

**Morro Bay Watershed
Partners in Restoration**

Permit Coordination Program



2006 Implementation Report

Report prepared by
**USDA – Natural Resources Conservation Service
and the Coastal San Luis Resource Conservation District**

In fulfillment of terms of agreement with:

United States Army Corps of Engineers
United States Fish and Wildlife Service
United States National Marine Fisheries Service
California Department of Fish and Game
California Coastal Commission
Central Coast Regional Water Quality Control Board
County of San Luis Obispo



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Permit Coordination for Resource Conservation in Morro Bay Watershed

Summary

Six projects were submitted in 2006, the fifth year of the Morro Bay Watershed Permit Coordination Program. Five of the six completed projects include 150 feet of Stream Bank Protection (vegetative bank protection) and <1000 feet of Clearing & Snagging (harvested for vegetative bank protection in forested flood plain area) on Chorro Creek, 2000 feet of Clearing & Snagging (vegetation management and debris jam removal) on Los Osos Creek, 2000 feet of Clearing & Snagging (vegetation management and debris jam removal) on lower Los Osos Creek, approximately 0.25 acre of Clearing & Snagging (vegetation management) in a riparian forest (1998 NRCS Wetland Reserve Easement) adjacent to Los Osos Creek, 2000 feet of Clearing and Snagging (vegetation management and debris jam removal) on Warden Creek.

The Permit Coordination Program alleviates the disincentive farmers and land managers experience when considering the regulatory review and permitting process when they wish to restore or enhance natural resource conditions on their property. Without the Permit Coordination Program, these projects would either not have been attempted, or would have been done without any form of agency guidance or oversight. The Program provides land managers with an alternative to the time-consuming and costly process of multiple permit applications, while ensuring that they utilize the regulatory agency approved conservation practice standards of the NRCS and the RCD.

Project Background

The Natural Resources Conservation Service (NRCS), Coastal San Luis Resource Conservation District (CSL RCD) and Sustainable Conservation, a non-profit environmental organization, worked in concert to design this innovative program to offer “one stop regulatory shopping” to land managers willing to implement conservation practices that result in net environmental benefits. The program is available to farmers and ranchers in the Morro Bay Watershed who voluntarily seek to reduce agricultural run off and protect natural resources on their lands.

Sixteen conservation practices recommended by the Department of Agriculture have been conditioned and authorized in advance by the participating federal, state and local agencies (see Table 2) through multiple watershed-based permits issued to the NRCS and Coastal San Luis Resource Conservation District. Any farmer receiving technical and/or cost share assistance from the NRCS will be able to implement the practices without the need to seek multiple individual project permits once agreements are finalized. NRCS assists in project design and monitors implementation and maintenance of the practices to ensure performance in conformance with the conditions of the permits.

Table 1: Participating Agencies and Form of Agreement

Agency	Regulatory Agreement
United States Army Corps of Engineers	Partners in Restoration Project Agreement
United States National Marine Fisheries Service	Programmatic Biological Opinion
United States Fish and Wildlife Service	Programmatic Biological Opinion
California Coastal Commission	Federal Consistency Review of PIR Program
California Department of Fish and Game	1601 Streambed Alteration Memorandum of Understanding
Regional Water Quality Control Board	Section 401 Waiver of Water Quality Certification
County of San Luis Obispo	Erosion and Grading Ordinance Exemptions

This program removes an institutional disincentive to improved land management. Farmers are always seeking ways to improve the value and productivity of their land and protect their investment in their crops but often hesitate to adopt changes that introduce uncertainty or could negatively affect the economic return on their operations. Voluntary, proactive partnerships on private property to install conservation practices have been limited by fear among many landowners that government regulatory review will be complex, costly and time-consuming.

Typical agency review processes intended to protect natural values can act as disincentives to voluntary initiatives to reduce non-point source pollution and enhance habitat. Most farmers will continue with current land use practices if the time and financial costs of seeking governmental approvals exceed the perceived benefits of engaging in conservation activities. The challenge identified in the Morro Bay watershed was to find a way to both provide incentives and overcome the disincentives to good land management.

The one-stop regulatory shopping program, combined with the ongoing technical and financial assistance programs of NRCS and the RCD, effectively removes disincentives and provides incentives for voluntary enhancement and sustainable management of agricultural and natural resources in the Morro Bay Watershed. Each of the agencies involved in this interagency coordination effort deserves recognition for creating an efficient watershed-level review process that is easy for farmers to use while ensuring the integrity of the agency resource protection and environmental quality mandates.

Fifth Year Accomplishments

Project # MB PIR 2006-1 – Notification #1600-2006-0365-3 - Creek Management-(326) Clearing & Snagging

Eucalyptus, Sycamore and Willow fall from the banks into Los Osos Creek along this reach and during high flows can cause debris jams, deflecting high flows right into stream banks. Additional management of this riparian vegetation is often necessary. Debris jams from material caught on fallen trees in the rainy season of 2004/2005 caused an estimated 4000 cubic yards of sedimentation.

The project area was the main channel portion of Los Osos Creek. The project involved the “limbing up” of existing large over-hanging trees that had fallen into, or nearly falling into the channel. This reach of Los Osos Creek seems to be purely migratory for Steelhead, and though it has many resting places throughout the reach, unfortunately large woody debris, unless securely anchored or “keyed in” does not stay in place in this high velocity runoff situation. Keying in this material proves a design improbability with the sandy makeup of the channel as evidenced by past projects which were either uprooted and caught downstream or undercut by high flows. The selective pruning was performed by hand, by the California Conservation Corps Watershed Crew. Work was performed in approximately 2000 linear feet of Los Osos Creek. The banks are very densely populated with many different native and some exotic species which made revegetation unnecessary. The failed bank from 2004-2005 storms seems to be recovering and has vegetation beginning to take root. A toe seems to be forming since the large debris jam was removed in 2005. This project took place September 14 to October 4, 2006.

Project: # MB PIR 2006-2 - Notification # 1600-2006-0366-3 - WRP Los Osos Creek Management – (326) Clearing & Snagging

Located within the boundaries of the Natural Resources Conservation Service Wetland Reserve Program Conservation Easement, the project area is potential migration habitat for steelhead (*Oncorhynchus mykiss*) a federally listed species. Since this section of the creek goes dry for the summer, it would only provide a seasonal migration corridor for steelhead. No spawning or rearing habitat is natural in this part of Los Osos Creek. The natural water flow of Los Osos Creek is under several feet of sediment in this reach most of the year.

