CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT SUMMARY

The Arroyo Grande Creek Channel Waterway Management Program (WMP; proposed project) is being developed through a cooperative effort between the community, the Coastal San Luis Resource Conservation District (RCD) and the San Luis Obispo County Flood Control and Water Conservation District (District). The project is located along the lower reaches of Arroyo Grande Creek, from near the intersection of Los Berros Creek to the Arroyo Grande lagoon, and along Los Berros Creek from Century Lane to the confluence with Arroyo Grande Creek. This area is within District "Zones 1 and 1A" (Zone 1/1A).

The County of San Luis Obispo Department of Public Works (County) is developing the WMP and preparing California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation, including an Environmental Impact Report (EIR), to obtain the necessary federal and state permits for implementation. The Draft WMP which is included as Appendix B of this EIR includes the following components:

1. Manage riparian vegetation annually to maintain a composite roughness of 0.040 within the flood control reach, fill existing gaps in the riparian corridor vegetation, and encourage species diversity by planting riparian tree species;

2. Remove sediment to create secondary channels that could be self-maintaining, and monitor annually to evaluate future sediment deposition and the need for annual maintenance of accumulated sediments;

3. Raise levees throughout the flood control channel to achieve channel capacity for up to 10-year flood flows; and

4. Eventually raise levees throughout the flood control channel to achieve channel capacity for up to 20-year flood flows.

2.2 PROJECT LOCATION

The proposed project is located within San Luis Obispo County, California, near the City of Arroyo Grande and the community of Oceano (refer to Figure 2-1). The project area is located entirely within the unincorporated areas of San Luis Obispo County. The project area is a linear corridor with two segments: (1) beginning on Arroyo Grande Creek 0.14 mile upstream of the confluence of Los Berros Creek and continuing downstream to the upper edge of the Arroyo Grande lagoon at the Pacific Ocean, and (2) beginning at the Century Lane Bridge on Los Berros Creek and continuing downstream to the confluence with Arroyo Grande Creek (refer to Figure 2-2). This area is within District Zone 1/1A. The total length of the flood control channels addressed in the WMP is approximately 3.5 miles.

Figure 2-1. Project Vicinity Map

Figure 2-2. Project Location Map

2.3 PROJECT BACKGROUND

The lower Arroyo Grande Valley has a long history of flooding and severe damage to agricultural and residential lands. Levees were built along lower Arroyo Grande Creek and the lower portion of Los Berros Creek was diverted in 1961 to provide flood control for the adjacent Cienega Valley. Lopez Lake is a water supply reservoir that also provides the added benefit of additional flood storage for the uppermost portion of Arroyo Grande Creek.

In February 2005, the Department of Water Resources (DWR) issued a Statement of Necessary Work with the goal of initiating maintenance work on the channel in July 2005. As mandated by State Water Code, the intended Work Plan was the same as the plan developed as part of the 1955 Arroyo Grande Creek Flood Control Project, which requires maintaining the channel by restoring it to its original 1958 design. Without Water Code provisions to study or implement alternative flood control designs, DWR was faced with a difficult and expensive regulatory permitting process that would likely result in costly mitigation requirements related to habitat loss for federally-listed species. These costs would have been paid locally through a Zone 1/1A property assessment process.

In response to impending assessments estimated by DWR, the Zone 1/1A Advisory Committee comprised of agriculturalists and other local residents and various stakeholders, actively lobbied the County Board of Supervisors to restore funding for a study of flood control alternatives, which had been dropped with the decision to relinquish responsibility to DWR in 2003. In June 2004, the District approved release of funding to Coastal San Luis RCD to conduct the “Arroyo Grande Creek Erosion, Sedimentation and Flooding Alternatives Study” (Alternatives Study). It was prepared in 2006 by Swanson Hydrology + Geomorphology. The Alternatives Study provides an in-depth focus on erosion sources, sedimentation, and hydrology as they relate to recurring flooding in the lower reaches of the creek.

