would be required.

5.5.2 Levee Setback Alternative

The Levee Setback Alternative would provide flood protection in a manner that represents a partial restoration of the drainage system as it existed prior to the original levee construction. It would include constructing a higher north levee to ensure protection for the residential and public facility land uses, but shift the southern levee along the Arroyo Grande and Los Berros Creek channels to the south approximately 130 feet, increasing channel width from approximately 70 feet to approximately 200 feet (refer to Figure 5-1). With this configuration the creek could meander within a larger corridor, reflecting more natural conditions. Unlike the proposed project, this wider channel would provide the capacity for deposition of sediment in the channel and not require sediment management.

This scenario was described in the Alternatives Study as providing approximately 50-year flood protection. A setback of less than 130 feet may adequately provide 20-year flood protection, similar to the proposed project, but based on the historical rates of vegetation growth in the creek, there is the risk that a narrower channel may lose capacity more quickly due to dense growth of willows and require regular vegetation management. A wider channel would reduce the likelihood that vegetation and/or sediment management would be necessary and therefore this alternative includes the wider channel.

Because the channel would be 130 feet wider, the Levee Setback Alternative would require significant infrastructure improvements at the UPRR, 22nd Street, and Highway 1 bridges. As such, this alternative was identified as one of the more expensive options in the Alternatives Study. To minimize costs of bridge construction, it was assumed that three expanded crossings would use large culverts and would not be spanned by bridges (refer to Figure 5-2).

This alternative would require the County to obtain a significantly wider easement or purchase land outright to accommodate the wider channel. Based on site visits and aerial photos, this alternative may result in the demolition or relocation of approximately 25 structures, including at least two residences and equestrian facilities, and require the partial relocation of at least two large agricultural facilities, one at the northern (upstream) end of the project area, and one west of 22nd Street. This alternative would potentially require the relocation of a short portion of Halcyon Road, south of Highway 1, although for purposes of this analysis it is assumed a slightly narrower channel would be used near Halcyon to allow for its current configuration.

This alternative would meet the project objectives, as it would provide flood protection, and potentially enhance water quality and sensitive species habitat. The alternative did not receive further analysis in the Alternatives Study because it was estimated (very roughly) to cost $30 million to implement – much of which would be related to property acquisition and infrastructure costs. Table 3.13 of the Alternatives Study includes an estimate that the proposed project could cost approximately $11 million to implement over 10 years.

5.5.2.1 Agricultural Resources

The Levee Setback Alternative would result in significant impacts to agricultural resources. Assuming a levee setback of 130 feet over a length of approximately 3 miles, this alternative would result in the permanent conversion of approximately 50 acres of prime agricultural soils, nearly all of which are in intensive production. Additional soils may be converted during reconstruction of the UPRR, 22nd Street, and Highway 1 bridges. It would also result in the need to permanently relocate agricultural infrastructure which is located adjacent to the southern levee, including large barns, warehouses, storage yards for irrigation pipe, etc. There are currently three agricultural crossings of the Arroyo Grande Creek channel and these would need to span the new 200-foot wide channel as well, which could prove more difficult for agricultural machinery than the existing 70 foot crossings. This alternative would have more significant impacts to agriculture resources compared to the proposed project. Impacts would be Class I, significant and unavoidable.

5.5.2.2 Air Quality

The Levee Setback Alternative would require more extensive upfront construction than the proposed project. The northern levee would need to be constructed as proposed, but the southern levee would need to be reconstructed entirely. A new levee with a cross-sectional area of approximately 525 square feet (15 foot top width, 60 foot base width, 14 feet tall), approximately 3 miles (15,800 feet) long, would require more than 300,000 cubic yards of material. The existing southern levee could be the source of much of this material. Additional construction and fill would be required for the channel crossings.

This alternative would not require sediment management over the long-term however, so all construction-related air emissions would be short-term. Further, the project would need to be constructed between rainy seasons as it requires the southern levee to be removed completely, exposing the properties to the south to a temporary increased risk of flooding. Because of a relatively quick construction schedule and significant earthmoving required, the Levee Setback Alternative would result in more significant construction-related air quality emissions (combustion and particulate) than the proposed project. Emissions are likely to exceed the SLOAPCD thresholds discussed in the Air Quality section and require substantial mitigation, potentially including offsite mitigation. Other impacts associated with demolition of structures would be less than significant with mitigation, similar to the proposed project.

