



CITY of CALABASAS

# APPENDIX No. 3



## McCoy Canyon Creek Filed Notes and Detail Cost Estimates







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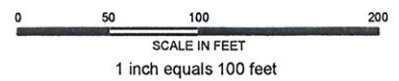
McCoy Creek

Construction Code	Project Codes	Project Description	Assumptions	Study & Design Cost	Construction & Inspection Cost	Total Design & Construction	Projected O & M Costs	Comments	Priority
FH-M01	MC01	Remove large Eucalyptus, Vinca, and other exotic species. Plant riparian forest species and understory to promote bank stability. Install bioengineered toe protection at key points. Maintain and monitor for 3-5 years.	Access is good. No supplemental watering. No CD's.	\$9,910.00	\$26,337.20	\$36,247.20	\$31,000.00		High
FH-M02	MC02, MC03	At MC02, demolish existing concrete overflow channel. Install cobble/boulder "natural" channel integrated with wetland/riparian plantings. At MC03, re-establish a floodplain and natural banks by recontouring the east bank. Limit modifications 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. Maintain and monitor for 3-5 years.	Access is good. CD's are required. Irrigation is available.	\$40,378.00	\$181,973.68	\$202,351.68	\$39,485.00	MC02 runs under the canopy of a large mature oak. If grading will cause damage to the tree, the project should not be completed as described, but could instead re-route the channel through the grassy area to the south. MC03 will require temporary removal of substantial riparian habitat.	Moderate to low
FH-M03	MC10, MC11	At MC10, 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. At MC11, 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. Maintain and monitor for 3-5 years.	Access is good through the golf course. CD's are required. Irrigation is available.	\$36,110.00	\$60,569.00	\$96,699.00	\$44,500.00	Water quality improvement is the major benefit in these projects. Extensive coordination with the golf course will be required. Numerous other opportunities exist within the golf course to daylight stream reaches, establish riparian plantings and/or water quality filter strips, etc.	High
FH-M04	MC19, MC20	MC19 was not found. At MC20, establish a water quality treatment wetland at the mouth of the culvert, allowing for periodic maintenance to remove accumulated sediments. Establish a permanent maintenance program for removing sediments, etc. Expand project to include removal of Schinus and Cortaderia in nearby landscaping. Coordinate with the golf course and home-owners' associations to replace invasive exotic landscape species with native species.	Access is through the golf course. CD's are required. Irrigation is available.	\$43,280.00	\$123,665.00	\$166,945.00	\$37,750.00		High



Digital aerials from the USGS Seamless Data Distribution System, 2003.

**Site MC- 01**





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Digital aeriels from the USGS Seamless Data Distribution System, 2003.

**Site MC- 02**





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Digital aerials from the USGS Seamless Data Distribution System, 2003.

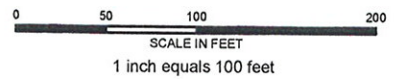
**Site MC- 03**

0 50 100 200  
SCALE IN FEET  
1 inch equals 100 feet



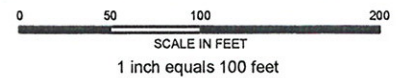
Digital aeriels from the USGS Seamless Data Distribution System, 2003.

**Sites MC-10 and MC-11**





**Sites MC-19 and MC 20**







## Overall Cost Estimates Assumptions

### **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.



# Cost Estimation for MC-01

## Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
<b>Design Costs</b>				
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
<b>Design Total</b>				<b>\$ 9,910.00</b>

**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.

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

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\MC01EucaE2W.JPG
- Photos\MC01\MC01ReinforcedWestBank.JPG

## 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
Cleaning 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		-
Silt/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
<b>Construction Total</b>				<b>\$ 26,337.20</b>

## 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		-
LAV/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 17,500.00
Reporting	\$ 800.00	year	5	\$ 4,000.00
<b>M&amp;M Total</b>				<b>\$ 31,000.00</b>
<b>Project Total</b>				<b>\$ 67,247.20</b>