Following completion of the Alternatives Study, the Zone 1/1A Advisory Committee selected a preliminary preferred project alternative that was considered feasible within anticipated funding limits. The selected approach was to pursue vegetation and sediment management within the channel, and a phased implementation of Alternative 3a, at a minimum, as funding within the local flood control district became available. Alternative 3a would provide flood protection up to the 10-year return period and would most likely be implemented in several phases. Alternative 3c would also be pursued as funding allows. Alternative 3c includes all elements of Alternative 3a, and additionally raises the levees and Union Pacific Railroad (UPRR) Bridge to provide flood protection up to the 20-year return period.

2.4 PROJECT OBJECTIVE

The primary objective of the WMP is 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.

2.5 PROPOSED PROJECT

The WMP is included as Appendix B in this EIR but is also summarized in this section of the EIR. Implementation of the WMP would include three distinctive components:

1. Vegetation Management
2. Sediment Management
3. Levee Raising (Alternatives 3a and 3c)

In addition there are a number of known secondary components resulting from implementation of the levee raising components of the project. These include: (1) raising of the railroad bridge, (2) raising and/or relocating a portion of Halcyon Road, (3) making improvements to the 22nd Street Bridge, and (4) potentially relocating structures located within the Arroyo Grande Channel maintenance easement that encroach on proposed improvements.

