

Chapter 3 Site Selection Criteria

The compensatory mitigation package presented in this MMP seeks to establish, re-establish, and rehabilitate self-sustaining, high-functioning wetlands and other waters in perpetuity in Little Lake Valley. Nonjurisdictional compensatory mitigation for federally listed fisheries and state-listed plants is also described at the request of USACE. These actions will ensure continued and improved functions and services of the distinctive aquatic resources in Little Lake Valley. This chapter describes the background and process of selecting compensatory mitigation sites for each sensitive resource.

3.1 Background

A primary goal of compensatory mitigation is to offset unavoidable impacts on wetlands and other waters. The process of selecting suitable mitigation sites to offset the impacts of the project has considered many factors.

The primary consideration was the practicability of undertaking mitigation efforts at each potential site (e.g., appropriate soils, hydrology, access for construction equipment). The amount of wetland establishment available was also a key factor because much of Little Lake Valley is unavailable for wetland establishment because it already contains jurisdictional wetlands. Selection criteria were also identified in consideration of the need to mitigate impacts on multiple sensitive biological resources on a limited number of parcels. However, the management requirements of state-listed plants have resulted in further constraining opportunities for wetland rehabilitation. The criteria listed below were also considered during the site selection process:

- Presence of slowly draining soils needed for successful wetland establishment and rehabilitation.
- Need to ensure the self-sustainability of any established or rehabilitated wetlands by selecting mitigation sites that would have the greatest probability of long-term success.
- Degree of landscape and hydrological manipulation required to construct the mitigation project, and the effects that such manipulation could have on other resources (natural or cultural) and on neighboring properties.
- General condition of the habitat on a given parcel (e.g., degraded or heavily grazed wet meadow).
- Presence and extent of listed plant species on a given parcel.
- Desire to achieve maximum habitat connectivity and avoid habitat fragmentation by seeking a collection of larger, contiguous mitigation properties to help support habitat diversity, quality, and stability.

Before evaluating potential offsite mitigation parcels on the basis of these criteria, two key limiting factors needed to be addressed: 1) the physical presence of suitable soils and hydrology

needed for successful wetland establishment and rehabilitation , and 2) the willingness of landowners to sell their parcels. These two limiting factors are interconnected, as discussed below.

The rationale behind selection of the current offsite mitigation properties for each jurisdictional resource type addressed in this MMP is described in Sections 3.2 and 3.3. The locations of the offsite mitigation properties are shown in Figures 2-1a and 2-1b. A summary of the rationale behind selection of offsite mitigation properties for state-listed plants is described in Section 3.5. A summary of the rationale behind selection of offsite mitigation properties for other sensitive biological resources will be covered in detail under a separate MMP. The discussion relative to other sensitive biological resources is included to provide the overall context of mitigation actions at the offsite mitigation properties and to satisfy USACE's request.

The rationale behind selection of the onsite other waters locations is discussed in Section 3.3.

3.2 Mitigation Site Selection for Jurisdictional Wetland Establishment

Identification or availability of suitable upland area for wetland establishment presented the most challenging obstacle; identification and availability of suitable opportunities to mitigate impacts on other resource types was less challenging. Because of state and federal policies of no net loss of wetlands, it was necessary to seek upland habitat types that could support wetland establishment. Much of Little Lake Valley has historically supported wetland habitats, a large amount of which has been degraded through historical land use practices, including grazing and agricultural management.

Wetland rehabilitation will be used to compensate for the deficiency of suitable lands for wetland establishment. Wetland rehabilitation actions will result in the development of successional plant communities to replace nonnative invasive managed pasture and haylands in wetlands. Wetland rehabilitation by definition does not contribute to the establishment of new wetlands. In addition, while degraded wetlands may be rehabilitated, on a per-acre basis, they provide only low compensatory mitigation credit and low functions and services lift above current conditions.

Efforts to identify suitable wetland establishment and rehabilitation properties in the Little Lake Valley began with preparation of the project's wetland mitigation feasibility study (2005 Feasibility Study; California Department of Transportation 2005b). The 2005 Feasibility Study was a preliminary investigation of candidate mitigation sites intended to determine whether onsite conditions existed that would support the establishment of wetlands.