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Cost Estimation for MC-02

Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
<b>Design Costs</b>				
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
<b>Design Total</b>				<b>\$ 17,968.00</b>
<b>Construction Costs</b>				
Preconstruction Surveys (sensitive species)	\$ 600.00	LS	1	\$ 600.00
Mobilization / Demobilization	\$ 5,000.00	LS	1	\$ 5,000.00
Large Tree removal	\$ 650.00	each		-
Cleaning 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
<b>Construction Total</b>				<b>\$ 41,425.18</b>
<b>Maintenance &amp; Monitoring Costs</b>				
Invasive Weed Eradication maint	\$ 5,000.00	acre/year	0.99	\$ 1,485.00
Standard Maint (trash, weeds, erosion, etc)	\$ 1,500.00	acre/year		-
Hand/truck watering	\$ 800.00	acre/visit	3	\$ 10,500.00
LA/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	3	\$ 2,400.00
Reporting	\$ 800.00	year		-
<b>M&amp;M Total</b>				<b>\$ 14,385.00</b>
<b>Project Total</b>				<b>\$ 73,779.18</b>

**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 reextensive 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



# Cost Estimation for MC-03

## Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
<b>Design Costs</b>				
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; Renderings, models or photosimulations)	\$ 5,000.00	LS	1	\$ 5,000.00
Grading Plan	\$ 650.00	each	1	\$ 650.00
Planting Plan	\$ 2,500.00	LS	1	\$ 2,500.00
Irrigation Plan	\$ 1,600.00	acre	0.75	\$ 1,200.00
Erosion Control Plan	\$ 3,000.00	acre		\$ -
Specifications	\$ 400.00	LS	1	\$ 400.00
Client review and coordination	\$ 2,000.00	LS	1	\$ 2,000.00
ACOE Nationwide permit	\$ 800.00	year	1	\$ 800.00
Water Quality Certification	\$ 6,000.00	LS	1	\$ 6,000.00
DFG 1600 agreement	\$ 3,000.00	LS	1	\$ 3,000.00
<b>Design Total</b>	\$ 3,000.00	LS	1	\$ 28,210.00
<b>Construction Costs</b>				
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	\$ 50.00	each		\$ -
Plant Salvage & Replant: By Hand	\$ 7.00	each	10	\$ 500.00
Potted Plantings (1 gal)	\$ 1.00	each	400	\$ 2,800.00
Cuttings Installation	\$ 30.00	LF	500	\$ 500.00
Bioengineering Practices	\$ 3,000.00	LS	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
<b>Construction Total</b>				\$ 127,247.50
<b>Maintenance &amp; Monitoring Costs</b>				
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		\$ -
LAV/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 17,500.00
Reporting	\$ 800.00	year	5	\$ 4,000.00
<b>M&amp;M Total</b>				\$ 32,750.00
<b>Project Total</b>				\$ 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 modifications 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 and N2S.JPG  
 Photos/MC03/MC03S\_End\_S2N.JPG



# Cost Estimation for MC-10

## Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
<b>Design Costs:</b>				
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
<b>Design Total</b>				<b>\$ 21,310.00</b>

## 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	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	\$ 50.00	each		\$ -
Plant Salvage & Replant: By Hand	\$ 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
<b>Construction Total</b>				<b>\$ 33,421.00</b>

## 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	5	\$ 17,500.00
LA/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 4,000.00
Reporting	\$ 800.00	year		\$ 29,000.00
<b>M&amp;M Total</b>				<b>\$ 83,731.00</b>