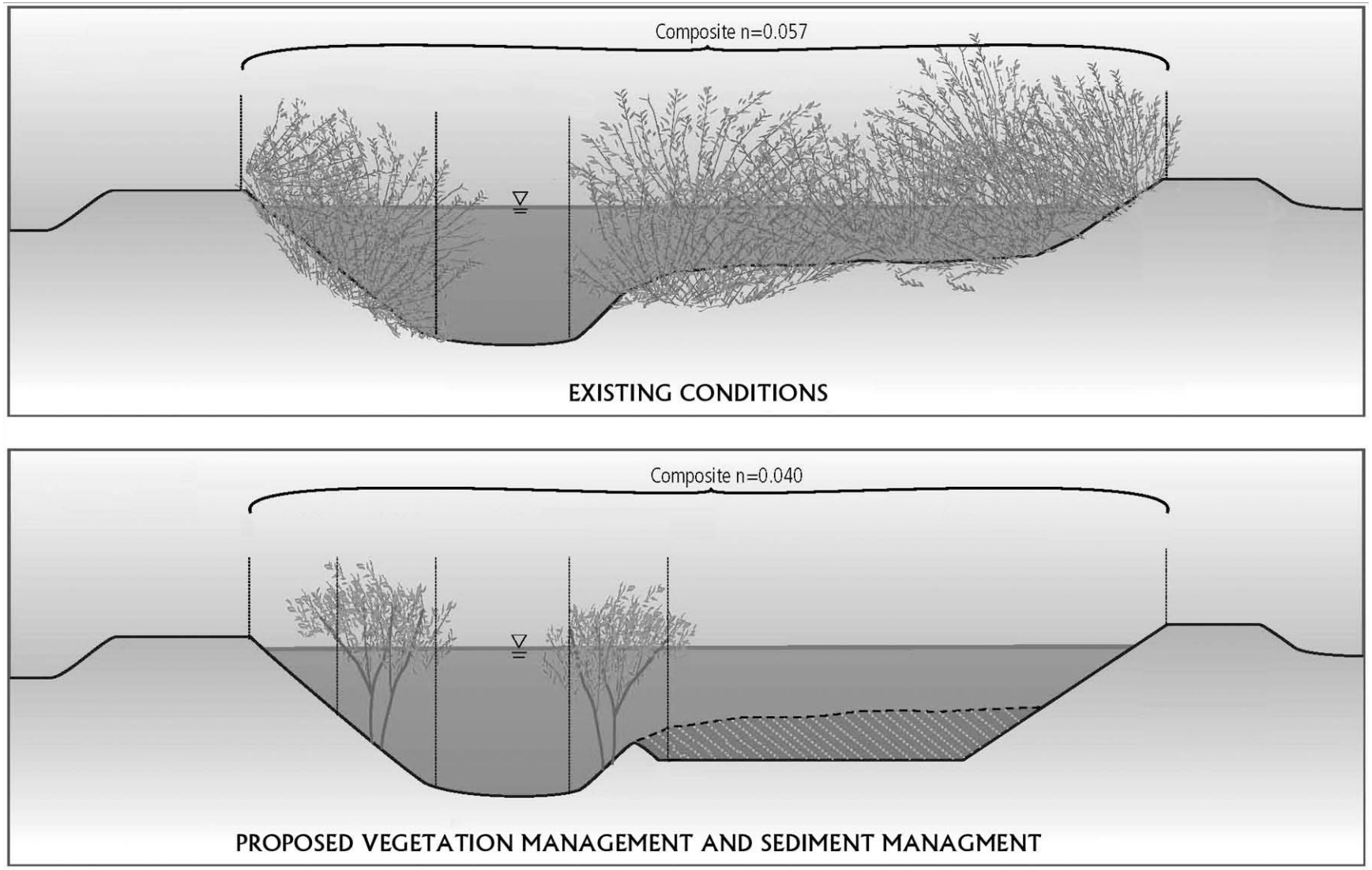
2.5.1 Vegetation Management

The vegetation management program would consist of maintaining a 10-foot riparian buffer on both sides of the low-flow channel to provide riparian habitat and streamside cover to protect aquatic habitat. The management would result in an approximate 40-foot riparian corridor, not including canopy width, although this width could vary depending upon the width of the channel and the location of the low-flow channel in relation to the levees. The corridor would also act to maintain a bankfull channel that has developed over the last several years by providing root strength along the low flow channel margins. All vegetation outside of the buffer would be removed completely to allow high flows to access secondary channels and provide for increased conveyance and flood capacity (refer to Figure 2-3).

Willows present within the buffer would be limbed up to reduce cross-sectional roughness but still provide adequate stream shading and riparian habitat. Root balls within the riparian buffer would be left intact to encourage spring/summer growth along the bankfull channel edge. Gaps in the riparian buffer would be revegetated with native riparian species including cottonwood, sycamore, and willow. Cottonwood and sycamore would be planted at random along the length of the flood control channel within the buffer to encourage long-term diversity in the riparian canopy.

Vegetation management would be conducted as often as necessary to maintain a roughness coefficient of 0.04 (current roughness is approximately 0.057 on average) through an adaptive management approach that would include reconnaissance surveys and site visits with regulatory agency staff. Based on past experience, vegetation management would be repeated approximately every one to three years, depending on the amount of regrowth. Vegetation management would occur as late as possible in the summer and fall of each year to maximize stream shading during the warmer summer months while avoiding impacts to steelhead. Regrowth of willow is expected in late winter and spring providing low, overhanging vegetation during critical months for steelhead rearing.

Figure 2-3. Proposed Vegetation and Sediment Management



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2.5.2 Sediment Management

2.5.2.1 Short Term Removal

The Arroyo Grande Creek flood control channel currently lacks the secondary channels that are found in more natural, low gradient stream environments. Therefore secondary, or overflow channels, would be excavated into areas in the channel that have accumulated excess sediment in bars and terraces resulting in reduced flood capacity (refer to Figure 2-3). At strategic locations, the excavated secondary channels would be connected with the primary channels to allow for complex flow conditions that would encourage scour and sediment transport, and reduce the need for future sediment removal. No sediment in the primary channel would be excavated.

Large wood structures would be placed at the confluence of each active and secondary channel connection to enhance aquatic habitat (refer to Appendix B). Approximately 35 large wood structures are proposed for the project, to promote pool scour, encourage sediment sorting, and provide deep pools and cover habitat for steelhead and red-legged frog. It is currently estimated that this project component would require the removal of approximately 21,000 cubic yards of sediment from the Arroyo Grande Creek and Los Berros channels. Sediment would be hauled by truck to an approved disposal site. The disposal site had not been identified at this time. Heavy machinery would need to operate in the channel during initial sediment removal and during construction of the log structures.

2.5.2.2 Long-term Removal

Some maintenance (sediment removal) of the secondary channels would be required over the long-term because of the likelihood that significant quantities of fine material would be deposited in the channels. Annual cross-section monitoring would assess the performance of the channel in moving supplied sediment. Cross-sections would be prepared each year following the rainy season. The hydraulic model would also be rerun annually with updated cross-sections and roughness information to assess channel capacity.

