2013 Amendment to 2010 Recharge Master Plan Update

Cost Opinions for Selected Proposed Recharge Projects

Chino Basin Watermaster

Inland Empire Utilities Agency

WILDERMUTH™
ENVIRONMENTAL INC.

Table D-
Cost Opinion for the 2010 RMPU Wineville Project

		Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	Job	Lump Sum	$227,000
2	Compacted Embankment				
	Foundation Excavation	122,000	Cu. Yds.	$3.36	$410,274
	Compacted Embankment	122,000	Cu. Yds.	$6.73	$820,548
3	Basin Spillway/Discharge Structure				
	Spillway Gate	1	Job	$720,000	$720,000
	Concrete/Building Components	1	Job	$1,038,000	$1,038,000
4	Basin Cleaning and Contouring				
	Basin Excavation	110,000	Cu. Yds.	$14.01	$1,541,331
	Subtotal Direct Construction				**$4,757,153**
	Contingency > $2 million@ 10%				$475,715
	Total Construction				**$5,232,869**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$523,000
	Construction Management > $2 million@ 10%				$523,000
	Total Engineering and Administration				**$1,046,000**
Total Estimated Cost					**$6,278,869**
Total Estimated Cost - Rounded					**$6,280,000**
Annual Cost - 30 Years @ 5% Interest					**$408,400**

Table D_

Cost Opinion for the 2010 RMPU RP3 Project (No Excavation)

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Co	1	Job	Lump Sum	$208,000
2	Channel Modification				
	Modify Channel for Conduit Inlet	35	Cu. Yds.	$1,200	$42,000
	Modify Channel for Pneumatic Gate	1	Job	$380,500	$380,500
	Pneumatic Gate	1	Job	$140,000	$140,000
3	Conduit to Cell 1				
	Excavation	22,200	Cu. Yds.	$5.60	$111,000
	Replace Compacted Fill	8,300	Cu. Yds.	$16.81	$124,500
	8' x 10' RCB	950	Lin. Ft.	$930	$788,500
	Coarse Drain Material	550	Ton	$26	$12,650
	Automated Gate	1	Job	$130,000	$130,000
	Concrete Inlet Structure	1	Job	$24,000	$24,000
	Energy Dissipation Structure	1	Job	$48,000	$48,000
	Road Demolition & Replacement	1	Job	$25,000	$25,000
4	Conduit to Cell 3				
	Excavation	1,720	Cu. Yds.	$5.60	$8,600
	Replace Compacted Fill	1,720	Cu. Yds.	$16.81	$25,800
	8' x 10' RCB	820	Lin. Ft.	$930	$680,600
	Coarse Drain Material	460	Ton	$26	$10,580
	Automated Gate	1	Job	$162,500	$162,500
	Concrete Inlet Structure	1	Job	$48,000	$48,000
	Energy Dissipation Structure	1	Job	$48,000	$48,000
	Channel Demolition & Replacement	1	Job	$17,800	$17,800
5	Conduit to Cell 4				
	Excavation	720	Cu. Yds.	$5.60	$3,600
	Replace Compacted Fill	720	Cu. Yds.	$16.81	$10,800
	48" Dia. RCP	360	Lin. Ft.	$335	$120,600
	Automated Gate	1	Job	$30,000	$30,000
	Concrete Inlet Structure	1	Job	$23,500	$23,500
	Energy Dissipation Structure	1	Job	$23,500	$23,500
6	Spillway from Cell 1				
	48" Dia. RCP	360	Lin. Ft.	$376	$120,600
	Concrete Inlet Structure	1	Job	$23,500	$23,500
	Energy Dissipation Structure	1	Job	$1,400	$1,400
7	Spillway from Cell 3				
	Excavate & Haul Offsite	300	Cu. Yds.	$14.01	$3,750
	Concrete Channel & Weir	125	Cu. Yds.	$560	$62,500
	Energy Dissipation Structure	1	Job	$17,000	$17,000
8	Spillway from Cell 4				
	Excavate & Haul Offsite	200	Cu. Yds.	$14.01	$2,500
	Concrete Channel & Weir	105	Cu. Yds.	$560	$52,500
	Energy Dissipation Structure	1	Job	$17,000	$17,000
9	Tie-In to Jurupa Pipeline				
	36" Dia. RCP	2,300	Lin. Ft.	$303	$621,000
	Butterfly Valve	3	Job	$19,700	$59,100
	Energy Dissipation Structure	3	Job	$46,200	$138,600
	Subtotal Direct Construction				**$4,367,480**
	Contingency > $2 million@ 10%				$436,748
	Total Construction				**$4,804,228**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$480,000
	Construction Management > $2 million@ 10%				$480,000
	Total Engineering and Administration				**$960,000**
Total Estimated Cost					**$5,764,228**
Total Estimated Cost - Rounded					**$5,760,000**
Annual Cost - 30 Years @ 5% Interest					**$375,000**