The project area is potential habitat for the California red-legged frog (*Rana aurora draytonii*), a federally listed threatened species. The project is located within an area designated as critical habitat for California red-legged frogs (Critical Habitat Unit 21, San Simeon-Morro Bay, San Luis Obispo County, CA). This reach of Los Osos Creek is subjected to extremely high rates of sedimentation from a high yielding watershed characterized primarily by naturally eroding old dunes and a high concentration of urban and rural home sites. This section of

the creek channel has also suffered severe debris jams from high flows and shrinking channels due to sedimentation. Selective pruning, hand removal of debris jams, cutting, hauling or reuse of the debris, was performed by the California Conservation Corps Watershed Crew. Exotic weed infestations of Pampas Grass and *Arundo donax* were removed upon contact in work vicinity, as well. Work was performed in approximately 2000 linear feet of Los Osos Creek. This project took place. October 5 to October 12, 2006.

Project # MBPIR 2006-3 - Notification #1600-2006-0367-3 - WRP Riparian Forest Management – (326) Clearing & Snagging

This project is located within the boundaries of the Natural Resources Conservation Service Wetland Reserve Program Conservation Easement. This reach of Los Osos Creek is subjected to extremely high rates of sedimentation from a high yielding watershed characterized primarily by naturally eroding old dunes. This section of the creek channel has also suffered severe debris jams from high flows and shrinking channels due to sedimentation. Selective pruning, hand removal of dead willow and debris was performed in a 0.25 acre area, of the WRP riparian forest adjacent to the Los Osos Creek portion of the WRP. High flows in heavy storms send high water through braided channels in the riparian forest. We proposed a plan to eventually allow Los Osos Creek to flood the riparian forest on a regular basis, by removing the levee below the cropland where it joins the riparian forest and open the riparian forest channels to regular flooding. Significant channels for flow and trapped fish to escape through the riparian forest need to be in place before removing the levee. The channels within the riparian forest allow the flow to lose momentum, slow and drop sediment outside of the creek channel, trapping it within the forest and not within Morro Bay Estuary. The plan has been to thin the riparian forest to let sunlight in and encourage under story plants to begin to take hold. The under story will hold the debris and sand in place, and provide roughness for a sediment drop. This was the second of a three year restoration and management plan for the NRCS Wetland Reserve Program (WRP) Riparian Forest. For the last two years, a section has been left untouched for comparison. The section also contains a naturally formed channel so that we can compare areas within the riparian forest/former cropland that we have treated to an area with the same conditions that we have not treated to show the results to our partners and regulatory agencies. Increases in under story vegetation in the treated sections of the riparian forest are noticeable in the second year of the project. We expect to do some planting later in the season of 2007 to improve diversity and habitat. This project took place October 12 to October 21, 2006.

Project # MBPIR 2006-4 - Notification #1600-2006-0368-3 - Chorro Flats Vegetative Bank Stabilization-(580) Stream Bank Stabilization

This project is located in the Coastal San Luis Resource Conservation District owned Chorro Flats Flood Plain Restoration Project. This project involved the use of native willow from onsite to construct willow structures, including willow mattresses and willow wall revetment (VII-78 & 79 from the CA Salmonid Stream Habitat Restoration Manual) to protect the bank. Willow was not harvested in-stream, but from the riparian forested areas of the floodplain. Willow was harvested judiciously and carefully so as not to disturb any nesting animals and to thin species for better survival and diversity. The Chorro Flats project has been an ongoing floodplain restoration project, complete with installation of in-stream structures, mechanical reshaping of the floodplain and native re-vegetation. The willow bank protection will be additionally planted with a more diverse group of native plants that have been observed on Chorro Creek, CA Blackberry, CA Rose, Dogwood, Creeping Wildrye, Cottonwood and CA Sycamore once the willow has been suitable established. The project was installed by hand, by the California Conservation Corps Watershed Crew, with oversight by Susan Litteral, NRCS Field Office Engineer and Cheryl Zelus, Soil Conservationist. Work was performed on approximately 150 linear feet of Chorro Creek, October 16 to October 20, 2006. .

Project # MBPIR 2006-5 - Notification #1600-2006-0369-3 - Grade Stabilization (410) Grade Stabilization

This project was not implemented this year due to time constraints.

**Project # MBPIR 2006-6 - Notification #1600-2006-0370-3 - Clearing & Snagging
(326) Clearing & Snagging**

This project involved the selective pruning of willow, and removal of woody debris jams which were blocking flow down the center of the main channel of the creek and eroding the vegetated banks. The selective pruning was done by hand, by the California Conservation Corps Watershed Crews, who also planted the banks to locally harvested and grown cottonwood, Toyon, and wild rose after winter rains had saturated the soil. Work was performed in approximately 2000 linear feet of Warden Creek. This project was performed August 27 to September 13, 2007.

Photo Documentation

**Project # MB PIR 2006-1 –DFG Notification #1600-2006-0365-3 - Creek Management-
(326) Clearing & Snagging**



Figure 1 & 2. Los Osos Creek with fallen trees needing pruning.

**Project: # MB PIR 2006-2 - Notification # 1600-2006-0366-3 - WRP Los Osos Creek Management – (326)
Clearing & Snagging**



Fig 3 & 4. Pictures taken of Los Osos Creek in 2003 before CCC hand clearing of debris jams took place. All 4 figures of same area in Los Osos Creek.



Fig 5. Taken of same area as above after, sediment removal, 2003.



Fig 6. Taken May 2007 in same area of Los Osos Creek.

Project # MBPIR 2006-3 - Notification #1600-2006-0367-3 - WRP Riparian Forest Management – (326) Clearing & Snagging



Fig 7 & 8. Leaved areas between Los Osos Creek and WRP Riparian Forest.



Fig 9. Area that has not been treated in the last 2 years of thinning.



Fig 10. Channel area that has been thinned. Notice patches of sunlight and increased under story diversity.

Project # MBPIR 2006-4 - Notification #1600-2006-0368-3 - Chorro Flats Vegetative Bank Stabilization - (580) Stream Bank Stabilization



Fig 11. Grasses hanging over disguise the vertical sloughing bank.



Fig 12. CCC crews excavated the bank by hand and laid in the willow.