Figure 5-1. Alternative 2 – Levee Setback Alternative

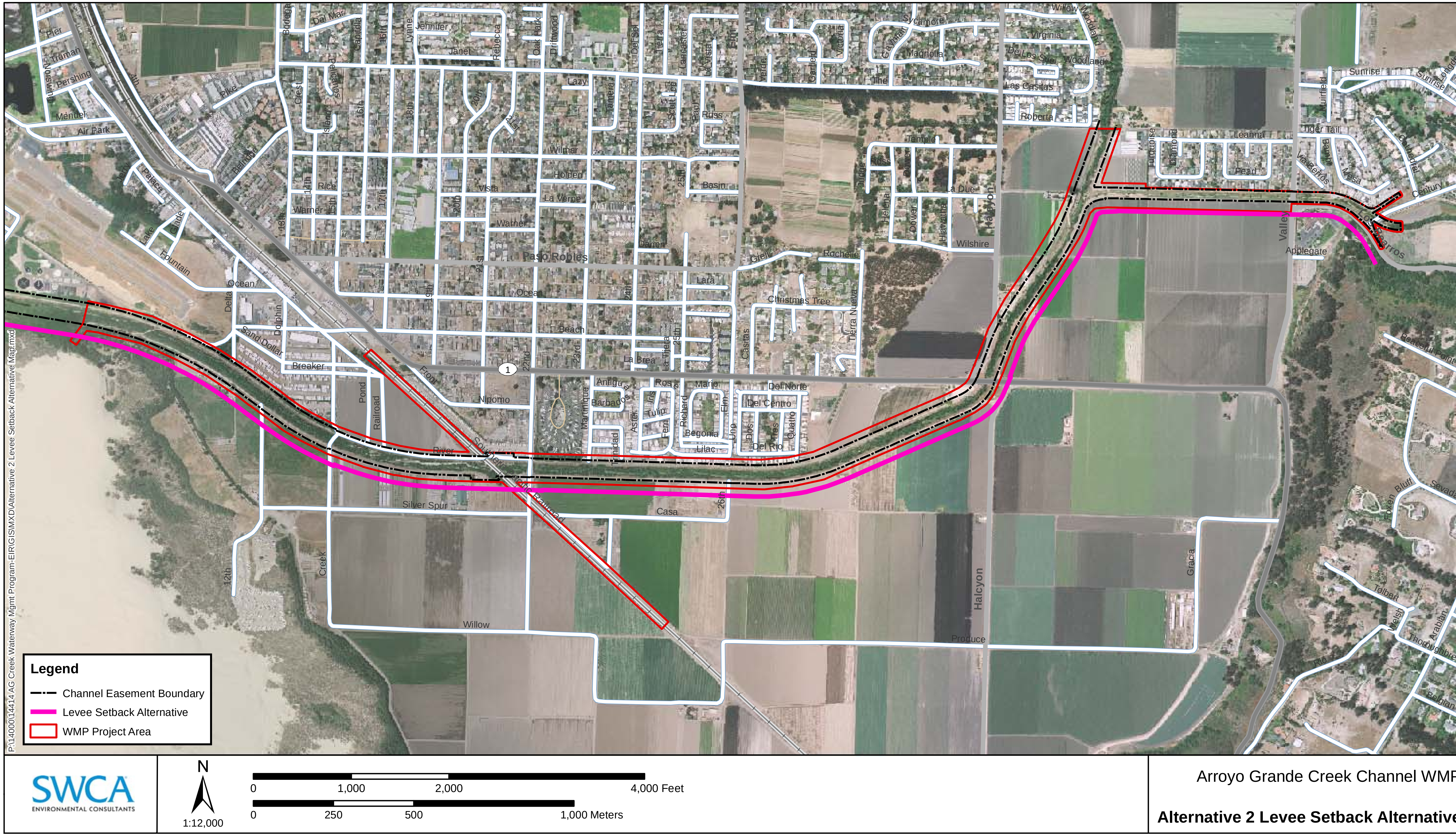

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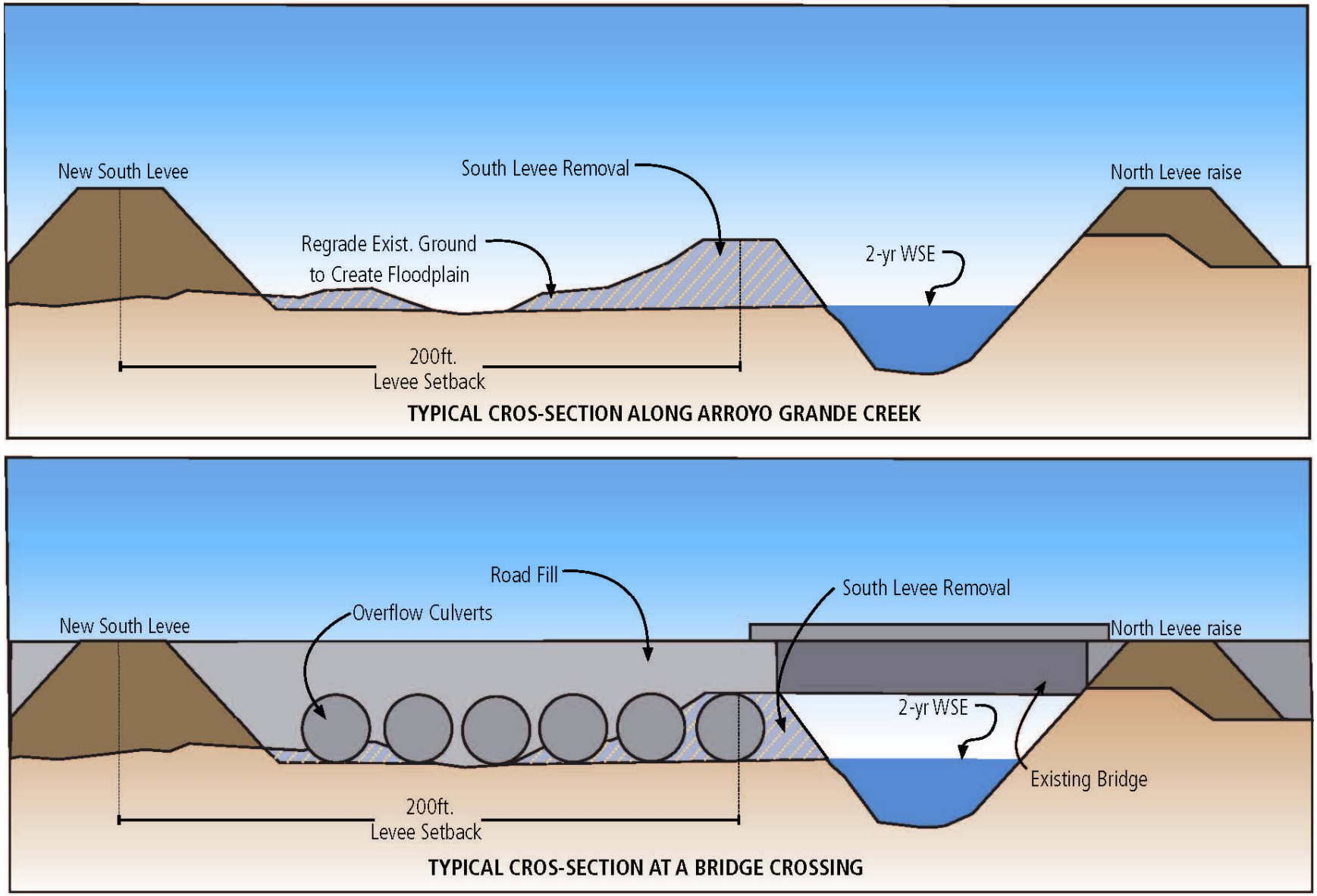
Figure 5-2. Levee Setback Alternative - Conceptual Cross Section



5.5.2.3 Cultural Resources

The Levee Setback Alternative would include a larger footprint to the south than the proposed project. However, there are no additional structures not considered in the analysis that would qualify as historic. Also given that the area south of the levee is floodplain and most likely part of the old Arroyo Grande Creek channel and adjacent floodplain, prehistoric resources are unlikely to remain. Cultural resource impacts would be less than significant, similar to the proposed project.