Table D_

Cost Opinion for the 2010 RMPU RP3 Project (With Excavation)

	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs				
1 Mobilization @ 5% Other Direct Construction Co	1	Job	Lump Sum	$795,000
2 Reservoir Excavation				
Excavate & Haul Offsite	762,000	Cu. Yds.	$14.01	$9,525,000
3 Channel Modification				
Modify Channel for Conduit Inlet	35	Cu. Yds.	$1,200	$42,000
Modify Channel for Pneumatic Gate	1	Job	$380,500	$380,500
Pneumatic Gate	1	Job	$140,000	$140,000
4 Conduit to Cell 1				
Excavation	22,200	Cu. Yds.	$5.60	$111,000
Replace Compacted Fill	8,300	Cu. Yds.	$16.81	$124,500
8' x 10' RCB	950	Lin. Ft.	$930	$788,500
Coarse Drain Material	550	Ton	$26	$12,650
Automated Gate	1	Job	$130,000	$130,000
Concrete Inlet Structure	1	Job	$24,000	$24,000
Energy Dissipation Structure	1	Job	$226,800	$226,800
Road Demolition & Replacement	1	Job	$66,000	$66,000
5 Conduit to Cell 3				
Excavation	66,500	Cu. Yds.	$5.60	$332,500
Replace Compacted Fill	66,500	Cu. Yds.	$16.81	$997,500
8' x 10' RCB	820	Lin. Ft.	$930	$680,600
Coarse Drain Material	460	Ton	$26	$10,580
Automated Gate	1	Job	$162,500	$162,500
Concrete Inlet Structure	1	Job	$48,000	$48,000
Energy Dissipation Structure	1	Job	$48,000	$48,000
Channel Demolition & Replacement	1	Job	$218,000	$218,000
6 Conduit to Cell 4				
Excavation	23,400	Cu. Yds.	$5.60	$117,000
Replace Compacted Fill	23,400	Cu. Yds.	$16.81	$351,000
48" Dia. RCP	420	Lin. Ft.	$376	$140,700
Automated Gate	1	Job	$30,000	$30,000
Concrete Inlet Structure	1	Job	$23,500	$23,500
Energy Dissipation Structure	1	Job	$23,500	$23,500
7 Spillway from Cell 1				
48" Dia. RCP	440	Lin. Ft.	$376	$147,400
Concrete Inlet Structure	1	Job	$23,500	$23,500
Energy Dissipation Structure	1	Job	$1,400	$1,400
8 Spillway from Cell 3				
Excavate & Haul Offsite	300	Cu. Yds.	$14.01	$3,750
Concrete Channel & Weir	125	Cu. Yds.	$560	$62,500
Energy Dissipation Structure	1	Job	$17,000	$17,000
9 Spillway from Cell 4				
Excavate & Haul Offsite	200	Cu. Yds.	$14.01	$2,500
Concrete Channel & Weir	105	Cu. Yds.	$560	$52,500
Energy Dissipation Structure	1	Job	$17,000	$17,000
9 Tie-In to Jurupa Pipeline				
36" Dia. RCP	2,300	Lin. Ft.	$303	$621,000
Butterfly Valve	3	Job	$19,700	$59,100
Energy Dissipation Structure	3	Job	$46,200	$138,600
Subtotal Direct Construction				**$16,695,580**
Contingency > $2 million@ 10%				$1,669,558
Total Construction				**$18,365,138**
Engineering and Administration Costs				
Engineering and Admin > $2 million@ 10%				$1,837,000
Construction Management > $2 million@ 10%				$1,837,000
Total Engineering and Administration				**$3,674,000**
Total Estimated Cost				**$22,039,138**
Total Estimated Cost - Rounded				**$22,040,000**
Annual Cost - 30 Years @ 5% Interest				**$1,434,000**