Caltrans then identified all parcels owned by willing sellers in the valley. A large-scale reconnaissance-level field investigation of the available parcels was conducted to identify parcels with the greatest potential for wetland establishment. Twenty-six parcels totaling approximately 250 acres of potential establishment were identified as likely candidates for mitigation because they appeared to have slow-draining soils, would not require extensive grading, were contiguous with other candidate properties, were available for sale or easement, and had at least some uplands that could potentially be converted to wetlands.

Therefore, the 2005 Feasibility Study concluded that favorable conditions were present on the 26 candidate parcels and that sufficient wetland establishment opportunities appeared to be available within the Little Lake Valley. Because the cost to study all candidate parcels in detail would have been prohibitive, the 2005 Feasibility Study was conducted at a coarse scale; no formal wetland delineations were conducted at that time. Caltrans held a number of meetings with the resource agencies during development of the 2005 Feasibility Study and provided draft copies for their review and comment. Although no formal written concurrence with the 2005 Feasibility Study was required under the 1994 National Environmental Policy Act/Clean Water Act Section 404 Integration Process Memorandum of Understanding (NEPA/404 MOU), Caltrans received informal verbal concurrence on the adequacy of its findings from the agencies.

Following completion of the 2005 Feasibility Study, a CMP (California Department of Transportation 2006a) was developed in accordance with the NEPA/404 MOU. The final CMP presented a conceptual plan of the overall proposed mitigation strategy for the project, as well as preliminary impact numbers and projected mitigation ratios for each resource based on the best available design information at that time. As with the development the 2005 Feasibility Study, the resource agencies played a collaborative role in the development of the CMP by participating in meetings and reviewing and commenting on draft versions of the document. In accordance with NEPA/404 MOU Appendix A, formal written concurrence was received from USACE, EPA, NMFS, and the U.S. Fish and Wildlife Service (USFWS) that the CMP established an appropriate framework to mitigate project impacts on waters of the United States, including wetlands. The CMP also presented mitigation strategies for other sensitive resources.

Following completion of the CMP and the FEIS/FEIR (California Department of Transportation 2006b), Caltrans initiated a series of more detailed field studies on the candidate mitigation properties; the results were documented in the mitigation parcels report (MPR; California Department of Transportation 2007). The MPR narrowed the search for suitable candidate mitigation properties to 15 parcels, with most of the wetland establishment efforts planned on the Gary and Diane Ford parcels and a large amount of wetland and Baker's meadowfoam preservation planned on the Rutledge parcels. Formal wetland delineations were then initiated on this short list of parcels to confirm their establishment potential.

After completion of the MPR and during the wetland delineation fieldwork, the Ford's and the Rutledge's informed Caltrans that they were no longer interested in offering any of their land for mitigation. In addition, during a February 2008 field review involving Caltrans, staff from multiple natural resource agencies, and wetland restoration experts, it was determined that the Benbow parcels and some of the Ford parcels had limited potential for wetland establishment because most of the properties were already wetlands. This determination further reduced the list of prospective candidate parcels for wetland establishment.

The remaining parcels on the list were concluded to have very limited opportunities for wetland establishment and had been included in the MPR primarily as mitigation for other resources. In March 2008, Caltrans and the resource agencies determined that further efforts should be made to identify additional willing sellers in Little Lake Valley to ensure that no wetland establishment opportunities had been overlooked. Therefore, Caltrans reinitiated contact with parcel owners initially contacted in 2004 during the 2005 Feasibility Study effort and with additional parcel owners who had not responded previously. As a result of this effort, 11 additional candidate

parcels (six parcel owners) were identified for further reconnaissance-level review: Frost, MGC Plasma, Goss, Arkelian, DeFranco, and Carrillo.

Of these parcels, Frost East and West appeared to have the most readily available water sources and to be the most promising for wetland establishment and rehabilitation. At the time, initial wetland delineations conducted on the Frost parcels identified a substantial amount of upland—more than 100 acres—that could provide opportunities for wetland establishment. Later, during the wetland verification process, USACE delineated these areas as wetlands; consequently, they were no longer suitable for wetland establishment. The Frost parcels were desirable because of their continuity with one of the 11 contiguous Ford and Wildlands parcels. Combined, the Frost, Nance, Ford, Wildlands, and Benbow parcels would make up a large contiguous mitigation area (over 1,100 acres) at the north end of the valley.