Figs. 13 & 14. Willow as it is laid into structure and covered with soil. Jute covers all exposed soil



Figs. 15. Finished project in October 2006 looking upstream and again in March 2007 after lower than average rainfall.



Fig 17. Recently harvested willow laid into project after watering.



Fig. 18. March 2007 willow is sprouting and rooting, and grass cover at top of bank is good considering extremely low rainfall.

Project # MBPIR 2006-5 - Notification #1600-2006-0369-3 - Grade Stabilization

This project was not implemented this year due to time constraints.

Project # MBPIR 2006-6 - Notification #1600-2006-0370-3 - Clearing & Snagging



Figs 19 & 20. Before pruning project, June 2006 and after project in May 2007. Canopy is maintained, flow is not directed toward bank.

Table 2: 2002-2006 Summary Statistics Conservation Project and Natural Enhancements and Sediment Reductions Resulting from Permit Coordination

Total Number of Projects Completed (2002-2006)	Practice		Total Enhancement of Streams, Creeks, or Riparian Zones		Total Volume of Soil Moved (cubic yards)	Reduction in Sediment Transported Downstream into Riparian and Wetland Habitat (cubic yards)
	Practice No.					
MB PIR Project # 2002-1 Notification #R3-2002-0838	326 Clearing and Snagging	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	12ft 0 ft 500 ft 6000 ft ² 0.14 ac	N/A	35 CY or 52.5 tons of soil per year for the next 5 years
MB PIR Project # 2003-1 Notification #1600-2003-0438-3 Project #1	326 Clearing and Snagging	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	10ft 0 ft 1000 ft 10000 ft ² 0.23 ac	N/A	78 tons of soil per year for the next 5 years
MB PIR Project # 2003-2 Notification #1600-2003-0439-3 Project #2	204 Stream Corridor Improvement	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	10-15ft 6 ft 2700 ft 10000 ft ² 1.45 ac	Cut: 3000 CY	4500 tons (3000 CY) soil saved one time
MB PIR Project #2003-3 Notification #1600-2003-0440-3	580 Stream Bank Stabilization	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	4ft 0 ft 200 ft 800 ft ² 0.01 ac	Cut: 4.5 cy (trench for coir logs) Fill: 9 cy (coir logs) Fill: 4.5 cy (trench material packed between logs.)	11.9 tons soil saved per year

Total Projects Completed (2002-2006)	Practice		Total Enhancement of Streams, Creeks, or Riparian Zones		Total Volume of Soil Moved (cubic yards)	Reduction in Sediment Transported Downstream into Riparian and Wetland Habitat (cubic yards)
	Practice No.					
MB PIR Project #2003-3 Notification #1600-2003-0440-3	342 Critical Area Planting (Stream bank)	1	Avg. Width: Tot. Length: Total Area:	4ft 200ft 800 ft ² 0.01	N/A	Same as above
MB PIR Project #2003-4 Notification #1600-2003-0441-3	326 Clearing and Snagging	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	12ft 0 ft 2000 ft 24000 ft ² 0.55 ac	N/A	162 tons soil saved per year for the next 5 years
MB PIR Project #2003-4 Notification #1600-2003-0441-3	322 Channel Vegetation (Stream bank) 342 Critical Area Planting	1	Avg. Width: Tot. Length: Total Area:	6 ft 4000 ft 24000 ft ² 0.55 ac	N/A	Same as above
MB PIR Project 2004-1 Notification #1600-2004-0523-3 Chorro Creek Bank Stabilization	580 Stream Bank Stabilization	1	Avg. Width: Avg. Depth: Tot. Length: Bank length: Total Area:	15 ft 1 ft 60 ft 40 ft .05 ac	≥42 yds ³	684 tons per year
MBPIR Project # 2004-3 Notification #1600-2004-0525-3 Chorro Flats Clearing & Snagging	326 Clearing and Snagging	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	10 ft 0 ft 2000 ft .69 ac	N/A	95 tons per year

Total Number of Projects Completed (2002-2006)	Practice & Practice No.		Total Enhancement of Streams, Creeks, or Riparian Zones		Total Volume of Soil Moved (cubic yards)	Reduction in Sediment Transported Downstream into Riparian and Wetland Habitat (cubic yards)
MBPIR Project # 2004-4 Notification #1600-2004-0528-3 Clearing & Snagging	326 Clearing and Snagging	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	10ft 0 ft 1000 ft 10000 ft ² 0.23 ac	N/A	325 tons of soil per year
MBPIR Project # 2004- 5 Notification #1600-2004-0528-3 – Clearing & Snagging	326 Clearing and Snagging	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	10-15ft 0 ft 500 ft 7500 ft ² .17 ac	N/A	163 tons of soil per year
MBPIR Project # 2004-6 - Notification # 1600-2004-0529-3- Clearing & Snagging	326 Clearing and Snagging	1	Avg. Width: Avg. Depth: Tot. Length: Total Area:	12ft 1 ft 2000 ft 24000 ft ² 0.55 ac	N/A	380 tons of soil per year
MBPIR Project # 2005-1 Notification #1600-2006-0408-3- Creek Management	326 Clearing and Snagging		Avg. Width: Avg. Depth: Tot. Length: Total Area	10-15ft 0 ft 500 ft 7500 ft ² .17 ac	N/A	435 tons
MBPIR Project # 2005-2 Notification #1600-2006-0409-3- Fish Barrier Removal & Creek Maintenance	204 Stream Corridor Improvement 326 Clearing and Snagging		Avg. Width: Avg. Depth: Tot. Length: Total Area	6ft 0ft 200 ft & 2000 ft 0.03 ac & 0.27ac	N/A	(204)1 ton (326) 6 tons