Table D-_

Cost Opinion for the 2010 RMPU Vulcan Basin Project[1]

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	Job	Lump Sum	$423,000
2	Basin Modification				
	Construction of Basin per County Requirements	1	LS	$6,401,250	$6,401,250
3	Spillway				
	200 ft Emergency Spillway	1	LS	$812,500	$812,500
	Inlet Spillway Upgrade	1	LS	$1,250,000	$1,250,000
	Subtotal Direct Construction				**$8,886,750**
	Contingency $1 - $2 million @ 15%				$1,333,013
	Total Construction				**$10,219,763**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$1,022,000
	Construction Management > $2 million@ 10%				$1,022,000
	Total Engineering and Administration				**$2,044,000**
Total Estimated Cost					**$12,263,763**
Total Estimated Cost - Rounded					**$12,260,000**
Annual Cost - 30 Years @ 5% Interest					**$797,800**

1. Reconnaissance-Level Construction Cost Opinion Alternative 2 Flood Control Use with Maximum Storm Water Capture, WEI 2006.

Table D-_

Cost Opinon for the 2010 RMPU Lower Day Basin Project

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	Job	Lump Sum	$79,000
2	Compacted Embankment				
	Foundation Excavation	72,000	Cu. Yds.	$3.36	$242,129
	Compacted Embankment	72,000	Cu. Yds.	$6.73	$484,258
3	Day Creek Channel Modification				
	Channel Demolition	400	Cu. Yds.	$61.65	$24,661
	Gate	1	Job	$144,000	$144,000
	Gate Structure	1	Job	$165,000	$165,000
4	Basin Diversion Channel Inlet				
	Gate	1	Job	$144,000	$144,000
	Gate Structure	1	Job	$378,000	$378,000
	Subtotal Direct Construction				**$1,661,048**
	Contingency $1 - $2 million @ 15%				$249,157
	Total Construction				**$1,910,206**
Engineering and Administration Costs					
	Engineering and Admin $1 - $2 million @ 15%				$287,000
	Construction Management $1 - $2 million @ 15%				$287,000
	Total Engineering and Administration				**$574,000**
Total Estimated Cost					**$2,484,206**
Total Estimated Cost - Rounded					**$2,480,000**
Annual Cost - 30 Years @ 5% Interest					**$161,600**

Table D-_

Cost Opinon for the 2010 RMPU Jurupa Basin Project (Improved Inlet and 29 Foot Excavation)

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	Job	Lump Sum	$824,000
2	Reservoir Excavation				
	Excavate & Haul Offsite	1,105,000	Cu. Yds.	$14.01	$15,483,367
3	Inlet Improvement				
	Rubber Dam and Structure	1	Job	$335,000	$335,000
	Sluice Gate	1	Job	$25,000	$25,000
	Electrical Service	1	Job	$100,000	$100,000
	SCADA Interface	1	Job	$30,000	$30,000
4	Pump Station Modification				
	Lift Station	1	Job	$500,000	$500,000
	Subtotal Direct Construction				**$17,297,367**
	Contingency > $2 million@ 10%				$3,459,473
	Total Construction				**$20,756,840**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$2,076,000
	Construction Management > $2 million@ 10%				$2,076,000
	Total Engineering and Administration				**$4,152,000**
Total Estimated Cost					**$24,908,840**
Total Estimated Cost - Rounded					**$24,910,000**
Annual Cost - 30 Years @ 5% Interest					**$1,620,400**