The volume of sediment to be removed would vary from year to year, would be considerably less than the initial removal, and in some years may not be required at all. Maintenance of the secondary channel would consist of removal of excess sediment by an excavator located on the top of the levee, and a long-reach bucket would be used to scoop up sediment from designated areas and deposit it in a dump truck to take the sediment off-site to a County-approved disposal area. Heavy machinery would most likely not need to access the channel during the annual sediment removal.

2.5.3 Levee Raising

The originally constructed flood control channel was believed to provide flood protection from a 50-year storm, but due to challenges in maintaining the channel, such as inadequate funding and regulatory requirements, as well as changes in the hydrology of the watershed associated with significant changes in land use, the level of flood protection has been reduced. It is estimated that the channels can currently provide flood protection from only a 4.6 year storm. This means that the channel has the probability to overtop once every 4.6 years.

The proposed project includes raising the levees in two stages along portions of the Los Berros Creek Diversion Channel and along Arroyo Grande Creek Channel from the Los Berros confluence to the lagoon. Levee raising would most likely be conducted in phases as funding is

available. The levees ultimately would be raised up to 2.5 feet above the 20-year storm flows (i.e., "freeboard"). Although overtopping of the levees is not desired at all, it is more desirable to overtop to the south where flood waters would inundate agricultural fields and the risk of loss of life can be reduced, rather than in the north, where housing, the airport, and a wastewater treatment plant are located. To that end, the north levee is currently approximately 4-6 inches higher than the south levee, and would remain so as a result of the proposed project.

In general, levee slopes would be constructed at a ratio of 2:1 (horizontal:vertical) on the channel side of the levees and 1.5:1 on the outside of the levees due to the limited levee easement area and number of existing structures encroaching on the levees. Retaining walls may also be necessary in some places to minimize the levee footprint due to the proximity of existing structures to the base of the levee. Retaining walls would not be located within the channel. The levees would maintain a minimum top width of 15 feet. Refer to Figures 2-4a and 2-4b for the approximate area of disturbance associated with the proposed project.

2.5.3.1 Short-term Levee Raise (Alternative 3a)

The first phase of the levee raising (Alternative 3a) would raise the levees to an elevation that would, along with the vegetation and sediment management discussed above, provide up to 10-year flood protection with freeboard. This raise would focus on "low spots" along the existing levee. The levees would need to be raised in various locations from approximately 6 inches to as much as 2 feet. This component would require approximately 14,350 cubic yards of fill material and would be implemented over a period of one or more years, depending on available funding.

2.5.3.2 Longer-term Levee Raise (Alternative 3c)

The longer term levee raise (Alternative 3c) would achieve 20-year flood protection with up to 2.5-feet of freeboard for those parcels included within the special maintenance assessment district. The average levee raise required to implement this component would be approximately 2.8 feet from existing grade, with a maximum raise necessary in some places of approximately 5 feet. These heights would be reduced accordingly if Alternative 3a is implemented first. It is currently estimated that this component would require a total of approximately 67,000 cubic yards of fill, less if Alternative 3a is implemented first. Refer to Figures 2-4a and 2-4b for more information regarding the approximate location and extent of the proposed levee improvements.

2.5.4 Secondary Components

In some cases, achieving the goals of levee raise Alternatives 3a (10-year protection) and 3c (20-year protection) would require improvements other than vegetation management, sedimentation management, and the levee raise. These are discussed below.

2.5.4.1 Union Pacific Railroad Bridge Replacement

The existing railroad bridge, located downstream of the 22nd Street bridge, hangs low in elevation in the Creek and creates a hydraulic constriction in levee raise Alternative 3c. The bridge would need to be raised or replaced at a higher elevation (approximately 5 feet) to relieve the constriction. Raising the bridge also necessitates raising the railroad tracks approaching the bridge. The raise of the approaching railroad bed would have to begin approximately 1,700 feet north and 2,400 feet south of the bridge, according to conceptual plans prepared by UPRR in 2006 (refer to Figure 2-4a for approximate area of disturbance). The area of disturbance would be approximately three acres (4,100 feet by 30 feet). So that railroad service is not disrupted, a

parallel but temporary track would need to be installed. This track is known as a “shoefly” and would allow for uninterrupted railroad service during the bridge raising. The area of disturbance for the shoefly may be approximately the same as that necessary for the bridge raising and would be located immediately west of the current tracks. It would occur mostly within the existing railroad right-of-way. This component of the project may result in earthwork totaling approximately 135,000 cubic yards (90,000 to construct and remove the shoefly, and 45,000 to construct the permanent raise). These construction improvements may require work within the creek channel.