Total Number of Projects Completed (2002-2006)	Practice & Practice No.	Total Enhancement of Streams, Creeks, or Riparian Zones		Total Volume of Soil Moved (cubic yards)	Reduction in Sediment Transported Downstream into Riparian and Wetland Habitat (cubic yards)
MBPIR Project # 2005-3 Notification #1600-2006-0410-3- Los Osos Creek Management	326 Clearing and Snagging	Avg. Width: Avg. Depth: Tot. Length: Total Area	10ft 0 ft 1000 ft 10000 ft ² 0.23 ac	N/A	143 tons
MBPIR Project # 2005-4 Notification #1600-2006-0411-3 –WRP Riparian Forest Management	326 Clearing and Snagging	Avg. Width: Avg. Depth: Tot. Length: Total Area	10ft 0 ft 1000 ft 10000 ft ² 0.23 ac	N/A	927 tons
MBPIR Project # 2005-7 Notification # 1600-2006-0529-3- Warden Creek Management	326 Clearing and Snagging	Avg. Width: Avg. Depth: Tot. Length: Total Area	5.5ft 1 ft 2000 ft 11000 ft ² 0.25 ac	N/A	57 tons
MBPIR Project # 2006-1 DFG Notification #1600-2006-0365-3 - Creek Management- (326) Clearing & Snagging	326 Clearing and Snagging	Avg. Width: Avg. Depth: Tot. Length: Total Area	10-15ft 0 ft 500 ft 7500 ft ² .17 ac	N/A	88 tons

Total Number of Projects Completed (2002-2006)	Practice & Practice No.	Total Enhancement of Streams, Creeks, or Riparian Zones		Total Volume of Soil Moved (cubic yards)	Reduction in Sediment Transported Downstream into Riparian and Wetland Habitat (cubic yards)
MBPIR Project # 2006-2 Notification # 1600-2006-0366-3 - WRP Los Osos Creek Management – (326) Clearing & Snagging	326 Clearing and Snagging	Avg. Width: Avg. Depth: Tot. Length: Total Area	10ft 0 ft 1000 ft 10000 ft ² 0.23 ac	N/A	40 tons
MBPIR Project # 2006-3 Notification #1600-2006-0367-3 - WRP Riparian Forest Management – (326) Clearing & Snagging	326 Clearing and Snagging	Avg. Width: Avg. Depth: Tot. Length: Total Area	10ft 0 ft 1000 ft 10000 ft ² 0.23 ac	N/A	26 tons
MBPIR Project # 2006-4 Notification #1600-2006-0368-3 - Chorro Flats (580) Stream Bank Stabilization	(580) Stream Bank Stabilization	Avg. Width: Avg. Depth: Tot. Length: Total Area	10 ft 1 ft 75 750 ft ² 0.17 ac	N/A	91 tons
MBPIR Project # 2006-6 Notification #1600-2006-0370-3 - Clearing & Snagging	326 Clearing and Snagging	Avg. Width: Avg. Depth: Tot. Length: Total Area	5.5ft 1 ft 2000 ft 11000 ft ² 0.25 ac	N/A	16 tons

Required Agency Reporting Elements

The following information addresses the reporting requirements of the participating agencies.

Location and Purpose of Projects

Project # MB PIR 2006-1 –DFG Notification #1600-2006-0365-3 - Creek Management- (326) Clearing & Snagging

This project site is located along the Los Osos Creek, which flows west into Morro Bay. The project area is approximately 1.5 miles southeast of the town of Los Osos at Los Osos Valley Road and Turri Road, T 30S, R 11E, Projected Sections 7, 8 16 & 17, Morro Bay South Quad as indicated on the watershed map (see figure 15). The purpose of this project was removal of accumulated woody debris and garbage, and selective pruning of canopy trees and removal of fallen Eucalyptus from the center of the channel from this reach of creek and restoration of channel's flow regime. The long-term goal is to train canopy trees up into a canopy growth habit to provide shading of water, when present, and to allow fish passage to upper watershed and spawning habitat.

Project: # MB PIR 2006-2 - Notification # 1600-2006-0366-3 - WRP Los Osos Creek Management – (326) Clearing & Snagging

This project site is located along the Chorro Creek, which flows west into Morro Bay. The project area is located near Section 33, T30N, R11E, Morro Bay South Quad as indicated on the watershed map (see figure 15). The purpose of this project was to remove old concrete debris from the many old failed crossings. The debris was deflecting flow into banks and in some years posing a fish passage issue. A small amount of pruning for canopy of existing native vegetation took place under 326 Clearing and Snagging. Several trees had fallen and had been catching debris and deflecting it toward banks causing erosion and subsequent sedimentation downstream. The pruning was performed within 2000 linear feet of Chorro Creek, but pruning was not contiguous within that reach. The long-term purpose of this project is to train young willows up into a canopy growth habit to provide shading of water, when present, and to continue to maintain fish passage to upper watershed and spawning habitat.

Project # MBPIR 2006-3 - Notification #1600-2006-0367-3 - WRP Riparian Forest Management – (326) Clearing & Snagging

This project site is located along the Los Osos Creek, which flows west into Morro Bay. The project area is approximately 1.5 miles southeast of the town of Los Osos at Los Osos Valley Road and Turri Road, T 30S, R 11E, Projected Sections 7, 8 16 & 17, Morro Bay South Quad as indicated on the watershed map (see figure 15). The purpose of this project was removal of accumulated woody debris and garbage carried in from upstream and selective pruning of willow for canopy.

Project # MBPIR 2006-4 - Notification #1600-2006-0368-3 - Chorro Flats Vegetative Bank Stabilization - (580) Stream Bank Stabilization

This project site is located along the Los Osos Creek, which flows west into Morro Bay. The project area is approximately 1.5 miles southeast of the town of Los Osos at Los Osos Valley Road and Turri Road, T 30S, R 11E, Projected Sections 7, 8 16 & 17, Morro Bay South Quad as indicated on the watershed map (see figure 15). Located on Wetland Reserve Easement property held by the Natural Resources Conservation Service. This property is retired cropland allowed to return to historic wetland.

The purpose of this project was to thin dead and crowded willow to allow sunlight to penetrate the riparian forest floor to encourage and re-populate native under story plants. Los Osos Creek has also established several small drainages within the WRP riparian forest and the thinning occurred along those drainages to encourage their production and usage as escape channels for steelhead during receding flows.

Project # MBPIR 2006-5 - Notification #1600-2006-0369-3 - Grade Stabilization

This project was not implemented this year due to time constraints.

Project # MBPIR 2006-6 - Notification #1600-2006-0370-3 - Clearing & Snagging

This project site is located along the north branch of Warden Creek, which flows west to Warden Lake and then into the Morro Bay. The project area is approximately 3.5 miles southeast of the town of Los Osos at Los Osos Valley Road and Turri Road, T 30S, R 11E, Section 23, Morro Bay South Quad as indicated on the watershed map (see figure 15). The purpose of this project was removal of accumulated small woody debris, and selective pruning of willow from the center of the channel from this reach of Warden Creek and restoration of channel's flow regime. Work was performed on approximately 2000 feet of Warden Creek. The long-term goal is to limb up or train willow canopy for shading of water, when present, and discourage bushy bottom growth to hopefully shade out cattails and weeds.