5.5.2.4 Flooding, Hydrology, and Water Quality

The concept behind the Levee Setback Alternative is that flood protection could be provided long-term in a manner that could potentially avoid long-term sediment or vegetation management in-channel. This alternative would in effect reclaim portions of the original floodplain disconnected from Arroyo Grande Creek when the levees were originally constructed. It would potentially result in a more active channel where various aquatic habitats such as pools, riffles, and bars may form naturally.

The Alternatives Study suggested that this alternative could provide 50-year flood protection and wouldn't require long-term sediment management, because the width would allow for a partial floodplain to develop within the channel; and therefore it wouldn't be necessary for sediment to be "flushed" to the Pacific Ocean during large events. As a result, sediment loads in the creek may be reduced, improving water quality (reducing turbidity) in comparison with the proposed project.

While the Levee Setback Alternative appears to restore the channel to a more natural condition, it is not a total restoration; the channel would still be a leveed, flood protection facility. In the event that the extended channel crossings at the UPRR, 22nd Street and Highway 1 utilized culverts, as depicted in Figure 5-2, it may be necessary to periodically maintain the culverts to ensure they didn't clog with debris or sediment. The effect that this alternative would have on the lagoon downstream is also unknown at this time. Additional modeling would be required to resolve these issues.

In general this alternative would likely have reduced flooding, hydrologic, and water quality impacts when compared to the proposed project. Impacts would be less than significant with mitigation. Mitigation would be focused on the preliminary infrastructure improvement efforts, but monitoring of the new channel and periodic management may also be necessary and could not be entirely ruled out at this time.

5.5.2.5 Geology and Soils

Given that the Levee Setback Alternative relocates the south levee 130 feet to the south, the geologic and soil conditions affecting the alternative are the same as the proposed project. The constructed levees would be subject to the same codes, regulations, and engineering standards as the proposed project. Seismic safety, erosion, expansive soils, etc .would all need to be considered during the design and permitting process. This alternative would require construction of significant channel crossings and therefore, special consideration would have to be given to the potential of the in-channel culverts and/or bridge abutments do not result in unintended scour or erosion of the levees or other infrastructure. Because this alternative would require more substantial infrastructure improvements, the number of mitigation measures may be more intensive and touch on a broader range of issues (for example, construction of an entirely new levee as opposed to raising an existing levee). Still, impacts would most likely be

less than significant through compliance with existing engineering standards and ordinance requirements.

5.5.2.6 Hazards and Hazardous Materials

The Levee Setback Alternative would require construction within the UPRR right-of-way, and as a result the potential to encounter hazardous materials associated with the railroad use would be similar to the proposed project. Other hazards impacts such as worker exposure to agricultural chemicals and the potential to encounter buried utilities would be similar or greater than the proposed project as construction would disturb more soils on active agricultural lands and potentially require the demolition and relocation of facilities where hazardous agricultural chemicals have been stored and are frequently used. Potential impacts would be more intensive than the proposed project, but still most likely less than significant with mitigation.

5.5.2.7 Transportation and Traffic

This alternative would have more intensive, short-term impacts to the local transportation network. In addition to the truck traffic associated with construction activities, which would be more substantial than the proposed project due to the increased earthwork, the Levee Setback Alternative would also require the closure of the Highway 1 and 22nd Street bridges for a period of time while new channel crossings are constructed. Impacts would be more intensive than the proposed project, but would remain less than significant with mitigation (i.e., traffic management plan) similar to the proposed project.

5.5.3 Levee Raise and Vegetation Management Alternative

The Levee Raise and Vegetation Management Alternative could also be considered a “reduced project” alternative as it includes the same levee raise and vegetation management components as the proposed project, but does not include the sediment management components. This would reduce activity in the channel, particularly that associated with heavy machinery, potentially avoiding some sensitive species and wetland impacts. By not including the sediment management component, flood protection resulting from the project would also be reduced. Based on information in the Alternatives Study, 34-year protection would be provided, although that protection would be reduced to 16-year protection if 2-feet of freeboard is also desired.

The levee raise components, vegetation management, and secondary components would be identical to the proposed project, and therefore potential impacts would be as well. This alternative would technically meet the project objectives similar to the proposed project, although 20-year protection would not be provided as effectively. The projects ability to enhance sensitive species habitat may also be more limited as the log and habitat structures are proposed as part of the sediment management component of the project.