The remaining parcels analyzed in 2008—Carrillo, DeFranco, Arkelian, Goss, MGC Plasma North, and MGC Plasma Middle—appeared to present limited establishment and rehabilitation opportunities as a result of difficult-to-access water sources; consequently, wetland establishment would require extensive manipulation of hydrology (i.e., ditches, culverts, water pumping). In some instances (DeFranco and Carrillo), established wetlands could potentially affect the groundwater level on neighboring properties. The establishment of a raised water table could limit neighbors' crop production and grazing. These issues called into question the proposed wetlands' long-term ability to support successful, naturally functioning wetland systems. In addition, many of these parcels are small and lack overall connectivity. In light of these potential complications, the DeFranco and Carrillo parcels were ruled out as candidates for wetland establishment.

A letter sent to the resource agencies in July 2008 indicated that establishment opportunities continued to be elusive. Establishment opportunities on the Frost parcels were unlikely to result in as much acreage as originally estimated, and adequate opportunities on the remaining properties were doubtful. The letter indicated that Caltrans intended to focus on a mixed strategy of wetland establishment, rehabilitation, and preservation. RWB responded with a letter in September 2008 reaffirming the state's no-net-loss policy. On October 20, 2008, a meeting was held between Caltrans and RWB to determine a mutually agreeable strategy for wetland mitigation. RWB requested that Caltrans expand its search for wetland establishment opportunities to further demonstrate due diligence in meeting the no-net-loss policy.

In response to this request, Caltrans initiated the 2009 Feasibility Study (ICF Jones & Stokes 2009a). Caltrans contacted owners in a much broader geographic area surrounding Little Lake Valley to determine their willingness to sell. The areas addressed in the 2009 Feasibility Study are shown in Figure 3-1. This study reviewed several thousand acres of land to assess their potential for wetland establishment. It indicated that, out of the approximately 11,000 acres considered, only a few small, isolated establishment opportunities were available on land owned by willing sellers. Therefore, even if the failure to meet the criterion of preserving habitat connectivity was dismissed, Caltrans would still fall substantially short of meeting the conventional mitigation requirement for establishment, even with the few suitable sites identified outside the valley included (ICF Jones & Stokes 2009a).