**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



# Cost Estimation for MC-11

## Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
<b>Design Costs</b>				
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	\$ 550.00	LS	1	\$ 550.00
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
<b>Design Total</b>				<b>\$ 29,310.00</b>
<b>Construction Costs</b>				
Reconstruction 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	\$ 50.00	each		\$ -
Plant Salvage & Replant: By Hand	\$ 7.00	each	300	\$ 2,100.00
Potted Plantings (1 gal)	\$ 1.00	each	200	\$ 200.00
Cuttings Installation	\$ 30.00	LF		\$ -
Bioengineering Practices	\$ 3,000.00	LS	1	\$ 3,000.00
Erosion Control Installation	\$ 3,100.00	week	1	\$ 3,100.00
Construction Monitoring				\$ -
<b>Construction Total</b>				<b>\$ 33,168.00</b>
<b>Maintenance &amp; Monitoring Costs</b>				
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		\$ -
LAV/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 17,500.00
Reporting	\$ 800.00	year	5	\$ 4,000.00
<b>M&amp;M Total</b>				<b>\$ 25,250.00</b>
<b>Project Total</b>				<b>\$ 87,728.00</b>

**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



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# Cost Estimation for MC-19

## Standard Rough Order of Magnitude Costs

Bid Item	Unit Cost	Units	Quant	Cost
<b>Design Costs</b>				
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
<b>Construction Costs</b>				
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	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.	10000	\$ 1,000.00
Seeding: Imprinting	\$ 0.05	S.F.		\$ 500.00
Seeding: Hand Broadcast	\$ 0.20	S.F.		\$ -
Plant Salvage & Replant: Tree Spade	\$ 50.00	each		\$ -
Plant Salvage & Replant: By Hand	\$ 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
<b>Maintenance &amp; Monitoring Costs</b>				
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	5	\$ 17,500.00
LAV/Bio monitoring of progress (qual & quan)	\$ 3,500.00	year	5	\$ 4,000.00
Reporting	\$ 800.00	year	5	\$ 37,750.00
M&M Total				\$ 77,500.00
<b>Project Total</b>				<b>\$ 204,695.00</b>

**Project Description**

MC-19 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\SedimentInlet.JPG



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Cost Estimation for Other McCoy Canyon Creek Sites

Construction Code	Project Codes	Project Description	Study & Design Cost	Construction & Inspection Cost	Total Design & Construction	Projected O & M Costs	Comments	Priority
QM-01	MC-04	Stabilize Banks	12,000	43,125	55,125	5,000		Low
QM-02	MC-05	Remove Barrier to Fish Movement	24,000	80,000	104,000	7,500		Low
	MC-06	Bank Instability and In-channel Grade Control	20,700	69,000	89,700	7,500		Low
			44,700	149,000	193,700	20,000		Low
QM-03	MC-07	Redesign Undersized Culverts	3,000	10,000	13,000	2,000		Low
	MC-08	Remove Sediment	0	6,400	6,400	30,000		Low
	MC-09, MC-12	Pull Back Banks and Restore Wetlands, Remove Sedin	30,000	160,000	190,000	30,000		Low
	MC-13	Remove Barrier to Fish Movement						
	MC-14	Improve or Replace Weirs; Monitor Bank Erosion						
	MC-15	Stabilize Bank						
	MC-16	Stabilize Headcut						
	MC-17	Monitor Channel Instability						
	MC-18	Fix Culvert Angle	50,000	220,000	270,000	30,000	MC-13-18	Low
			83,000	396,400	479,400	92,000		Low
QM-04	MC-21	Stabilize Headcut	0		0			
	MC-22	Stabilize Channel Incision	0		0			
	MC-23	Stabilize Headcut	13,800	46,000	59,800	5,000	MC-21-23	Low
			13,800	46,000	59,800	5,000		Low