Modification to Bank or Channel

Project # MB PIR 2006-1 –DFG Notification #1600-2006-0365-3 - Creek Management- (326) Clearing & Snagging

This project did not result in direct modification of the bank or channel. Indirect effects will include slowing of bank erosion caused by deflection of flows into banks. Removal of willow and woody debris jams in the middle of the channel, and reduction of sediment and debris build up in the channel and better hydrologic function of stream channel may have an indirect positive effect on channel stabilization.

Project: # MB PIR 2006-2 - Notification # 1600-2006-0366-3 - WRP Los Osos Creek Management – (326) Clearing & Snagging

This project resulted in a slight modification of channel when concrete debris was removed and erosion and sedimentation was reduced.

Project # MBPIR 2006-3 - Notification #1600-2006-0367-3 - WRP Riparian Forest Management – (326) Clearing & Snagging

This project did not result in direct modification of the bank or channel. Indirect effects will include reduction of erosion caused by deflection of flows around debris jams into surrounding riparian forest and reduction of sediment and debris build up in the channel and better hydrologic function of stream channel. Improved channel flow could also be attributed to this project, as the debris jams were so dramatic, as depicted in the before pictures, (Fig17) that deflection to the surrounding riparian forest was evident.

Project # MBPIR 2006-4 - Notification #1600-2006-0368-3 - Chorro Flats Vegetative Bank Stabilization - (580) Stream Bank Stabilization

Project # MBPIR 2006-5 - Notification #1600-2006-0369-3 - Grade Stabilization

This project was not implemented this year due to time constraints.

Project # MBPIR 2006-6 - Notification #1600-2006-0370-3 - Clearing & Snagging

This project did not result in direct modification of the bank or channel. Indirect effects will include reduction of erosion caused by deflection of flows around debris jams and vegetation that has grown up in the center of the channel. Removal of willow and dry cattail/woody debris jams in the middle of the channel, and reduction of sediment and debris build up in the channel may trigger better hydrologic function of stream channel, may have an indirect positive effect on channel stabilization. Slowing bank erosion and reducing erosion due to high flow deflection, reduces sediment delivery to Morro Bay Estuary.

Water Quality All the projects performed under the terms of the Permit Coordination Project are intended to improve water quality over time by reducing erosion, runoff, and transport of sediment and agricultural chemicals.

Project # MB PIR 2006-1 –DFG Notification #1600-2006-0365-3 - Creek Management- (326) Clearing & Snagging

Water quality was primarily improved during this project by stabilizing channel banks with removal of the fallen trees, woody debris jams and small willows in the center of the channel that caused deflection and consequently erosion and sedimentation into Morro Bay. The loss of bank in the 2004-2006 storms is calculated to be approximately 435 tons of soil. Management of fallen vegetation and debris jams will help, along with other land use practices, to prevent excessive erosion of the banks of Los Osos Creek and sedimentation downstream and into Morro Bay Estuary.

Project: # MB PIR 2006-2 - Notification # 1600-2006-0366-3 - WRP Los Osos Creek Management – (326) Clearing & Snagging

This project helped to reduce erosion and sedimentation downstream in Chorro Creek, improving water quality in Chorro Creek. Removal of the concrete debris restored natural flow pattern through this reach of Chorro Creek and saved an estimated one ton of soil. Pruning of fallen vegetation and removal of debris jams reduced deflection of high flows into banks of Chorro Creek when they are at the most vulnerable point, saving an estimated 6 tons of sediment.

Project # MBPIR 2006-3 - Notification #1600-2006-0367-3 - WRP Riparian Forest Management – (326) Clearing & Snagging

Large and small woody debris jams trap sediment in front of them but erode large amounts of sandy creek bottom and bank behind them causing sedimentation downstream. Debris jams continue to grow over the rain season and many times pose barriers to fish migration. Debris jams also cause deflection of flow into sandy banks of Los Osos Creek eroding and causing sedimentation downstream from this reach which is Morro Bay Estuary. Removing debris jams and restoring the natural flow reduces erosion and sedimentation and improves water quality.

Project # MBPIR 2006-4 - Notification #1600-2006-0368-3 - Chorro Flats Vegetative Bank Stabilization - (580) Stream Bank Stabilization

This project is intended to reduce sedimentation from upstream sources in the Morro Bay Estuary by trapping sediment in the old farmed wetland-turned-riparian forest. Since 1998, when the wetland easement was placed on this property, it is estimated that the riparian forest has trapped over 6 feet of sandy sediments across approximately 30 acres of the WRP Easement which equates to nearly 21,000 tons of sediment saved from deposition in the Morro Bay Estuary. (fence posts and h-braces from farm land fencing were found buried in riparian forest/old farm ground). Maintaining this process of passive sediment trapping is improving water quality in Los Osos Creek and the Morro Bay Estuary. Management of the vegetation and improvement in the diversity of the vegetation will assist this passive sediment retention and improve its wildlife value at the same time.

Project # MBPIR 2006-5 - Notification #1600-2006-0369-3 - Grade Stabilization

This project was not implemented this year due to time constraints.

Project # MBPIR 2006-6 - Notification #1600-2006-0370-3 - Clearing & Snagging

Water quality was improved stabilizing the channel with the removal of massive dead cat-tail/woody debris jams and small willows in the center of the channel that cause deflection into the banks and consequently erosion and downstream sediment. It is estimated that reducing the deflection of flow into the banks and the subsequent erosion and sedimentation will save 57 tons of soil per year. Continually managing the channel for stabilization will minimize water quality issues.

Species of Concern All of the project sites were evaluated during project planning as potential habitat for threatened and endangered animal and plant species. All of the project sites were identified as having suitable stream habitat for red-legged frogs. Cheryl Zelus, NRCS, a USFWS service approved individual, conducted a biological survey of the area before construction and documentation of these surveys is available at the NRCS field office in Templ n. No CA red-legged frogs (CRLF) were encountered at any project site this year and the information was documented according to US Fish & Wildlife and CDFG requirements. Los Osos Creek is a stream supporting steelhead. Project # MB PIR 2006-1, Project # MB PIR 2006-3 and Project # MB PIR 2006-4 were project sites on Los Osos Creek. Los Osos Creek was dry during the time the projects were performed, and was identified by NMFS as not likely to adversely affect. Project # MB PIR 2006-7 was identified by NMFS, as not likely to support steelhead due to presence of downstream barriers. There was one project performed on Chorro Creek, also considered a stream supporting steelhead. On Project # MB PIR 2006-2, Dave Highland, Fish Habitat Specialist, CDFG and Mike Hill, CDFG consulted with me to set up appropriate sedimentation protection. During project, Steelhead were not encountered anywhere on or near project. No CRLF were found on, at or near the project site during implementation. No steelhead or CRLF were detected or harmed in any way during any of these projects.

