

This cost estimate is based on several assumptions:

- These types of projects are extremely variable in their costs, depending on biological, political, and logistical issues encountered. Included costs are estimated at the high end of range when there is question. Each project could potentially be completed at 30% less than the estimate provided in this study.
- Economy of scale is an important factor in controlling costs. Projects can be grouped in a variety of ways that may be different than those used in this study.
- Costs on each sheet in this workbook assume that each project will be built separately. The sheet titled "Grouping" provides recommendations on how to combine projects, and calculates the savings realized through the grouping.
- The scope of work for this task did not include searching for additional projects or issues outside of the immediate areas indicated on our site maps. There may be additional work not captured in these cost-estimates.
- This study assumes that all projects with permits will need 5 years of maintenance and monitoring to meet success criteria, and that all projects will be targeting mitigation-quality results.
- Estimates do not include costs associated with endangered species consultation or associate mitigation measures. Project proponent should take all possible
- Any impacts incurred to wetland habitats during implementation will be self-mitigated within the proposed project through replacement and expansion of same or similar habitats. The purpose of each project is inherently intended to improve quality and function of natural habitats and systems.

Malibu Creek Subwatershed Cost Estimation

McCoy Creek Site 1 (MC01)

Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
Design Costs				
Field Investigation/Bio Surveying/Mapping	\$ 1,000.00	LS	1	\$ 1,000.00
Field Equipment	\$ 110.00	day	1	\$ 110.00
Topographic Survey	\$ 450.00	acre		\$ -
Base Plan Preparation	\$ 650.00	LS		\$ -
Conceptual Restoration Plan (map + narrative)	\$ 5,000.00	LS	1	\$ 5,000.00
Renderings, models or photosimulations	\$ 650.00	each		\$ -
Grading Plan	\$ 2,500.00	LS		\$ -
Planting Plan	\$ 1,600.00	acre		\$ -
Irrigation Plan	\$ 3,000.00	acre		\$ -
Erosion Control Plan	\$ 400.00	LS		\$ -
Specifications	\$ 2,000.00	LS		\$ -
Client review and coordination	\$ 800.00	year	1	\$ 800.00
ACOE Nationwide permit	\$ 6,000.00	LS		\$ -
Water Quality Certification	\$ 3,000.00	LS		\$ -
DFG 1600 agreement	\$ 3,000.00	LS	1	\$ 3,000.00
Design Total				\$ 9,910.00
Construction Costs				
Preconstruction Surveys (sensitive species)	\$ 600.00	LS	1	\$ 600.00
Mobilization / Demobilization	\$ 2,000.00	LS	1	\$ 2,000.00
Large Tree removal	\$ 650.00	each	15	\$ 9,750.00
Clearing and Grubbing	\$ 2,330.00	acre	0.2	\$ 466.00
Invasive Weed Kill (Arundo, Tamarisk, etc.)	\$ 15,000.00	acre	0.2	\$ 3,000.00
Traffic Control	\$ 400.00	day		\$ -
Earthwork (balanced)	\$ 20.00	cyd		\$ -
Earthwork (imported fill)	\$ 33.00	cyd		\$ -
Earthwork (disposal of cut)	\$ 16.00	cyd		\$ -
In-stream structures (boulders, logs, etc)	\$ 500.00	each		\$ -
Site/Plant Protection (flagging/fencing)	\$ 1,500.00	acre	0.3	\$ 450.00
Seeding: Hydroseeding	\$ 0.10	S.F.		\$ -
Seeding: Imprinting	\$ 0.05	S.F.		\$ -
Seeding: Hand Broadcast	\$ 0.20	S.F.	4356	\$ 871.20
Plant Salvage & Replant: Tree Spade		each		\$ -
Plant Salvage & Replant: By Hand	\$ 50.00	each		\$ -
Potted Plantings (1 gal)	\$ 7.00	each	200	\$ 1,400.00
Cuttings Installation	\$ 1.00	each	200	\$ 200.00
Bioengineering Practices	\$ 30.00	LF	100	\$ 3,000.00
Erosion Control Installation	\$ 1,500.00	LS	1	\$ 1,500.00
Construction Monitoring	\$ 3,100.00	week	1	\$ 3,100.00
Construction Total				\$ 26,337.20
Maintenance & Monitoring Costs				
Invasive Weed Eradication maint	\$ 5,000.00	acre/year	1	\$ 5,000.00
Standard Maint (trash, weeds, erosion, etc)	\$ 3,000.00	acre/year	1.5	\$ 4,500.00
Hand/truck watering	\$ 800.00	acre/visit		\$ -
LA/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 17,500.00
Reporting	\$ 800.00	year	5	\$ 4,000.00
M&M Total				\$ 31,000.00
Project Total				\$ 67,247.20