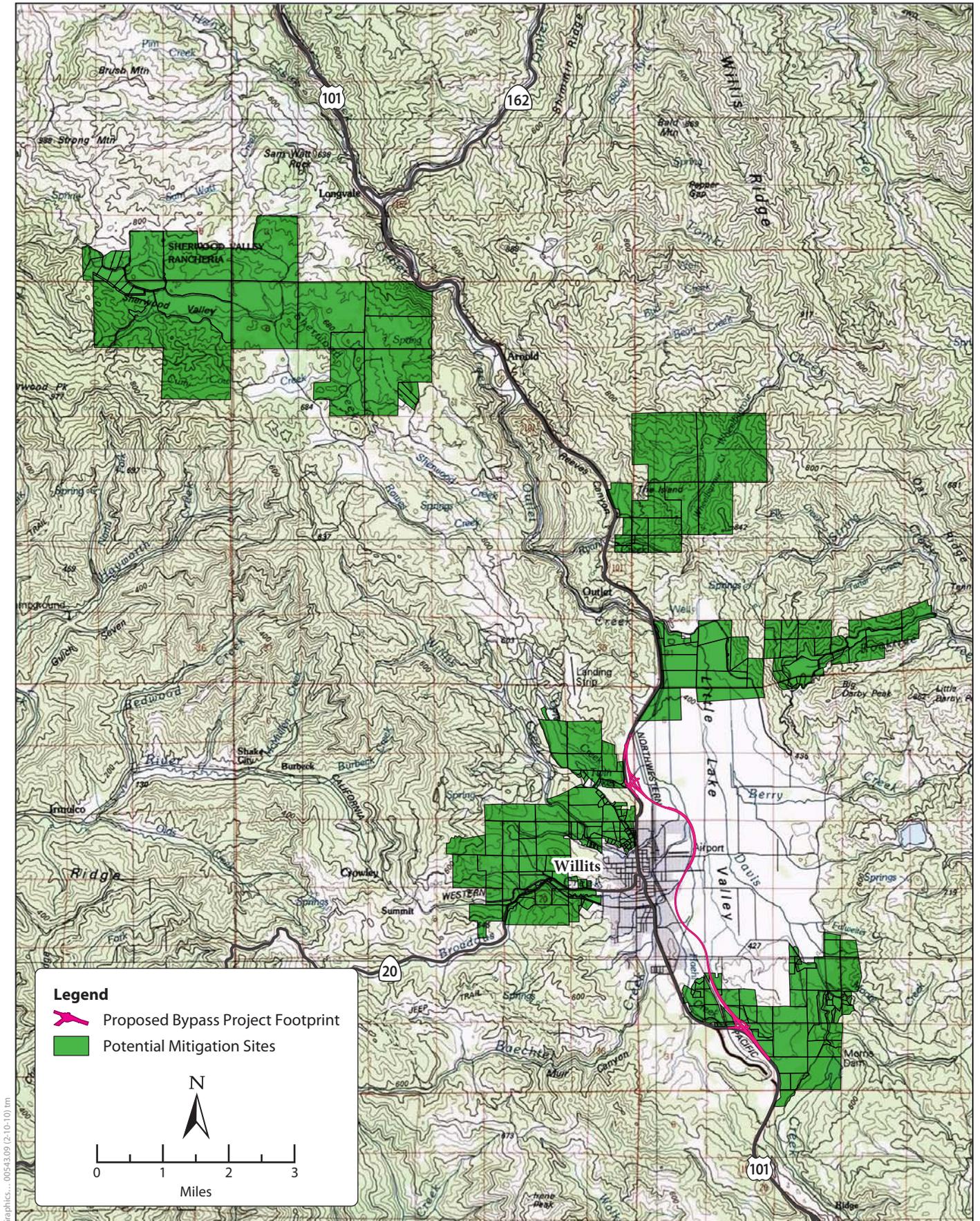


Figure 3-1
Potential Mitigation Sites Considered in the 2009 Feasibility Report

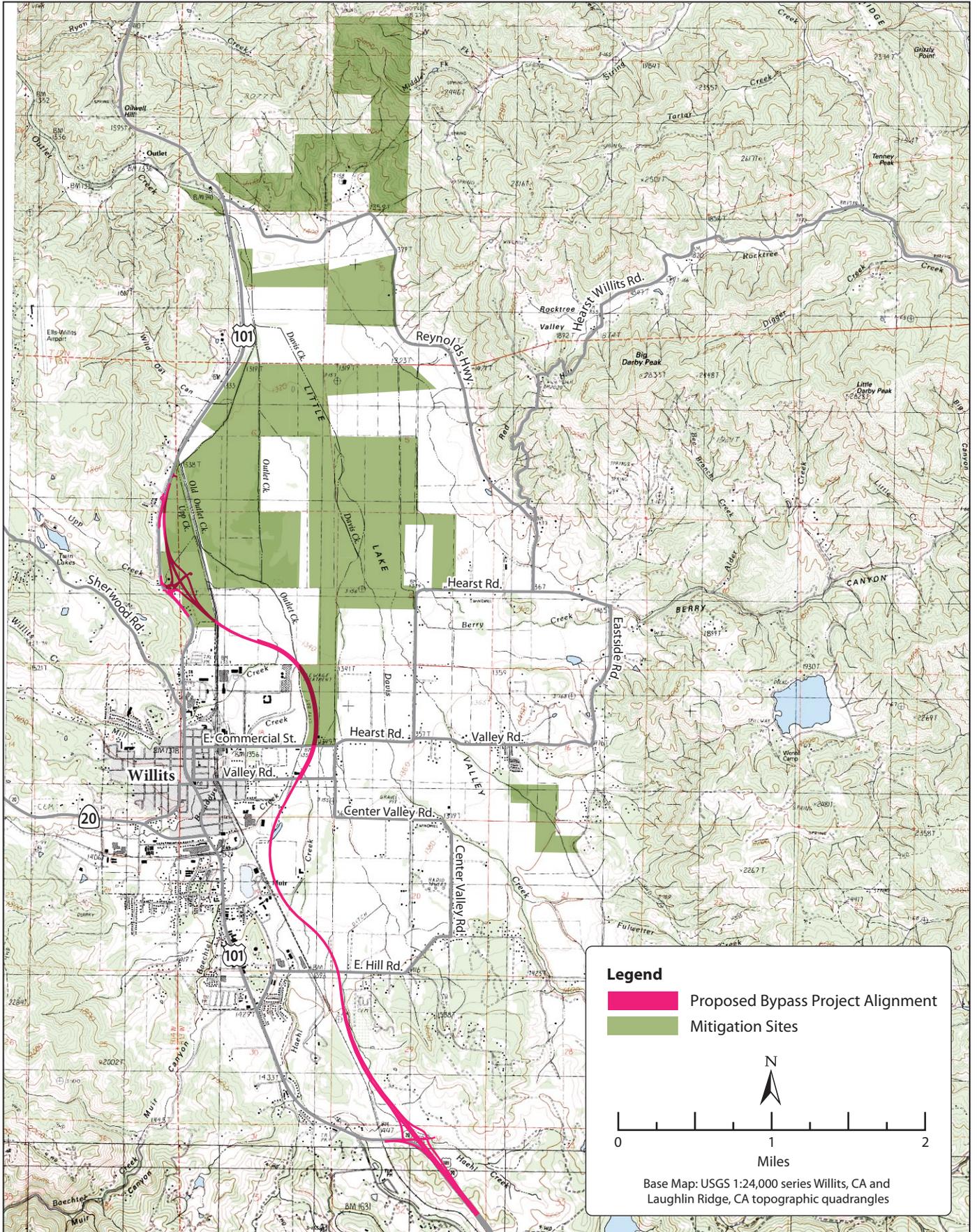


Figure 3-2
Proposed Bypass and Offsite Mitigation Sites

Caltrans also moved forward with wetland delineations of sites on properties that would provide rehabilitation and preservation opportunities. Included in this effort were formal delineations of the Brooke, Niesen, Lusher, Huff, Watson, and Benbow parcels. Delineations of the Taylor Ranch parcels were also conducted for portions on the floor of Little Lake Valley; however, because the parcels south of Reynolds Highway contain existing wetlands and listed plant populations and are already under easements for protection of Baker’s meadowfoam, they offer limited wetland establishment opportunities and were not considered as potential mitigation sites.

Also, in 2009, the Frost West parcel (108-070-03) and the eastern portion of the Nance parcel became unavailable because of the owners were not willing to sell.