2.5.4.2 Halcyon Road

Halcyon Road was built at an elevation roughly equal to the top of the bank of Arroyo Grande Creek. North of Highway 1, the northwest levee visually disappears becoming part of Halcyon Road. The levee raise for alternative 3c would encroach into a portion of Halcyon Road north of Highway 1 for approximately 600 feet (refer to Figure 2-4b). Either the road would need to be shifted to the west, or the ground would need to be elevated to achieve the flood protection goal under levee raise alternative 3c. The road would need to be raised along this length approximately 5.5 feet or flood walls could be installed in the channel to an equivalent height.

The Department of Public Works is currently working on plans to improve the Halcyon Road/Highway 1 intersection separately from the WMP, but it is expected that the final proposed improvements would be coordinated with the implementation of the WMP to minimize the work required and disturbance of the flood control channel. The Halcyon Road project may result in shifting Halcyon Road to the west, and if this project occurs first, it will provide space for the levee improvements to occur.

2.5.4.3 Structure Encroachment

There are a number of locations along Arroyo Grande Creek Channel where structures have been constructed within the right-of-way. Many of these structures would be impacted by the construction of Levee Raise Alternative 3a and/or 3c. These structures include water tanks, stalls, a barn, propane tanks, and a mobile home, among others. The degree to which they encroach into the right-of-way varies. Some would only be affected by work on Alternative 3c, for example. The actual encroachment issues will not be known until the construction plans have been further refined. It may be possible to design around these structures through the use of retaining walls or other alternate design techniques.

2.5.4.4 22nd Street Bridge Modification

The 22nd Street Bridge is considered a "perched" bridge. This means that if water is allowed to flow over the bridge it will not continue to flow perpendicular to the bridge deck but would turn and flow parallel, potentially creating flooding to adjacent properties. Alternative 3a would only require the installation of a short length of concrete floodwall along the north side of the upstream levee. As part of alternative 3c, the project would include replacing the open bridge railing with a solid concrete barrier on the upstream side of the bridge. It would also require construction of concrete floodwalls on both the north and south levees, to keep floodwaters in the channel. It should be noted that the 22nd Street Bridge, unlike the railroad bridge does not create a hydraulic constriction.

2.5.5 Earthwork

Total approximate earthwork required to implement the components of the project are shown in Table 2-1.

Table 2-1. Earthwork, By Component

Project Component	Earthwork (yds.3)
Sediment Removal	21,000
Alternative 3a	14,350
Alternative 3c	67,000
UPRR Bridge Raise	135,000
Annual Sediment Maintenance	< 2,000

2.6 REQUIRED PERMITS

Table 2-2 shows the permits and responsible agencies for the proposed project. A coastal development permit would be required as the downstream end of the project is located in the Coastal Zone. Also, a portion of the upstream end of Los Berros Creek channel is located within the City of Arroyo Grande limits.

Table 2-2. Responsible Agencies and Associated Permits

Permit	Responsible Agency
Conditional Use Permit/Coastal Development Permit	County of San Luis Obispo Department of Planning and Building
Conditional Use Permit and Grading Permit	City of Arroyo Grande Community Development Department
Section 401, Stormwater Pollution Prevention Plan	Regional Water Quality Control Board
Section 404	Army Corps of Engineers
Section 1602 Streambed Alteration Agreement	California Department of Fish and Game
Encroachment Permit	California Department of Transportation

2.7 PROJECT TIMING AND PHASING

Due to anticipated funding mechanisms and U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS) involvement, the project will also go through National Environmental Policy Act (NEPA) review prior to construction. It is estimated that the environmental review and permitting process may be complete to allow for the implementation of some components of the WMP in the fall of 2010. However funding for the larger components, including the Alternative 3c levee raise, may not be available for many years. Sediment and vegetation management would occur annually as necessary.