**McCoy Creek (MC) – Notes/Assumptions**

<p><b>MC – 04 – Stabilize Banks-</b> Private property – creek corridor park owned and managed by Calabasas Park Homeowners Assn. (CPHA). Eastside is condos – west side is open space/parkland. Creek mostly natural channel with some minor bank erosion problems, mainly at channel bends – Bedrock (sandstone) exposed in some banks. Some banks below condos protected by stacked gabion baskets, and rock riprap. Several small bank erosion problems; most less than 40 feet in length with vertical banks no more than 5 to 6 feet. The two largest are about 125-150 feet long, with 6-8 foot vertical banks. Creek is shaded with large/mature oaks, could create low flow terrace at ± 4-5' above channel. Level 3 bank protection, planted willow rock toe 150 l.f. @ \$250/ft = \$37,500 plus 15% field engr. &amp; constr. inspection = \$43,125. Allow \$10,000 for O&amp;M. Probably several other minor/focal bank erosion problems done at same time. No infrastructure threatened. Recommend a comprehensive restoration and bank stabilization plan be prepared for entire CPHA – allow \$30,000 for plan and up to \$120,000 for implementation.</p>
<p><b>MC – 05 – (5a &amp; 5b) Remove barrier to fish passage.</b> – This is channel segment upstream of Park Capri below Park Granada and Calabasas Parking, Countryside Financial property. There are 2 barriers, - 1 about 100 ft. upstream of Capri box culvert and the second about 50 feet below Calabasas Parkway Culvert  <b>MC - 5A</b> consists of a 2' – 3' concrete weir and apron upstream of Park Capri. This can be removed to 12" above grade and a series of 3-4 rock step pools added above and below. Each rock step pool across the 40' wide channel section would require: 4' trench x 2' wide x 40' long = 12 cubic yards x 2.5 tons/yd. = 30 tons x \$80/ton = \$2,400 plus excavation = \$5,000 per step pool – 4 pools = \$2,000. \$5,000 design inspection = \$25,000 plus allow \$5,000 for concrete demolition = \$30,000. This is a low to medium priority project, and should be completed concurrently with other projects on Countryside Financial property. Currently no steelhead in creek or watershed.  <b>MC-05b</b> consists of an approx. 4' drop on concrete shelf associated with Calabasas Parkway box culvert. The culvert may also have some velocity problems requiring possible installation of baffles.                  This is a more complicated design than 5a. Project would involve concrete demolition to create a 2 or 3 step concrete weir, and 6 – 7 step pools. Concrete demolition and reconstruction - \$15,000, 6 step pools @ \$5,000 = \$30,000. Total construction - \$45,00. Inspect - \$5,000 = \$50,000. Total of MC05a, 05b = \$80,000.</p>
<p>Since currently no steelhead in McCoy – Low priority.  <b>MC – 06 – Bank Instability and in-channel grade control</b> – Countryside Financial property along Park Granada between Park Capri and Parkway Calabasas. Series of small 30-40' x 6' high local bank instability problems, and a larger –60' channel bank problem immediately downstream of Parkway Calabasas box culvert. The larger erosion problem just below Parkway Calabasas is a failed former repair as evidenced by stacked concrete slabs that have been moved, and the presence of an erosional scarp.                  Total of 5, 40' type 3 bank repair problems = 200 l.f. @ \$300/l.f. = \$60,000, plus inspection at 15% = \$9,000 = total \$69,000. If channel incising the bank protection work should be completed along with the fish passage barrier removal work and should include willow planted rock toe. The channel is in general, well vegetated and the bank instability problems are minor.                  No top of bank infrastructure is threatened except (possibly in future) Countryside Financial jogging trail. Total Countryside Properties improvements is \$149,000 total for MC-05 and 06.</p>
<p><b>MC – 07 Redesign Undersized Culvert – Calabasas Golf Course</b> – Undersized culvert just above Calabasas Parkway – Remove and replace existing culvert with two 24" culverts. Cost of culvert installation and field engineering – \$10,000.                  Comment                  As with all projects above MC – 05, needs to be completed as part of any more comprehensive redesign of golf course drainage system. Needs to be coordinated w/golf course to minimize impact on playing time/revenues, and any modification of golf course T-green layout.</p>