Project Description
MC01 is roughly .3 acres along 250 L.F. of McCoy Creek, immediately south of Calabasas Road. It is a highly constrained reach that would benefit from a substantial widening effort to recreate a riparian zone and floodplain. That degree of project, however, is not feasible because of existing developments up to the edge of the current banks. This reach has steep banks, at roughly 1:1, but they appear to be largely stable. It is dominated by exotic species, including Vinca major, Eucalyptus spp, and Washingtonia robusta. Access is very good from the adjacent parking lot.

Recommendations
Concentrate on replacing exotic species with natives, and on maintaining bank stability.
<ol style="list-style-type: none"> 1. Preserve existing natives. 2. Remove large eucalyptus (2@60"dbh. 3@24"dbh) and other exotic species. 3. Seed and plant banks with natives that will help maintain bank stability. 4. Install willow wattles, brush fence, or similar at key locations along bank. 5. Actively maintain and monitor for 3-5 years.

Assumptions
<ol style="list-style-type: none"> 1. Construction drawings will not be necessary. 2. Supplemental watering will not be necessary. 3. Access is possible from adjacent property.

Project Benefits	
Water Quality	low
Habitat Improvement	moderate
Flood conveyance	-
Groundwater recharge	-
Aesthetics	moderate
Public Safety	-
Permitting Difficulty	low

Site Map and Photos
Graphics & Figures\Site_Locations\MC-01.pdf
Photos\MC01\MC01ChannelS2N.JPG
Photos\MC01\MC01CreekNE2SW.JPG
Photos\MC01\MC01EucsE2W.JPG
Photos\MC01\MC01ReinforcedWestBank.JPG

Malibu Creek Subwatershed Cost Estimation

McCoy Creek Site 2 (MC02)

Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
Design Costs				
Field Investigation/Bio Surveying/Mapping	\$ 1,000.00	LS	1	\$ 1,000.00
Field Equipment	\$ 110.00	day		\$ -
Topographic Survey	\$ 450.00	LS	1	\$ 450.00
Base Plan Preparation	\$ 650.00	LS	1	\$ 650.00
Conceptual Restoration Plan (map + narrative)	\$ 5,000.00	LS	1	\$ 5,000.00
Renderings, models or photosimulations	\$ 650.00	each	1	\$ 650.00
Grading Plan	\$ 2,500.00	LS	1	\$ 2,500.00
Planting Plan	\$ 1,600.00	acre	0.33	\$ 528.00
Irrigation Plan	\$ 3,000.00	acre	0.33	\$ 990.00
Erosion Control Plan	\$ 400.00	LS	1	\$ 400.00
Specifications	\$ 2,000.00	LS	1	\$ 2,000.00
Client review and coordination	\$ 800.00	year	1	\$ 800.00
ACOE Nationwide permit	\$ 6,000.00	LS		\$ -
Water Quality Certification	\$ 3,000.00	LS		\$ -
DFG 1600 agreement	\$ 3,000.00	LS	1	\$ 3,000.00
Design Total				\$ 17,968.00
Construction Costs				
Preconstruction Surveys (sensitive species)	\$ 600.00	LS	1	\$ 600.00
Mobilization / Demobilization	\$ 6,000.00	LS	1	\$ 6,000.00
Large Tree removal	\$ 650.00	each		\$ -
Clearing and Grubbing	\$ 2,330.00	acre	0.33	\$ 768.90
Invasive Weed Kill (Arundo, Tamarisk, etc.)	\$ 15,000.00	acre		\$ -
Traffic Control	\$ 400.00	day		\$ -
Earthwork (balanced)	\$ 20.00	cyd	100	\$ 2,000.00
Earthwork (imported fill)	\$ 33.00	cyd		\$ -
Earthwork (disposal of cut)	\$ 16.00	cyd		\$ -
Rock Channel	\$ 4,000.00	LS	1	\$ 4,000.00
Site/Plant Protection (flagging/fencing)	\$ 1,500.00	acre	0.33	\$ 495.00
Seeding: Hydroseeding	\$ 0.10	S.F.	14375	\$ 1,437.48
Seeding: Imprinting	\$ 0.05	S.F.		\$ -
Seeding: Hand Broadcast	\$ 0.20	S.F.		\$ -
Irrigation Installation	\$ 1.00	S.F.	14375	\$ 14,374.80
Plant Salvage & Replant: By Hand	\$ 50.00	each	10	\$ 500.00
Potted Plantings (1 gal)	\$ 7.00	each	150	\$ 1,050.00
Cuttings Installation	\$ 1.00	each	100	\$ 100.00
Bioengineering Practices	\$ 30.00	LF	30	\$ 900.00
Erosion Control Installation	\$ 3,000.00	LS	1	\$ 3,000.00
Construction Monitoring	\$ 3,100.00	week	2	\$ 6,200.00
Construction Total				\$ 41,426.18
Maintenance & Monitoring Costs				
Invasive Weed Eradication maint	\$ 5,000.00	acre/year		\$ -
Standard Maint (trash, weeds, erosion, etc)	\$ 1,500.00	acre/year	0.99	\$ 1,485.00
Hand/truck watering	\$ 800.00	acre/visit		\$ -
LA/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	3	\$ 10,500.00
Reporting	\$ 800.00	year	3	\$ 2,400.00
M&M Total				\$ 14,385.00
Project Total				\$ 73,779.18