The final suite of parcels is a result of right-of-way discussions within Caltrans and the feasibility studies and wetland delineations discussed above, which were considered in concert with existing data for the Ford Ranch and Wildlands parcels. Figure 3-2 identifies the location of the offsite mitigation parcels in relation to the bypass alignment. Wetland establishment, wetland rehabilitation, and other waters rehabilitation opportunities, by parcel, are identified in Table 3-1.

Table 3-1. Establishment and Rehabilitation Mitigation Actions by Parcel

Parcel	APN	Mitigation Actions		
		Wetland Establishment	Wetland Rehabilitation	Other Waters Rehabilitation
Benbow	007-020-03		X	
	007-010-04		X	
	108-040-13	X	X	
	108-030-07		X	
	108-020-06	X		
Brooke	108-020-03		X	
Ford	108-010-05		X	
	108-010-06	X	X	X
	108-020-04	X	X	
	108-030-02	X	X	
	108-030-05		X	
Goss	103-230-02	X		
Lusher	108-030-04	X	X	
MGC North	103-230-06	X		
MGC Middle	103-250-14	X		
Niesen	108-040-02	X		
Watson	037-221-30	X	X	
	037-250-05		X	
Wildlands	108-020-07	X	X	X
	108-030-08		X	
	108-060-01	X	X	X
	108-070-08		X	
	108-070-09	X	X	