Table D-_

Cost Opinon for the 2010 RMPU Lower Cucamonga Basin Project

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	Job	Lump Sum	$833,000
2	Compacted Embankment				
	Foundation Excavation	214,000	Cu. Yds.	$3.36	$719,661
	Compacted Embankment	409,000	Cu. Yds.	$6.73	$2,750,855
3	Reservoir Excavation				
	Excavate & Haul Offsite	709,800	Cu. Yds.	$14.01	$9,945,786
4	Existing Channel				
	Channel Demolition	17,300	Cu. Yds.	$26.90	$465,426
5	Basin Discharge Structure				
	Concrete Spillway Structure	1,400	Cu. Yds.	$897	$1,255,484
6	Basin Inlet Structure				
	Concrete Inlet Spillway Structure	1,300	Cu. Yds.	$785	$1,020,081
7	Basin Outlet to Cucamonga Creek				
	60" Dia. RCP Outlet Conduit	400	Lin. Ft.	$673	$269,032
	Gates and Controls	1	Job	$50,000	$50,000
8	Chris Basin Inlet Structure				
	60" Dia. RCP Outlet Conduit	200	Lin. Ft.	$673	$134,516
	Gates and Controls	1	Job	$50,000	$50,000
	Subtotal Direct Construction				**$17,493,841**
	Contingency > $2 million@ 10%				$1,749,384
	Total Construction				**$19,243,225**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$1,924,000
	Construction Management > $2 million@ 10%				$1,924,000
	Total Engineering and Administration				**$3,848,000**
Total Estimated Cost					**$23,091,225**
Total Estimated Cost - Rounded					**$23,090,000**
Annual Cost - 30 Years @ 5% Interest					**$1,502,100**

Table D-_

Cost Opinon for the 2010 RMPU Lower San Sevaine Basin Project

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	Job	Lump Sum	$1,201,000
2	Compacted Embankment				
	Foundation Excavation	30,000	Cu. Yds.	$3.36	$100,887
	Compacted Embankment	46,000	Cu. Yds.	$6.73	$309,387
3	Reservoir Excavation				
	Excavate & Haul Offsite	1,542,000	Cu. Yds.	$14.01	$21,606,653
4	Existing Channel Demolition				
	Channel Demolition	5,800	Cu. Yds.	$26.90	$156,039
5	Basin Outlet to Etiwanda Channel				
	60" Dia. RCP Outlet Conduit	300	Lin. Ft.	$673	$201,774
	Gates and Controls	1	Job	$50,000	$50,000
6	Basin Outlet to San Sevaine Channel				
	60" Dia. RCP Outlet Conduit	300	Lin. Ft.	$673	$201,774
	Gates and Controls	1	Job	$50,000	$50,000
6	Basin Spillway/Discharge Structure				
	Concrete Structure	650	Cu. Yds.	$1,345	$874,355
7	Basin Inlet Structure				
	Concrete Structure	350	Cu. Yds.	$1,345	$470,806
	Subtotal Direct Construction				**$25,222,676**
	Contingency > $2 million@ 10%				$2,522,268
	Total Construction				**$27,744,943**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$2,774,000
	Construction Management > $2 million@ 10%				$2,774,000
	Total Engineering and Administration				**$5,548,000**
Total Estimated Cost					**$33,292,943**
Total Estimated Cost - Rounded					**$33,290,000**
Annual Cost - 30 Years @ 5% Interest					**$2,165,800**