5.5.3.1 Agricultural Resources

This alternative would result in agricultural resource impacts similar to the proposed project, as the level same level of temporary and permanent disturbance on and outside the levees would be required. This alternative would not result in any new impacts not discussed in the Agricultural Resources chapter of this EIR. Impacts would be less than significant with mitigation.

5.5.3.2 Air Quality

The Levee Raise and Vegetation Management Alternative would have similar air quality impacts as the proposed project, although it would result in reduced construction-related impacts because the sediment management earthwork and truck traffic would not occur. Impacts would be less than significant with mitigation.

5.5.3.3 Biological Resources

The Levee Raise and Vegetation Management Alternative would still result in a significant loss of riparian habitat and impact sensitive wildlife species. Because it does not involve the sediment management component of the WMP the use of heavy machinery in or near the channel would be limited to the levee raise components of the WMP. As a result temporary impacts to sensitive wildlife species may also be reduce, and the potential for "take" of those species may also be reduced compared to the proposed project. However, removing the sediment management component also reduces the opportunities to enhance aquatic habitat for steelhead as it included installation of the log structures, which are intended to create backflows, eddies, and localized scour, mimicking undercut stream banks.

Generally the impacts and mitigation measures for this alternative would be similar to the proposed project, although because the log structure and secondary channel habitat enhancements would not be included, it would be necessary to focus more of the mitigation efforts offsite.

5.5.3.4 Cultural Resources

No known prehistoric or historic resources were identified in the proposed project area. This alternative would have a similar or reduced project area compared to the proposed project and therefore the cultural resource impacts would be less than significant.

5.5.3.5 Flooding, Hydrology, and Water Quality

This alternative would include two of three measures proposed to improve flood capacity within the channel (vegetation management and the levee raises). Based on the analysis in the 2006 Alternatives Study, this alternative would provide approximately 16 year flood protection with 2-feet of freeboard (34 year with no freeboard). The initial sediment removal was added to the project to attain the 20-year flood protection goals of Zone1/1A. The excavation would increase flood capacity directly by increasing the volume of water which could be accommodated within the channel, and is also designed to allow for the channel to more easily transport sediment through the channel, ensuring that the ongoing sediment removal activities would be minimized in the long-term. Without the sediment management component, sediment transport would occur as it does currently.

Impacts to water quality from construction activities would be similar to the proposed project as the levee raise components and vegetation management would still occur. Impacts and mitigation measures in this EIR developed for the proposed project would reduce impacts to a less than significant level.

5.5.3.6 Geology and Soils

This alternative would be subject to the same codes, regulations, and engineering standards as the proposed project. Seismic safety, erosion, expansive soils, etc. would all need to be considered during the design and permitting process. The impacts identified in the Geology and Soils section of the EIR were not specific to the sediment management component, but were instead a result of the levee raise components of the project. Impacts would be similar to the proposed project - less than significant with mitigation.

5.5.3.7 Hazards and Hazardous Materials

The Levee Raise and Vegetation Management Alternative would include the UPRR bridge raising, and as a result the potential to encounter hazardous materials associated with the railroad would be similar to the proposed project. Other hazards impacts such as worker exposure to agricultural chemicals and the potential to encounter buried utilities would also be similar to the proposed project as construction would occur in roughly the same footprint and in the same manner. Impacts would be less than significant with mitigation.

5.5.3.8 Transportation and Traffic

This alternative would have impacts similar to the proposed project. Impacts would be temporary and related to construction of the infrastructure improvements, including the levee raises and the UPRR bridge raising. Impacts would be somewhat less intensive than with the proposed project because the initial sediment removal and long-term management would not be required. Impacts would be less significant with mitigation.

Table 5-1. Project Alternatives Impact Analysis

Environmental Resource	Proposed Project	Alternatives		
		1. No Project	2. Levee Setback	3. Levee Raise and Vegetation Management
Agricultural Resources				
Air Quality				
Biological Resources				
Cultural Resources				
Flooding, Drainage and Water Quality				
Geology and Soils				
Hazards/Hazardous Materials				
Transportation and Circulation				
	Impacts unavoidable and/or requiring intensive mitigation measures.			
	Less than significant impacts with application of substantial mitigation.			
	Less than significant impacts with standard mitigation measures/ordinance compliance.			
	No significant impacts.			