Project Description
MC02 is an existing 300' concrete drainage connecting a lake to McCoy Creek (~.33 acres). It is likely not a historic natural connection and is designed as an overflow channel. There is good potential to improve its appearance, and aesthetics would be the primary benefit from the project. A major constraint is the presence of a very large oak only ~10' from the channel; the channel is well within the tree's canopy and disturbance from grading could be detrimental to the long-term health of the oak. Our recommendations are below, but a more raextensive alternative to the project as described would be to recreate the overflow channel in the form of a meandering channel through the wide open grassy area to the south of the oak tree. This alternative would roughly double the construction costs. Access is available through the park area.

Recommendations
Replace the existing concrete channel with a natural-appearing, rock-lined channel interplanted with riparian woodland species. Overall value of this project is relatively low, and there is a significant risk associated with damage to the large oak tree.
1. Protect the large oak tree from root and crown damage.
2. Salvage native species along McCoy Creek
3. Demo existing concrete channel.
4. Create boulder channel
5. Plant willow, mesic grasses, and similar native species.
6. Actively maintain and monitor for 3-5 years.

Assumptions
1. Channel work can be completed with zero root damage to the oak tree.
2. Construction drawings and specifications will be necessary.
3. Supplemental watering will be necessary for establishment.

Project Benefits	
Water Quality	low
Habitat Improvement	low
Flood conveyance	-
Groundwater recharge	-
Aesthetics	moderate
Public Safety	-
Permitting Difficulty	moderate

Site Map and Photos
Graphics & Figures\Site Locations\MC-02.pdf
Photos\MC02\MC02ChannelAndOak.JPG
Photos\MC02\MC02ChannelOutlet.JPG
Photos\MC02\MC02ChannelW2E.JPG

Malibu Creek Subwatershed Cost Estimation

McCoy Creek Site 3 (MC03)

Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
Design Costs				
Field Investigation/Bio Surveying/Mapping	\$ 2,000.00	LS	1	\$ 2,000.00
Field Equipment	\$ 110.00	day	1	\$ 110.00
Topographic Survey	\$ 450.00	acre	2	\$ 900.00
Base Plan Preparation	\$ 650.00	LS	1	\$ 650.00
Conceptual Restoration Plan (map + narrative)	\$ 5,000.00	LS	1	\$ 5,000.00
Renderings, models or photosimulations	\$ 650.00	each	1	\$ 650.00
Grading Plan	\$ 2,500.00	LS	1	\$ 2,500.00
Planting Plan	\$ 1,600.00	acre	0.75	\$ 1,200.00
Irrigation Plan	\$ 3,000.00	acre		\$ -
Erosion Control Plan	\$ 400.00	LS	1	\$ 400.00
Specifications	\$ 2,000.00	LS	1	\$ 2,000.00
Client review and coordination	\$ 800.00	year	1	\$ 800.00
ACOE Nationwide permit	\$ 6,000.00	LS	1	\$ 6,000.00
Water Quality Certification	\$ 3,000.00	LS	1	\$ 3,000.00
DFG 1600 agreement	\$ 3,000.00	LS	1	\$ 3,000.00
Design Total				\$ 28,210.00
Construction Costs				
Preconstruction Surveys (sensitive species)	\$ 600.00	LS	1	\$ 600.00
Mobilization / Demobilization	\$ 6,000.00	LS	1	\$ 6,000.00
Large Tree removal	\$ 650.00	each	20	\$ 13,000.00
Clearing and Grubbing	\$ 2,330.00	acre	0.75	\$ 1,747.50
Invasive Weed Kill (Arundo, Tamarisk, etc.)	\$ 15,000.00	acre		\$ -
Traffic Control	\$ 400.00	day		\$ -
Earthwork (balanced)	\$ 20.00	cyd	2440	\$ 48,800.00
Earthwork (imported fill)	\$ 33.00	cyd		\$ -
Earthwork (disposal of cut)	\$ 16.00	cyd	2400	\$ 38,400.00
In-stream structures (boulders, logs, etc)	\$ 500.00	each		\$ -
Site/Plant Protection (flagging/fencing)	\$ 1,500.00	acre	1	\$ 1,500.00
Seeding: Hydroseeding	\$ 0.10	S.F.	30000	\$ 3,000.00
Seeding: Imprinting	\$ 0.05	S.F.		\$ -
Seeding: Hand Broadcast	\$ 0.20	S.F.		\$ -
Plant Salvage & Replant: Tree Spade		each		\$ -
Plant Salvage & Replant: By Hand	\$ 50.00	each	10	\$ 500.00
Potted Plantings (1 gal)	\$ 7.00	each	400	\$ 2,800.00
Cuttings Installation	\$ 1.00	each	500	\$ 500.00
Bioengineering Practices	\$ 30.00	LF	40	\$ 1,200.00
Erosion Control Installation	\$ 3,000.00	LS	1	\$ 3,000.00
Construction Monitoring	\$ 3,100.00	week	2	\$ 6,200.00
Construction Total				\$ 127,247.50
Maintenance & Monitoring Costs				
Invasive Weed Eradication maint	\$ 5,000.00	acre/year		\$ -
Standard Maint (trash, weeds, erosion, etc)	\$ 3,000.00	acre/year	3.75	\$ 11,250.00
Hand/truck watering	\$ 800.00	acre/visit		\$ -
LA/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 17,500.00
Reporting	\$ 800.00	year	5	\$ 4,000.00
M&M Total				\$ 32,750.00
Project Total				\$ 188,207.50

Project Description

MC03 is approximately 0.75 acres along roughly 400 L.F. of McCoy Creek, starting at the culvert/bridge and extending to the south. It is flanked closely on the west bank by housing developments, with portions of the bank protected by structural products like gabions. The east bank is relatively heavily vegetated with native riparian forest species, and leads into a wide open grassy area maintained as park land use. This reach of creek has clearly been narrowed over time, resulting in the elimination of its floodplain. This is a good opportunity to expand the riparian zone and re-establish more natural hydraulics and floodplain functionality. It will come at some degree of short-term cost in the form of impacts to existing riparian vegetation on the bank to be graded. Access is available through the park area.

Recommendations

Re-establish a floodplain and natural banks by recontouring the east bank. Limit modification to the actual channel, but allow for its natural migration over time. Plant heavily on the west bank to encourage high-velocity flows further away from the homes.

1. Salvage cuttings and whole plants from the east bank area that will be graded.
2. Protect native species outside the limits of grading.
3. Regrade ~400 L.F. of the east bank. Create floodplain 20-40' wide and 2:1 - 3:1 banks.
4. Plant the west bank heavily with willow cuttings
5. Plant the graded area with riparian forest species.
6. Actively maintain and monitor the site for 3-5 years

Assumptions

1. Construction drawings will be necessary.
2. Grading will require substantial export of material.
3. Supplemental irrigation will not be necessary.