Wetlands and Riparian Habitat Wetland area was not lost or gained as a result of any of these projects. Enhancement to these riparian areas will result in a better functioning riparian habitat for use by diverse wildlife species including birds, fish, amphibians, reptiles, and small mammals. More refuge for these species will result from management of vegetation and increased shading, prolonging the life of pools in the summer months. CCC crews planted cottonwood, Big Leaf Maple, and Toyon, rooted cuttings along the banks at the site for diversity, in early December 2006. Toyon, Elderberry, Flowering Currant, Big Leaf Maple, Dogwood, Western Clematis and CA rose

Watershed Map

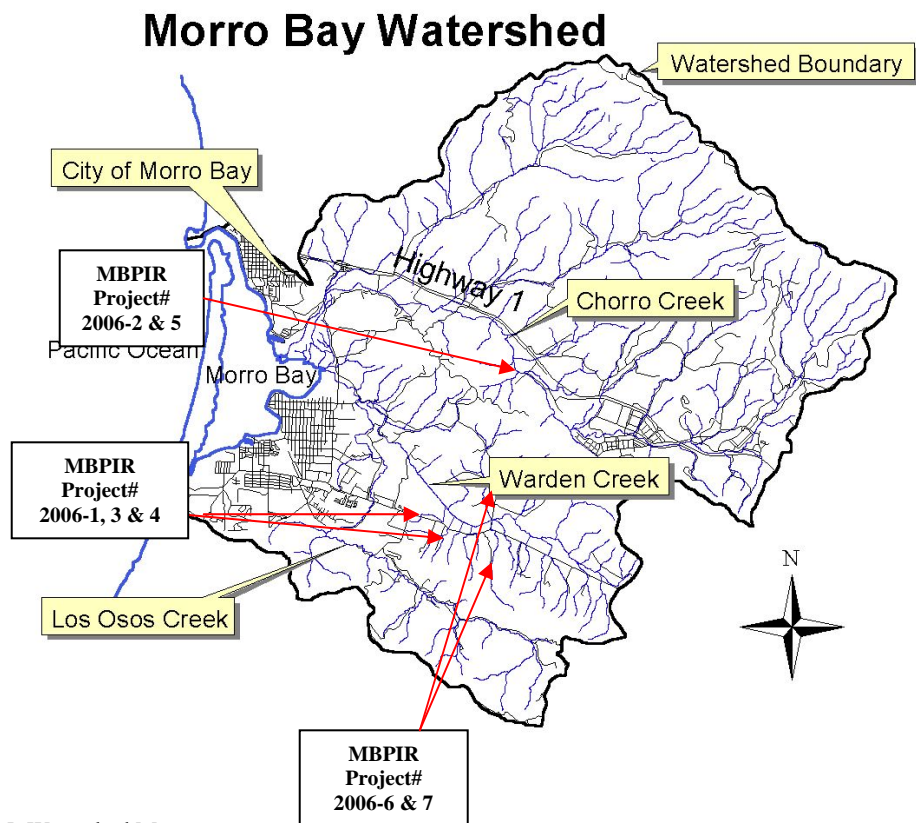


Fig 15. Watershed Map

Table 3: Description of the Conservation Projects and the Natural Enhancements and Physical Improvements Resulting from the Permit Coordination Program – 2002; 2003; 2004; 2006

Project No.	Project Purpose	Practices Installed	Pre-Project Condition	Natural Enhancements and Physical Improvements	Permits Involved
MB PIR Project # 2002-1 Notification #R3-2002-0838 & Cattle Co	To restore channel capacity, reduce bank erosion and enhance wildlife habitat.	Clearing and Snagging (326) Critical Area Planting (342)	Stream channel clogged with willows and accumulated debris	500 ft of stream channel improved by debris removal and selective pruning of willows to restore channel capacity and reduce bank erosion. Stream bank vegetation will be enhanced by willow planting. Continued maintenance will result in tall willow canopy providing shading of pools in summer months. This will provide more refuge for many different wildlife species.	USFWS CDFG
MB PIR Project # 2003-1 Notification #1600-2003-0438-3 Project #1	To restore channel capacity and fish passage & and enhance wildlife habitat.	(326) Clearing and Snagging	Stream channel clogged with willows and huge piles of accumulated woody debris	Maintaining canopy with no loss of habitat, and increasing migration corridor by opening channel with removal of large debris jams that would have delivered sediment to Morro Bay.	CDFG USFW
MB PIR Project # 2003-2 Notification #1600-2003-0439-3 Project #2	To restore channel capacity, establish low flow channel and fish passage at flood stage flows & enhance wildlife habitat.	(204) Stream Corridor Improvement	Stream channel is choked with sediment from upper reaches Steelhead could be stranded in riparian forest during flooding/no low flow channel during low rainfall years	Improve fish passage, reduce concern for stranding steelhead.	CDFG USFW
MB PIR Project #2003-3 Notification #1600-2003-0440-3	To protect stream bank and prevent erosion and sedimentation in Morro Bay	(580) Stream Bank Stabilization (342)Critical Area Planting	Stream Bank is eroded and continues to produce sediment which travels through this tributary to Warden Creek to Los Osos Creek and into Morro Bay	Stream bank protected temporarily while vegetation becomes established that will provide long term protection for stream bank.	CDFG USFW USACE RWQCB