As of the date of this MMP, the known opportunities for successful, self-sustainable wetland establishment have been exhausted. Caltrans has expended a great deal of effort and has acted diligently to identify suitable wetland establishment opportunities both in and outside the valley among landowners who have expressed willingness to participate in the mitigation process. In

view of the challenges discussed above, Caltrans believed it would be in the best interest of the wetland resources to pursue mitigation on larger contiguous parcels within the valley using multiple strategies of establishment, re-establishment, and rehabilitation to work toward achievement of no net loss of functions and services of wetlands. USACE withdrew preservation as an option for compensatory mitigation, noting that the properties did not meet the criteria listed in the 2008 Mitigation Rule.

Caltrans worked in coordination with USACE to develop and refine the wetland and other waters mitigation actions presented in this MMP and the methodology for determination of credits.

3.3 Mitigation Site Selection for Other Waters of the United States Rehabilitation

Preliminary discussions with USACE determined that implementation of riparian plantings and bank stabilization along various streams and improvements to fish passage would be acceptable mitigation for impacts on other waters in lieu of establishment of new other waters.

3.3.1 Onsite Mitigation for Other Waters

Fish passage repair increases the amount of available habitat within a stream system. If habitat abundance is the limiting factor for a migratory fish species, its population may rise in response to access to additional habitat. However, the population response to habitat gain also depends on numerous other factors, such as the quality and quantity of newly available habitat and the abundance and nature of the predators, competitors, and prey that reside there.

The primary objective for project design on both Haehl and Upp Creeks is to repair fish passage opportunities that are currently constrained or absent because of stream channel alignment or artificial barriers (e.g., culverts). These improvements are incorporated into the project design. Fish passage design elements will comply with guidelines established by NMFS and CDFG.

Fish passage design addresses one component of a healthy, sustainable, and functioning riparian habitat that supports anadromous fish. The design includes stabilization of streambanks using a variety of biotechnical measures, including rootwad revetment, live siltation, and vegetated RSP (Appendix E). Planting of containerized plants and cuttings from willows and cottonwoods will be included as part of the overall strategy to fully repair the riparian stream zone (Appendix E).

Obstacles or barriers currently exist in both creeks within Caltrans right-of-way. At Haehl Creek, the obstacle is a 72-inch corrugated metal pipe culvert with a 4- to 6-foot entryway jump at the downstream end. This culvert will be removed, and grade control structures will be located downstream of the culvert at appropriate heights and intervals for the distance necessary to stabilize the natural stream gradient (Appendix E). Also, in the Haehl Creek interchange, the northbound onramp has a bridge that does not require any changes to the existing creek alignment but will have grade control structures placed to maintain the natural stream gradient (Appendix E). These structures will also allow the existing culvert belonging to the adjacent property owner to be backwatered if necessary.

The barrier along Upp Creek is a 10- by 5-foot box culvert. It appears to be in good condition and its size is adequate for necessary capacity, but it creates a fish barrier because of a combination of low flows and water levels, high velocity, and a slight entryway jump. This RCB culvert will be removed and grade control structures will be located at appropriate heights and intervals for the distance necessary to stabilize the natural stream gradient (Appendix E).

The primary fish passage measure being proposed on both creeks are grade control structures that consist of rock sills and weirs. These structures are low-profile, typically constructed of boulders that span the width of the channel and are keyed into the channel bank. Collectively, the boulders are placed to concentrate the flows toward the center of the channel and away from streambanks. Rock weirs are typically arranged to form an upstream-pointing arch in plan view, with the lowest point (as seen in profile view) at the apex of the arch. They can be used to:

- Redirect the lowest point of the channel.
- Control channel alignment in confined areas or near infrastructure.
- Alter and maintain the width-to-depth ratio of the channel.
- Protect an eroding or sensitive streambank.
- Establish and maintain a scour pool for fish habitat.
- Concentrate low flow into a deeper, narrower channel to improve fish passage in otherwise flat-bottomed channels.
- Backwater the upstream channel to increase riffle water depth.
- Provide fish passage over barrier drops, provide water to diversions, or other uses.
- Encourage natural sorting of sediment at the pool outflow.