Project Benefits

Water Quality	moderate
Habitat Improvement	high (long term). Negative benefit in short term)
Flood conveyance	high
Groundwater recharge	moderate
Aesthetics	moderate
Public Safety	low
Permitting Difficulty	moderate

Site Map and Photos

[Graphics & Figures\Site Locations\MC-03.pdf](#)
[Photos\MC03\MC03BankVegS2N.JPG](#)
[Photos\MC03\MC03N_end_N2S.JPG](#)
[Photos\MC03\MC03S_End_S2N.JPG](#)

Malibu Creek Subwatershed Cost Estimation

McCoy Creek Site 10 (MC10)

Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
Design Costs				
Field Investigation/Bio Surveying/Mapping	\$ 2,000.00	LS	1	\$ 2,000.00
Field Equipment	\$ 110.00	day	1	\$ 110.00
Topographic Survey	\$ 450.00	acre	2	\$ 900.00
Base Plan Preparation	\$ 650.00	LS	1	\$ 650.00
Conceptual Restoration Plan (map + narrative)	\$ 5,000.00	LS	1	\$ 5,000.00
Renderings, models or photosimulations	\$ 650.00	each	3	\$ 1,950.00
Grading Plan	\$ 2,500.00	LS	1	\$ 2,500.00
Planting Plan	\$ 1,600.00	acre	0.5	\$ 800.00
Irrigation Plan	\$ 3,000.00	acre		\$ -
Erosion Control Plan	\$ 400.00	LS	1	\$ 400.00
Specifications	\$ 2,000.00	LS	1	\$ 2,000.00
Client review and coordination	\$ 2,000.00	year	1	\$ 2,000.00
ACOE Nationwide permit	\$ 6,000.00	LS		\$ -
Water Quality Certification	\$ 3,000.00	LS		\$ -
DFG 1600 agreement	\$ 3,000.00	LS	1	\$ 3,000.00
Design Total				\$ 21,310.00
Construction Costs				
Preconstruction Surveys (sensitive species)	\$ 600.00	LS		\$ -
Mobilization / Demobilization	\$ 6,000.00	LS	1	\$ 6,000.00
Large Tree removal	\$ 650.00	each	15	\$ 9,750.00
Clearing and Grubbing	\$ 2,330.00	acre	0.5	\$ 1,165.00
Invasive Weed Kill (Arundo, Tamarisk, etc.)	\$ 15,000.00	acre		\$ -
Traffic Control	\$ 400.00	day		\$ -
Earthwork (balanced)	\$ 20.00	cyd		\$ -
Earthwork (imported fill)	\$ 33.00	cyd		\$ -
Earthwork (disposal of cut)	\$ 16.00	cyd		\$ -
In-stream structures (boulders, logs, etc)	\$ 500.00	each		\$ -
Site/Plant Protection (flagging/fencing)	\$ 1,500.00	acre	0.5	\$ 750.00
Seeding: Hydroseeding	\$ 0.10	S.F.		\$ -
Seeding: Imprinting	\$ 0.05	S.F.		\$ -
Seeding: Hand Broadcast	\$ 0.20	S.F.	21780	\$ 4,356.00
Plant Salvage & Replant: Tree Spade		each		\$ -
Plant Salvage & Replant: By Hand	\$ 50.00	each		\$ -
Potted Plantings (1 gal)	\$ 7.00	each	300	\$ 2,100.00
Cuttings Installation	\$ 1.00	each	100	\$ 100.00
Bioengineering Practices	\$ 30.00	LF		\$ -
Erosion Control Installation	\$ 3,000.00	LS	1	\$ 3,000.00
Construction Monitoring	\$ 3,100.00	week	2	\$ 6,200.00
Construction Total				\$ 33,421.00
Maintenance & Monitoring Costs				
Invasive Weed Eradication maint	\$ 5,000.00	acre/year		\$ -
Standard Maint (trash, weeds, erosion, etc)	\$ 3,000.00	acre/year	2.5	\$ 7,500.00
Hand/truck watering	\$ 800.00	acre/visit		\$ -
LA/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 17,500.00
Reporting	\$ 800.00	year	5	\$ 4,000.00
M&M Total				\$ 29,000.00
Project Total				\$ 83,731.00

Project Description
MC10 is roughly .5 acres in size along 250 L.F. of McCoy Creek within the Calabasas Golf and Country Club. The master plan calls for the removal of sediment and stabilization of bank erosion. Neither problem was prominent during our visit, but the area does need restoration work. A large area on the NW bank is dominated by Pepper Trees and other exotic species. The upstream sections have relatively sparsely vegetated banks. The reach ends at a small bridge that separates this site from MC11. The creek itself apparently has low velocity in this area and is dominated by Typha. Golf play crosses this section of creek so solutions will need to accommodate line of site and ball travel..