Project No.	Project Purpose	Practices Installed	Pre-Project Condition	Natural Enhancements and Physical Improvements	Permits Involved
MB PIR Project #2003-4 Notification #1600-2003-0441-3	To restore channel capacity, reduce bank erosion and enhance wildlife habitat.	(326) Clearing and Snagging (322) Channel Vegetation (Stream Bank)	Stream channel clogged with willows, non-native cat-tails and accumulated woody debris	2000 ft of stream channel improved by debris removal and selective pruning of willows to restore channel capacity and reduce bank erosion. Stream bank vegetation will be enhanced by willow planting. Continued maintenance will result in tall willow canopy providing shading of pools in summer months. This will provide more refuge for many different wildlife species.	USFWS CDFG
MB PIR Project 2004-1 Notification #1600-2004-0523-3 Bank Stabilization	To protect stream bank and prevent erosion and sedimentation in Morro Bay and enhance wildlife habitat.	(580) Stream Bank Stabilization (342)Critical Area Planting	Eroded Vertical Bank, eroded toe, filling of natural pool and sediment delivery to bay.	Re-establishment of natural Pool, protection of bank toe, Terracing and filtering with plantings of vertical slope, and berm diversion to discontinue runoff damage from slope.	USACOE NMFS USFW CDF&G SWQCB Co of SLO Coastal Co
MBPIR Project # 2004-3 Notification #1600-2004-0525-3 Chorro Flats Clearing & Snagging	To protect stream bank and prevent erosion and sedimentation in Morro Bay and enhance wildlife habitat.	326 Clearing and Snagging	Many small willows in channel center and small eroded vertical bank from deflection of willow and debris jam.	Channel clear with good canopy maintained, young trees shaped for canopy cover not debris catchment, and cattail jam removed from structures so that structures can function as intended.	USACOE NMFS USFW CDF&G SWQCB Co of SLO Coastal Co
MBPIR Project # 2004-4 Notification #1600-2004-0528-3 Clearing & Snagging	To restore channel capacity and fish passage & enhance wildlife habitat.	326 Clearing and Snagging	Many debris jams clogging main channel of stream eroding sides of stream and delivering yards of sand to Morro Bay with every storm.	Maintaining canopy with no loss of habitat, and increasing migration corridor by opening channel with removal of large debris jams that would have delivered sediment to Morro Bay.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co

Project No.	Project Purpose	Practices Installed	Pre-Project Condition	Natural Enhancements and Physical Improvements	Permits or Notification
MBPIR Project # 2004- 5 Notification #1600-2004-0528-3 – Clearing & Snagging	To protect stream bank and prevent erosion sedimentation in Morro Bay and enhance wildlife habitat.	326 Clearing and Snagging	Fallen trees caused debris jams and deflected flow, damaging banks and creating sediment delivery to Morro Bay.	Maintaining canopy with no loss of habitat, and increasing migration corridor by opening channel with removal of fallen trees and debris jams.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MBPIR Project # 2004-6 - Notification # 1600-2004-0529-3- Clearing & Snagging	To protect stream bank and prevent erosion and sedimentation in Morro Bay and enhance wildlife habitat.	326 Clearing and Snagging	Many small willows in channel center and eroded vertical banks from deflection of willow and debris jams, debris jams deflecting flow into banks as well as fallen trees and large cat-tail debris jams causing sediment delivery to Morro Bay.	Clearing channel allows for better, cleaner, clearer flow to Morro Bay and less erosion to banks. Pruning existing vegetation to shape for canopy to shade out unwanted exotic vegetation and cool the water.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MBPIR Project # 2005-1 Notification #1600-2006-0408-3- Creek Management	To protect stream bank and prevent erosion sedimentation in Morro Bay and enhance wildlife habitat.	326 Clearing and Snagging	Fallen trees have caused debris jams and deflected flow, damaging banks and creating sediment delivery to Morro Bay.	Maintaining canopy with no loss of habitat, and increasing migration corridor by opening channel with removal of fallen trees and debris jams. Reduction in sedimentation to Morro Bay by reducing bank erosion by deflection.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MBPIR Project # 2005-2 Notification #1600-2006-0409-3- Fish Barrier Removal & Creek Maintenance	To remove old crossing debris with potential to be fish barrier. Prune vegetation and remove debris buildup for proper stream functioning and to improve habitat.	(326) Clearing & Snagging (204) Stream Corridor Improvement	Some willow growth had grown heavy and fallen into creek, caught debris and deflected flow into bank. Large chunks of old failed concrete crossings were strewn about, deflecting flow into banks and posing a fish barrier in some instances.	Maintaining canopy with no loss of habitat, and reducing bank deflection that resulted in sedimentation downstream and in Morro Bay. Removing fish barriers and foreign concrete, wire & rebar from creek that may cause problems for fish migration and passage. Pools & riffle sequences were reestablished and revegetation provided improved habitat.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co

Project No.	Project Purpose	Practices Installed	Pre-Project Condition	Natural Enhancements and Physical Improvements	Permits or Notification
MBPIR Project # 2005-3 Notification #1600-2006-0410-3- Los Osos Creek Management	To restore channel capacity and fish passage & enhance wildlife habitat.	326 Clearing and Snagging	Large debris jams are common in this flatter section of Los Osos Creek, large debris from upstream including a lot of garbage comes to rest and poses potential fish barriers and deflects flow to sandy banks causing sedimentation downstream in Morro Bay estuary.	Canopy is maintained with no loss of habitat and reducing sedimentation downstream and in the Morro Bay Estuary. Removing debris jams that cause barriers to fish migration, garbage and exotic species like Pampas Grass, Cape Ivy and Arundo Donax improve habitat for wildlife and increase plant diversity.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MBPIR Project # 2005-4 Notification #1600-2006-0411-3 –WRP Riparian Forest Management	To thin overcrowded and dead willow along channels Los Osos Creek formed in the old farm ground turned WRP Riparian Forest adjacent to Los Osos Creek. To improve native plant diversity and increase wildlife habitat value. Also to establish accessible escape channels for steelhead that may possibly be stranded in riparian forest.	326 Clearing and Snagging	“Matchstick” willow growth has caused willow to overcrowd one another and kill off a large portion of the primary phase willow growth in the reclaimed farm ground from the 1998 Wetland Reserve Program Easement purchase. Willow and dead willow stand so tight that no light can come in to encourage native under story growth found downstream. Channels have formed from the previous season’s deposition into Los Osos Creek and resulting over flow into forest. These small channels are choked with dead willow debris.	Canopy is maintained but dead willow is thinned from channel areas, some willows were pruned for canopy and to allow established channels to provide escape route for steelhead and sediment catchment as water flow slows. Already natives have begun to fill in the under story in the areas that were managed. Evidence of approximately 2 inches of sediment was observed on July 13, 2006 in the channels formed in last years flows and managed for this year’s flows. Habitat is improving with natural regeneration. We intend to plant after the third year of the trial, and let as much native regeneration occur as possible.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co