<p><b>MC-08 – Remove Sediment – Calabasas Golf Course</b> Sediment has accumulated in channel along a 70-80' length and created wet boggy conditions and reduced channel capacity. For planning purposes, assume 90' length, 8' wide channel and 3' of sediment excavation = 80± cu. yds. Excavation, haul-off @ \$50.00/cu.yd. = \$4,000. Allow \$1,200 for field inspection and \$1,200 for replanting = \$6,400.</p>	<p style="text-align: center;"><b>Comment</b></p> <p><b>Low priority</b> – see comment note in MC-07</p>
<p><b>MC-09, MC-10, MC-11, 12 – Pull back banks &amp; restore wetlands</b> – Remove sediment and stabilize banks Calabasas Golf &amp; Country Club. This series of restoration actions should be undertaken as part of a comprehensive drainage, stream restoration, and course alignment plan for golf course. Drainage in this area passes in and out of small underground culverts, many appear undersized, and some are under greens and fairways. Do not recommend a "piecemeal" approach to drainage and habitat improvements for this area. Because of potential impact on golf course, including playing times, revenues, and course layout revisions, this will be both technically challenging, expensive, and perhaps difficult to convince golf course owner/manager of merits. Work should probably be done in late fall to minimize impact on golf course, and perhaps stage/phase into 2 segments, with projects MC – 07 – 12 (downstream of entry at Entrada Golf Course entry) year 1 and MC - 13 – 20 upstream of entry in year 2. Costs very difficult to estimate without comprehensive Master Plan, as should perhaps be completed by a golf course architect along with some course revisions, but probably on order of \$30,000 planning and conceptual design study, and budget \$160,000 for implementation of MC-07 - 12, including construction and observation costs. This is an approx. 800 ft. length of creek and restoration/repair would be \$200/ft erosion control, rock work and planting. Annual O&amp;M costs for 3 years \$10,000/yr. = \$30,000</p> <p style="text-align: center;"><b>Comment</b></p> <p>Proceed first with a comprehensive creek management and restoration plan working closely with golf course owner/manager and golf course architect. Since private course with limited public access, may be difficult to grant fund.</p>	<p><b>MC 13-20 – Remove barrier to Fish movement</b> – Improve/replace weirs, monitor bank erosion, stabilize bank and headcut, monitor channel instability, fix culvert angle, create/restore wetlands. This series of projects are located above or upstream of the Golf and Country Club entry at Entrada Drive. They should be completed as one group and not piecemealed. Much of the streamway is located in apparently undersized/underground culverts and there is evidence of surface flow in swale over culverts. Restoration of projects 13 – 20 could be completed either with 07-12, or as a separate phase in a different year, in late fall. Need to start the projects downstream in watershed and move upstream, not logical to fix fish passage problems at upper ends first. Planning study of \$30,000 with an implementation budget as part of comprehensive golf course drainage improvement and creek restoration plan. Stream reach above Entrada is about 100 feet, so at 200 ft. is about \$220,000. Total Golf Course Plan would be \$60,000, with designs geared to an implementation budget of \$220,000, and annual O&amp;M costs of \$10,000 for 3 years or \$30,000.</p> <p style="text-align: center;"><b>Comment</b></p> <p>Same as above, prepare comprehensive plan, working with golf course architect, and design improvements golf-course wide to a total budget of \$380,000. Improvement budget would partially dictate design. This is a very long range goal, tied to future golf course modifications.</p>
<p><b>MC – 21-23 – Stabilize Headcut, Channel Incisions</b> – This series of 3 projects are located on upper McCoy Creek above the Calabasas Golf and Country Club. Creek channel is apparently private in this area with difficult access through a gated community. The work would involve repair of some bank erosion by placing willow planted rock toe at 2 locations, and extending the rock across the channel bottom to create no higher than 12" above channel invert grade control. Assuming total of 120 l.f. of type 3 channel protection (willow planted rock toe) at \$250/l.f. = \$30,000. Two rock grade control structures at \$5,000 each = \$10,000. So total work is \$40,000. Allow 15% inspection, or \$6,000. So total construction, inspection and field engineering is estimated to be \$46,000. Mobilization/access is poor.</p> <p style="text-align: center;"><b>Comment</b></p> <p><b>Low priority project</b> – no infrastructure threatened.</p>	