5.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The alternative that most effectively reduces impacts while meeting project objectives should be considered the "environmentally superior alternative." In the event that the No Project Alternative is considered the environmentally superior alternative, the EIR is also supposed to identify an environmentally superior alternative among the other alternatives.

The No Project Alternative would result in the fewest significant impacts among the alternatives, including the proposed project. Impacts to all resources other than biological resources and agricultural resources would be avoided by the No Project Alternative, and agricultural resources impacts would be less than significant with minimal mitigation recommendations. This alternative could result in additional impacts in the event that significant sediment accumulated in the channel, as that would exacerbate flooding and may affect sensitive habitat in the channel and the lagoon.

Alternative 2, the Levee Setback Alternative, would have significantly greater impacts to agricultural resources. This alternative would permanently convert approximately 50 acres of highly productive soils along the levees, and some additional conversion resulting from the need to lengthen bridges at 22nd Street, the UPRR railroad, and Highway 1. This alternative would require relocation of existing agricultural infrastructure including drainage systems, storage areas, fencing, warehouses, power systems, and interior access roads. During construction this alternative would result in incompatibilities with agricultural operations similar to the proposed project. It may be more difficult for growers to maintain access across the wider channel. This alternative may also have more significant Air Quality impacts, due to the increased earthwork involved, although impacts could be mitigated.

Alternative 2 would result in significant short-term biological resource impacts associated with the removal and reconstruction of the southern levee. However, over the long-term this alternative would potentially provide a more substantial area for the development of wetland and riparian habitats. It is likely that the channel would provide enough capacity and that sediment removal would not be necessary, although some thinning of vegetation may be necessary given the history of willow growth in the channel. Because of the increased area for habitat and the reduced sediment and vegetation management, the levee setback alternative would result in significantly fewer biological resource impacts when compared to the proposed project.

This alternative could potentially provide similar or greater flood protection than the proposed project, and based on the size of the new channel, it would accommodate short and mid-term sediment accumulation without any changes to the level of flood protection. This alternative would appear to result in a more "natural" drainage pattern, reducing long-term management requirements; however it would not necessarily reduce flooding, drainage, and water quality impacts when compared to the proposed project, as both would be less than significant. And as with the proposed project this alternative would not increase or decrease surface water runoff, interfere with groundwater recharge, or exceed the capacity of stormwater systems. Other impacts, including Geology and Soils and Cultural Resources would also be similar to the proposed project.

After review of Alternative 3, the Levee Raise and Vegetation Management Alternative, it was determined that the alternative would not avoid or significantly reduce the biological resource impacts associated with the proposed project. Use of heavy machinery and activity within the channel would be reduced; however, the vegetation management component of the project would still result in similar impacts to jurisdictional features and wildlife species and require

substantial mitigation on and offsite mitigation over the short and long-term. The alternative would have impacts similar to the proposed project for other issue areas as well.

Based on the analysis above and Table 5-1 an Environmentally Superior Alternative is not evident. The proposed project would result in significant impacts to biological resources, including jurisdictional area and sensitive wildlife over the short long term. The measures included in the WMP and developed for this EIR would reduce impacts to less than significant level, although it will take a long term commitment of resources and intensive monitoring efforts to ensure mitigation is fully implemented.

The Levee Setback Alternative would avoid many of the significant biological resources impacts associated with the proposed project, but would result in significant and unavoidable impacts to agricultural resources. It would require the conversion of prime farmland on a large scale and require relocation of significant portions of existing agricultural infrastructure. Both the proposed project and the Levee Setback Alternative would potentially improve long-term productivity of agricultural resources by reducing flooding potential.

Due to the biological resources which exit in the channel and the agricultural resources adjacent to the channel, neither the proposed project nor the Levee Setback Alternative could feasibly avoid impacts. The difference therefore between the two alternatives is the potential for feasible mitigation. Impacts to biological resources can be mitigated to a less than significant level through the application of intensive compensatory mitigation. For example, the Army Corps of Engineers policy is “no net loss” of wetlands. This policy allows for wetlands to be impacted (if avoidance is not feasible) as long as wetlands are created or enhanced in return. Prime agricultural soils on the other hand are considered a finite resource. Mitigation measures can be proposed to address impacts; however ultimately, especially when considering the scale of the conversion which would occur with the Levee Setback Alternative, impacts would be considered significant and unavoidable. Because of this, the proposed project is the environmentally superior alternative.