Project No.	Project Purpose	Practices Installed	Pre-Project Condition	Natural Enhancements and Physical Improvements	Permits or Notification
MBPIR Project # 2005-5 Notification #1600-2006-0412-3– Chorro Flats Stream Bank Stabilization	To reduce bank erosion and subsequent sedimentation downstream in Morro Bay Estuary.	None this year	Chorro Creek jumped to the new channel before the channel was completed and vegetation had been established. It has not been managed since the creek jumped into the channel. Canopy in some places has not yet grown in. This site had some new bank erosion and no vegetation to protect it.	Work was not performed this year.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MBPIR Project # 2005-6 Notification #1600-2006-0413-3– Stream Channel Stabilization	To stabilize stream bank of tributary to Warden Creek from erosion and downstream sedimentation	None this year	Upland swale has a severe head cut just upstream from an historical hand built old stone culvert, built by landowner’s father and grandfather.	Work was not performed this year.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MBPIR Project # 2005-7 Notification # 1600-2006-0529-3-Warden Creek Management	To protect over 2.5 miles of stream bank and prevent erosion and sedimentation in Morro Bay and enhance wildlife habitat.	326 Clearing and Snagging	Many small willows in channel center and eroded vertical banks from deflection of willow and debris jams, debris jams deflecting flow into banks and large cat-tail debris jams causing sediment delivery to Morro Bay Estuary.	Pruning willow for canopy to improve habitat value of riparian area and reduce erosion of banks. Would like taller trees and better under story diversity We have planted cottonwoods, box elder and big leaf maple. We know Cottonwoods have done well from the 1996 plantings. Sycamores do not do well at this site.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MB PIR Project # 2006-1 DFG Notification #1600-2006-0365-3 - Creek Management-(326) Clearing & Snagging	To protect stream bank and prevent erosion sedimentation in Morro Bay and enhance wildlife habitat.	326 Clearing and Snagging	Fallen trees have caused debris jams and deflected flow, damaging banks and creating sediment delivery to Morro Bay.	Maintaining canopy with no loss of habitat, and increasing migration corridor by opening channel with removal of fallen trees and debris jams. Reduction in sedimentation to Morro Bay by reducing bank erosion by deflection.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co

Project No.	Project Purpose	Practices Installed	Pre-Project Condition	Natural Enhancements and Physical Improvements	Permits or Notification
MB PIR Project # 2006-2 Notification # 1600-2006-0366-3 - WRP Los Osos Creek Management – (326) Clearing & Snagging	To restore channel capacity and fish passage & enhance wildlife habitat.	326 Clearing and Snagging	Large debris jams are common in this flatter section of Los Osos Creek, large debris from upstream including a lot of garbage comes to rest and poses potential fish barriers and deflects flow to sandy banks causing sedimentation downstream in Morro Bay estuary.	Canopy is maintained with no loss of habitat and reducing sedimentation downstream and in the Morro Bay Estuary. Removing debris jams that cause barriers to fish migration, garbage and exotic species like Pampas Grass, Cape Ivy and Arundo Donax improve habitat for wildlife and increase plant diversity.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MB PIR Project # 2006-3 Notification #1600-2006-0367-3 - WRP Riparian Forest Management – (326) Clearing & Snagging	To thin overcrowded and dead willow along channels Los Osos Creek formed in the old farm ground turned WRP Riparian Forest adjacent to Los Osos Creek. To improve native plant diversity and increase wildlife habitat value. Also to establish accessible escape channels for steelhead that may possibly be stranded in riparian forest.	326 Clearing and Snagging	“Matchstick” willow growth has caused willow to overcrowd one another and kill off a large portion of the primary phase willow growth in the reclaimed farm ground from the 1998 Wetland Reserve Program Easement purchase. Willow and dead willow stand so tight that no light can come in to encourage native under story growth found downstream. Channels have formed from the previous season’s deposition into Los Osos Creek and resulting over flow into forest. These small channels are choked with dead willow debris.	Canopy is maintained but dead willow is thinned from channel areas, some willows were pruned for canopy and to allow established channels to provide escape route for steelhead and sediment catchment as water flow slows. Already natives have begun to fill in the under story in the areas that were managed. Evidence of approximately 2 inches of sediment was observed on July 13, 2006 in the channels formed in last years flows and managed for this year’s flows. Habitat is improving with natural regeneration. We intend to plant after the third year of the trial, and let as much native regeneration occur as possible.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co

Project No.	Project Purpose	Practices Installed	Pre-Project Condition	Natural Enhancements and Physical Improvements	Permits or Notification
MB PIR Project # 2006-4 Notification #1600-2006-0368-3 - Chorro Flats Vegetative Bank Stabilization-(580) Stream Bank Protection	Reduce bank erosion on small un-vegetated bank area.	(580) Stream Bank Protection	Approximately 100 feet of bank area that had not been populated with Willow and other species yet after Chorro Creek jumped into the new channel project, several years ago.	Willow mattresses are built to withstand bank erosion and protect bank by populating with vegetation in several layers. This will allow regular flood events without eroding soil.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MB PIR Project # 2006-5 Notification #1600-2006-0369-3 - Grade Stabilization (410) Grade Stabilization	To reduce erosion on tributary to Warden Creek.	(410) Grade Stabilization	Head cut formed above historical stone culvert built by landowner's grandfather and father. Head cut is creating d=sedimentation downstream.	Work was not performed this year.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co
MB PIR Project # 2006-6 Notification #1600-2006-0370-3 - Clearing & Snagging (326) Clearing & Snagging	To protect over 2.5 miles of stream bank and prevent erosion and sedimentation in Morro Bay and enhance wildlife habitat.	326 Clearing and Snagging	Many small willows in channel center and eroded vertical banks from deflection of willow and debris jams, debris jams deflecting flow into banks and large cat-tail debris jams causing sediment delivery to Morro Bay Estuary.	Pruning willow for canopy to improve habitat value of riparian area and reduce erosion of banks. Would like taller trees and better under story diversity We have planted cottonwoods, box elder and big leaf maple. We know Cottonwoods have done well from the 1996 plantings. Sycamores do not do well at this site.	USACOE USFW CDF&G SWQCB Co of SLO Coastal Co