Figure 2-4a. Project Area

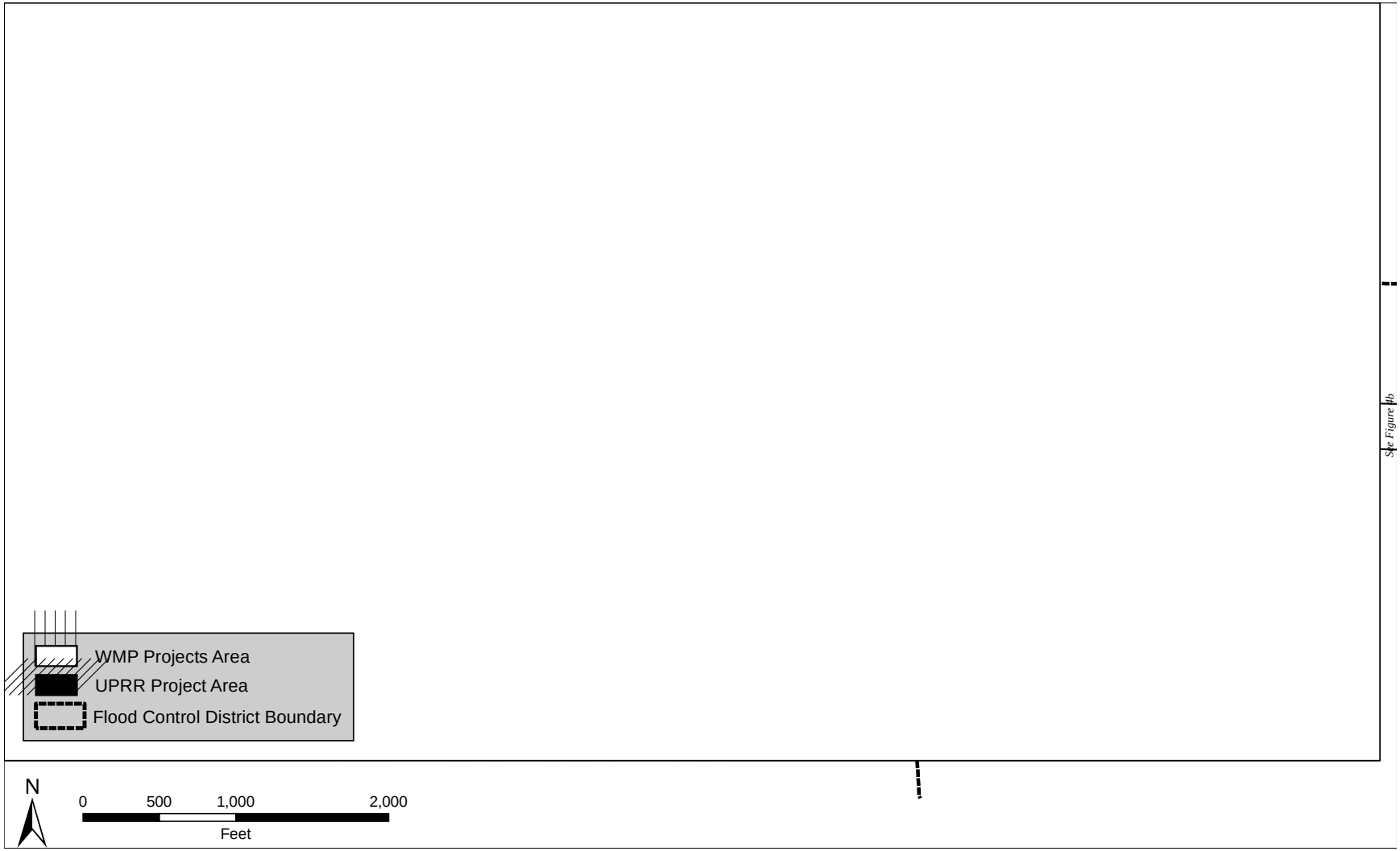

Figure 2-4b. Project Area

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