Recommendations
Plant the west bank just north of the bridge heavily to keep it stable. Replace the existing exotic trees with natives. Enhance the section of bank in line with the golfing line with native herbaceous species. Remove exotics and re-establish natives at the outside of the bend at the north end of the site. Grade plantings from herbaceous and shrubs at the bank edge, through riparian forest, to upland tree and shrub species. Establish a herbaceous riparian buffer strip on either side of the creek to improve water quality.
1. protect native species
2. remove exotics
3. plant and seed natives
4. actively maintain and monitor for 3-5 years.
5. Establish a permanent monitoring program to manage the area as a pollutant filter.
6. Clearly stake the limits of the riparian area with permanent, unmovable markers

Assumptions
1. Substantial coordination with the golf course will be necessary.
2. Construction drawings will be necessary.
3. No supplemental watering will be necessary.
4. Access is possible through the golf course.

Project Benefits	
Water Quality	high
Habitat Improvement	moderate
Flood conveyance	-
Groundwater recharge	-
Aesthetics	moderate
Public Safety	-
Permitting Difficulty	low

Site Map and Photos
Graphics & Figures\Site Locations\MC-10.11.pdf
Photos\MC10\MC10N_BankE2W.JPG
Photos\MC10\MC10SE2NW.JPG
Photos\MC10\MC10UpstreamEndNE2SW.JPG

Malibu Creek Subwatershed Cost Estimation

McCoy Creek Site 11 (MC11)

Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
Design Costs				
Field Investigation/Bio Surveying/Mapping	\$ 1,000.00	LS	1	\$ 1,000.00
Field Equipment	\$ 110.00	day	1	\$ 110.00
Topographic Survey	\$ 450.00	acre	2	\$ 900.00
Base Plan Preparation	\$ 650.00	LS	1	\$ 650.00
Conceptual Restoration Plan (map + narrative)	\$ 5,000.00	LS	1	\$ 5,000.00
Renderings, models or photosimulations	\$ 650.00	each	3	\$ 1,950.00
Grading Plan	\$ 2,500.00	LS	1	\$ 2,500.00
Planting Plan	\$ 1,600.00	acre	0.5	\$ 800.00
Irrigation Plan	\$ 3,000.00	acre		\$ -
Erosion Control Plan	\$ 400.00	LS	1	\$ 400.00
Specifications	\$ 2,000.00	LS	1	\$ 2,000.00
Client coordination and public outreach	\$ 2,000.00	year	1	\$ 2,000.00
ACOE Nationwide permit	\$ 6,000.00	LS	1	\$ 6,000.00
Water Quality Certification	\$ 3,000.00	LS	1	\$ 3,000.00
DFG 1600 agreement	\$ 3,000.00	LS	1	\$ 3,000.00
Design Total				\$ 29,310.00
Construction Costs				
Preconstruction Surveys (sensitive species)	\$ 600.00	LS		\$ -
Mobilization / Demobilization	\$ 6,000.00	LS	1	\$ 6,000.00
Large Tree removal	\$ 650.00	each		\$ -
Clearing and Grubbing	\$ 2,330.00	acre		\$ -
Invasive Weed Kill (Arundo, Tamarisk, etc.)	\$ 15,000.00	acre		\$ -
Traffic Control	\$ 400.00	day		\$ -
Earthwork (balanced)	\$ 20.00	cyd	440	\$ 8,800.00
Earthwork (imported fill)	\$ 33.00	cyd		\$ -
Earthwork (disposal of cut)	\$ 16.00	cyd	440	\$ 7,040.00
In-stream structures (boulders, logs, etc)	\$ 500.00	each		\$ -
Site/Plant Protection (flagging/fencing)	\$ 1,500.00	acre	0.5	\$ 750.00
Seeding: Hydroseeding	\$ 0.10	S.F.	21780	\$ 2,178.00
Seeding: Imprinting	\$ 0.05	S.F.		\$ -
Seeding: Hand Broadcast	\$ 0.20	S.F.		\$ -
Plant Salvage & Replant: Tree Spade		each		\$ -
Plant Salvage & Replant: By Hand	\$ 50.00	each		\$ -
Potted Plantings (1 gal)	\$ 7.00	each	300	\$ 2,100.00
Cuttings Installation	\$ 1.00	each	200	\$ 200.00
Bioengineering Practices	\$ 30.00	LF		\$ -
Erosion Control Installation	\$ 3,000.00	LS	1	\$ 3,000.00
Construction Monitoring	\$ 3,100.00	week	1	\$ 3,100.00
Construction Total				\$ 33,168.00
Maintenance & Monitoring Costs				
Invasive Weed Eradication maint	\$ 5,000.00	acre/year		\$ -
Standard Maint (trash, weeds, erosion, etc)	\$ 1,500.00	acre/year	2.5	\$ 3,750.00
Hand/truck watering	\$ 800.00	acre/visit		\$ -
LA/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 17,500.00
Reporting	\$ 800.00	year	5	\$ 4,000.00
M&M Total				\$ 25,250.00
Project Total				\$ 87,728.00