Although they are similar to drop structures in appearance, rock structures, which include rock weirs and sills, can withstand small shifts of material and continue to function as intended. They are made of individual rocks stabilized by the weight of the material and by contact with other rocks. Because they can withstand small deformations and continue to provide fish passage, these types of drop structures are better suited to withstand downstream channel adjustments than rigid weirs. Also, because of the inherent irregularities in the surface of rock structures, they generally provide increased hydraulic diversity and better passage performance than rigid weirs.

Both Upp and Haehl Creeks have unstable banks that increase sediment transport and bed load while reducing biological functions as they pertain to spawning habitat for anadromous fish. Although bank erosion is a natural and important geomorphic process in many disturbed systems, the erosion at both creeks appears to be occurring at an accelerated rate, especially at the Haehl Creek Interchange. The proposed bank protection at the creeks is designed to rehabilitate natural functions while still enabling long-term natural stream processes to take place.

3.3.2 Offsite Mitigation for Other Waters

3.3.2.1 Riparian Site Selection

The priority for selecting riparian corridor planting areas is to increase contiguous canopy cover longitudinally along the streams, as opposed to creating wider, intermittent corridors. Ample riparian plantings to satisfy mitigation needs for other waters, which also benefit federally listed fisheries, were identified along the various streams across the offsite mitigation parcels.

Long stream reaches supporting protected fisheries that would benefit from riparian plantings are present along both Davis and Outlet Creeks. Consultations with Craig Martz and Scott Harris of CDFG and Tom Daugherty of NMFS on April 18, 2008, indicated a preference for riparian plantings that serve as fisheries mitigation to occur on Outlet Creek because it supports populations of all three listed fish species (salmonids and steelhead) potentially affected by the project. The longest reach of Outlet Creek available for mitigation traverses several of the John Ford and Wildlands parcels; accordingly, these properties have been selected to fulfill the fisheries mitigation requirements. In addition, the John Ford and Wildlands parcels are contiguous with other offsite mitigation parcels: Brooke, Lusher, Benbow, Nance, and Frost.

In a meeting held on May 14, 2009, Mr. Daugherty expressed a desire to reduce the width of riparian establishment and instead extend the riparian establishment in a more linear fashion to encompass more streambank. This approach to riparian establishment would have a more direct, positive effect on the quality of fisheries habitat.

In addition to planting along anadromous streams, riparian species and oaks will be planted adjacent to or near streams tributary to anadromous streams to provide bank stabilization, stream shading, and a source of organic material for benthic invertebrates and salmonids, all of which will improve instream habitat.

3.3.2.2 Bank Erosion and Headcut Repair Site Selection

Numerous drainages throughout Little Lake Valley drain wet meadows to allow for more efficient and extensive grazing of pastureland. These drainages are often interconnected and flow to the lowest point on the parcel, where they exit the parcel and flow onto another parcel or into an adjacent stream. In addition to draining surface water from the wet meadow more quickly than under natural conditions, the drainages also dewater adjacent wetland habitat, thereby potentially affecting adjacent wetland plant communities. Some disturbed drainages are unvegetated and show signs of channel bed and bank erosion (usually in the form of headcuts). Caltrans conducted an assessment of all the erosion sites located in the mitigation areas, which included inventory, prescription, and prioritization of mitigation actions that would reduce erosion and sedimentation in the Outlet Creek Basin.

Erosion features on the offsite mitigation properties that are contributing excessive sediment to and causing water quality degradation in channels and streams in Little Lake Valley have been prioritized for restoration as follows:

1. The erosion feature contributes significantly to water quality degradation, as related to the contribution of excessive sediment from erosion of native soil.
2. The erosion feature can be restored without impacts on existing sensitive biological resources, including special-status plants and jurisdictional wetlands.
3. The erosion feature can be restored in coordination with planned mitigation actions.
4. The erosion feature can be restored using restoration approaches that are very constructable mean (i.e., construction of the feature is easy and access to it is direct).
5. The erosion feature's restoration will create a synergy by combining site-specific restoration opportunities to create a major effect at a cumulative level. Priority is given to particular erosion sites because restoration actions at these sites can immediately address many of the priority items above. The following are considered to be four highest-priority bank erosion and headcut repair sites:
 - a. **Ford (APN 108-010-06):** There are three eroding bank sites on the east bank of Outlet Creek.
 - b. **Frost Complex (APN 108-070-04):** There are five headcut sites located in the northeast corner of the parcel—three are instream headcut sites, and two are upland headcut sites.
 - c. **Lusher (APN 108-030-04):** There are two headcut sites in the southwest corner of the parcel.
 - d. **Benbow (APN 108-040-13):** There is one headcut site in the southern end of the parcel.

Specific actions related to these drainages and headcuts for each of the erosion sites are described in Chapter 7, and the construction design drawings are provided in Appendix E.

3.4 Mitigation Site Selection for State-Listed Plants

Offsite mitigation parcels for the purpose of providing mitigation for state-listed plants were selected based on the presence of occupied or potential Baker's meadowfoam and North Coast semaphore grass populations. The offsite mitigation parcels on which these species occur will be grazed and therefore do not contribute to the mitigation program for USACE jurisdictional wetlands.

3.4.1 North Coast Semaphore Grass

North Coast semaphore grass is a perennial species that spreads through underground rhizomes; although there is potential for its distribution to vary annually, the variation is not substantial. For this reason, only areas where the plant was observed during special-status plant surveys were considered during the determination of both impact and protection areas. Wetland mitigation parcels were selected based on the presence of occupied or potential North Coast semaphore grass populations.

3.4.2 Baker's Meadowfoam

Preservation is used for compensation for impacts on Baker's meadowfoam because the establishment of populations of annual plant species is considered to have limited success. Because the distribution varies annually, Caltrans' efforts to identify suitable offsite mitigation parcels included protocol-level surveys for Baker's meadowfoam that focused on available parcels with either observed populations or suitable habitat (determined by soil type, elevation, and slope). The methods used to determine suitable habitat are presented in the MPR. Additional factors considered were contiguity with other mitigation properties, connectivity with other habitats, and percentage of the parcel supporting the species or its potential habitat.

Wetland mitigation parcels were selected based on the presence of occupied or potential Baker's meadowfoam populations.

Chapter 4 Site Protection Instruments

Caltrans intends to complete its purchase of the offsite mitigation properties by the end of the 2011 calendar year. A conservation easement (CE) will be placed over the properties and will be held by CDFG. The CEs will provide protection in perpetuity of the conservation values for which the properties were purchased. The CE will be tailored to ensure that the level of protection is adequate, while retaining the flexibility to carry out the necessary maintenance and management measures. All CE documents will be submitted to Mendocino County for recording no later than 1 year after the purchase date of the last remaining offsite mitigation property.

Caltrans will provide an endowment to fund the initial startup costs and the long-term protection and management of the properties. A long-term management plan is provided in Chapter 11; it outlines the necessary management activities and will direct the land manager on how the properties will be maintained. An endowment calculation has been prepared and is found in Chapter 13.

For all offsite mitigation properties, CDFG will act as the endowment holder and CE holder/compliance monitor. MCRCDD will act as the fee title holder following transfer of the titles from Caltrans and as the land manager. The endowment holder is responsible for holding and managing the endowment funds, the CE holder is the party to which the CE is granted, and the fee title holder legally owns the real property. The land manager is responsible for performing the actions set forth in the long-term management plan, adaptive management plan, and CE. The compliance monitor is responsible for ensuring that the land is being managed in accordance with the terms of the CE. In no case will the land manager also be designated the compliance monitor, nor will the fee title holder also be the CE holder; these two situations would create a conflict of interest.

Fee title has been obtained by Caltrans for all offsite mitigation properties except the Watson and Taylor properties, which are in escrow as of August 2011. Escrow is expected to close on Watson by mid-October 2011 and on Taylor by early November 2011.

The locations of onsite mitigation will not be included under CEs because permanent protection within the Caltrans right-of-way could interfere with maintenance of the roadway. However, resources within the Caltrans right-of-way would still be afforded protection under the CWA and other environmental laws.