Project Description

MC11 is roughly .5 acre located along roughly 300 L.F. of McCoy Creek within a golf course. It is very tightly constrained by golf fairway on either side. The upstream end is defined by a culvert outlet, and the downstream end is defined by a small bridge. Both banks are actively sloughing, and portions have been reinforced by low retaining walls. Solutions will need to respect the need for a line of site for golfers over the downstream end. Vegetated buffer strips are likely to be highly beneficial for water quality.

Recommendations

- Establish a more natural stream course roughly 30-40' wide along the entire length, with the upper portion planted in riparian woodland and the lower portion planted and maintained as lower grass/forb/shrub communities. All should be designed for maximum filtering effect.
1. Recreate a floodplain area by recontouring both banks. Export of material will be necessary
 2. Plant the banks as described above.
 3. Actively maintain and monitor the site for 5 years.
 4. Establish a permanent monitoring program to manage the area as a pollutant filter.
 5. Clearly stake the limits of the riparian area with permanent, unmovable markers

Assumptions

1. Construction drawings will be necessary
2. No supplemental watering will be necessary.
3. Substantial coordinate with the golf course will be necessary.

Project Benefits

Water Quality	high
Habitat Improvement	high
Flood conveyance	high
Groundwater recharge	low
Aesthetics	high
Public Safety	low
Permitting Difficulty	low

Site Map and Photos

- [Graphics & Figures\Site Locations\MC-10,11.pdf](#)
[Photos\MC11\MC11BanksSE2NW.JPG](#)
[Photos\MC11\MC11LookingUpstream.JPG](#)
[Photos\MC11\MC11Upstream_EndS2N.JPG](#)

Malibu Creek Subwatershed Cost Estimation

McCoy Creek Site 19 and 20 (MC19 & MC20)

Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
Design Costs				
Field Investigation/Bio Surveying/Mapping	\$ 3,000.00	LS	1	\$ 3,000.00
Field Equipment	\$ 110.00	day	3	\$ 330.00
Topographic Survey	\$ 450.00	acre	3	\$ 1,350.00
Base Plan Preparation	\$ 650.00	LS	1	\$ 650.00
Conceptual Wetland Plan (maps + narrative)	\$ 10,000.00	LS	1	\$ 10,000.00
Renderings, models or photosimulations	\$ 650.00	each	3	\$ 1,950.00
Grading Plan	\$ 3,500.00	LS	1	\$ 3,500.00
Planting Plan	\$ 1,600.00	LS	1	\$ 1,600.00
Irrigation Plan	\$ 3,000.00	acre		\$ -
Erosion Control Plan	\$ 400.00	LS	1	\$ 400.00
Specifications	\$ 3,500.00	LS	1	\$ 3,500.00
Client review and coordination	\$ 2,000.00	year	1	\$ 2,000.00
ACOE Nationwide permit	\$ 6,000.00	LS	1	\$ 6,000.00
Water Quality Certification	\$ 6,000.00	LS	1	\$ 6,000.00
DFG 1600 agreement	\$ 3,000.00	LS	1	\$ 3,000.00
Design Total				\$ 43,280.00
Construction Costs				
Preconstruction Surveys (sensitive species)	\$ 600.00	LS		\$ -
Mobilization / Demobilization	\$ 6,000.00	LS	1	\$ 6,000.00
Large Tree removal	\$ 650.00	each	50	\$ 32,500.00
Clearing and Grubbing	\$ 2,330.00	acre	0.5	\$ 1,165.00
Invasive Weed Kill (Pampass grass)	\$ 15,000.00	acre	0.5	\$ 7,500.00
Traffic Control	\$ 400.00	day	10	\$ 4,000.00
Earthwork (balanced) + fine grading	\$ 35.00	cyd	1000	\$ 35,000.00
Earthwork (imported fill)	\$ 33.00	cyd		\$ -
Earthwork (disposal of cut)	\$ 16.00	cyd	600	\$ 9,600.00
In-stream structures (boulders, logs, etc)	\$ 500.00	each		\$ -
Site/Plant Protection (flagging/fencing)	\$ 1,500.00	acre		\$ -
Seeding: Hydroseeding	\$ 0.10	S.F.		\$ -
Seeding: Imprinting	\$ 0.05	S.F.	10000	\$ 500.00
Seeding: Hand Broadcast	\$ 0.20	S.F.		\$ -
Plant Salvage & Replant: Tree Spade		each		\$ -
Plant Salvage & Replant: By Hand	\$ 50.00	each		\$ -
Potted Plantings (1 gal)	\$ 7.00	each	200	\$ 1,400.00
Cuttings / Plugs Installation	\$ 1.00	each	7500	\$ 7,500.00
Bioengineering Practices	\$ 30.00	LF		\$ -
Erosion Control Installation	\$ 3,000.00	LS	1	\$ 3,000.00
Construction Monitoring	\$ 3,100.00	week	5	\$ 15,500.00
Construction Total				\$ 123,665.00
Maintenance & Monitoring Costs				
Invasive Weed Eradication maint	\$ 5,000.00	acre/year	2.5	\$ 12,500.00
Standard Maint (trash, weeds, erosion, etc)	\$ 3,000.00	acre/year	1.25	\$ 3,750.00
Hand/truck watering	\$ 800.00	acre/visit		\$ -
LA/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 17,500.00
Reporting	\$ 800.00	year	5	\$ 4,000.00
M&M Total				\$ 37,750.00
Project Total				\$ 204,695.00

Project Description

MC19 is listed in the master plan as a headcut stabilization project. We were unable to locate any significant erosion in the area and so we are merging this site with MC20. MC20 is vaguely defined in the master plan as "create/restore wetland." Ecologically speaking, there is ample opportunity to restore wetlands in this area, but given the constraints of the existing golf course, we recommend concentrating on a .1 acre area just upstream of the culvert under Parkway Calabasas. The area currently has scattered riprap and appears to receive significant sedimentation, which points to good potential for a treatment wetland function in this area. We added approximately 2 acres of additional surrounding landscape areas to this project because they contain large numbers of Cortaderia and Schinus. Similar issues probably exist in other landscape areas around the course and should also be addressed in other projects.

Recommendations

Establish a water quality treatment wetland at the mouth of the culvert, allowing for periodic maintenance to remove accumulated sediments. Coordinate with the golf course and homeowners' associations to replace invasive exotic landscape species with native species.

1. construct treatment wetland
2. remove exotic species
3. plant native species in landscaping areas
4. develop a permanent maintenance and monitoring program for the wetland area.
5. maintain and monitor the project during its 3-5 year establishment phase.

Assumptions

1. construction documents will be necessary.
2. supplemental watering will not be necessary.
3. extensive coordination and study will be necessary to reach consensus on the wetland
4. the HOA and golf course will maintain landscape plantings after a 120-day establishment.

Project Benefits

Water Quality	high
Habitat Improvement	low
Flood conveyance	-
Groundwater recharge	moderate
Aesthetics	moderate
Public Safety	-
Permitting Difficulty	high

Site Map and Photos

[Graphics & Figures\Site_Locations\MC-19,20.pdf](#)
[Photos\MC19andMC20\MC20ExistingInletAreaS2N.JPG](#)
[Photos\MC19andMC20\MC20PampassGrass.JPG](#)
[Photos\MC19andMC20\MC20PepperTrees.JPG](#)
[Photos\MC19andMC20\MC20PotentialWetlandAreaS2N.JPG](#)
[Photos\MC19andMC20\MC20SedimentAtInlet.JPG](#)