Table D-_

Cost Opinon for the 2010 RMPU Declez Basin Project

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	Job	Lump Sum	$147,000
2	Compacted Embankment				
	Foundation Excavation	70,600	Cu. Yds.	$3.36	$237,421
	Compacted Embankment	70,600	Cu. Yds.	$6.73	$474,842
	Interior Berm Excavation	40,000	Cu. Yds.	$3.36	$134,516
	Interior Berm Compacted Fill	40,000	Cu. Yds.	$6.73	$269,032
3	Existing Spillway Demolition				
	Channel Demolition	1,000	Cu. Yds.	$18.17	$18,170
4	Basin Spillway/Discharge Structure				
	Basin Discharge Concrete Structure	1,000	Cu. Yds.	$1,345	$1,345,161
	Berm Overflow Concrete Structure	300	Cu. Yds.	$1,345	$403,548
5	Outlet Gate				
	Gates and Controls	1	Job	$50,000	$50,000
	Subtotal Direct Construction				**$3,079,691**
	Contingency > $2 million@ 10%				$307,969
	Total Construction				**$3,387,660**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$339,000
	Construction Management > $2 million@ 10%				$339,000
	Total Engineering and Administration				**$678,000**
Total Estimated Cost					**$4,065,660**
Total Estimated Cost - Rounded					**$4,070,000**
Annual Cost - 30 Years @ 5% Interest					**$264,500**

Table D-__

Cost Opinon for the 2010 RMPU Turner Basin Expansion Project

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	LS	5%	$ 401,064.53
2	Basin Construction				
	Basin Excavation & Haul Offsite	482,963	Cu. Yds.	$ 14	$ 6,767,324
	Fine Grading	48,296	Cu. Yds.	$ 17	$ 812,079
	Inlet Structure	1	LS	$ 441,888	$ 441,888
Subtotal Direct Construction					**$ 8,420,000**
	Contingency > $2 million@ 10%				$ 842,000
	Total Construction				**$ 9,260,000**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$ 926,000
	Construction Management > $2 million@ 10%				$ 926,000
	Total Engineering and Administration				**$ 1,852,000**
Total Estimated Cost					**$ 11,110,000**
Annual Cost - 30 Years @ 5% Interest					**$ 723,000**

Table D-_
Cost Opinon for the North West Upland Basin

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	Job	Lump Sum	$216,000
2	Basin Construction				
	Traffic Control and Safety	1	LS	$15,000.00	$15,000
	Utility Verification (potholing)	1	LS	$8,000.00	$8,000
	Survey	1	LS	$30,000.00	$30,000
	Swppp and Bmps	1	LS	$5,000.00	$5,000
	Clearing, Grubbing, Removals, Relocations, Restorations and Earthwork	1	LS	$400,000.00	$400,000
	Structure Excavation and Over Excavation	1	LS	$250,000.00	$250,000
	Structure Backfill and Grading	2,903	LF	$100.00	$290,300
	Riprap	6,690	SF	$25.00	$167,250
	Construct 24" RCP	80	LF	$120.00	$9,600
	Construct 30" RCP	14	LF	$170.00	$2,380
	Construct 36" RCP	601	LF	$175.00	$105,175
	Construct 42" RCP	1,784	LF	$225.00	$401,400
	Construct 66" RCP	97	LF	$700.00	$67,900
	Construct 84" RCP	2,236	LF	$780.00	$1,744,080
	Construct reinforced concrete plug	1	EA	$2,000.00	$2,000
	Construct curb opening catch basin per sppwc 300-3	22	EA	$13,000.00	$286,000
	Construct local depression at catch basin per sppwc 313-3	22	EA	$2,000.00	$44,000
	Construct manhole per sppwc 320-2	4	EA	$9,000.00	$36,000
	Construct manhole per sppwc 322-2	7	EA	$9,000.00	$63,000
	Construct manhole shaft safety ledge per sppwc 330-2	11	EA	$10,000.00	$110,000
	Construct junction structure per sppwc 331-3	13	EA	$6,000.00	$78,000
	Construct junction structure per sppwc 332-2	2	EA	$8,000.00	$16,000
	Construct concrete collar per sppwc 380-4	17	EA	$2,000.00	$34,000
	Construct junction structure per sppwc 340-2	2	EA	$8,500.00	$17,000
	Abandon exist. 4" water line	1	LS	$15,000.00	$15,000
	Construct 18'x9' conc. outlet	1	EA	$25,000.00	$25,000
	Remove existing 16" waterline	1	LS	$15,000.00	$15,000
	Construct energy dissipater	1	EA	$20,000.00	$20,000
	Construct 1 ft. wide concrete lined swale	1	LS	$6,000.00	$12,000
	Construct new curb and gutter	25	LF	$25.00	$625
	Concrete vaults and miscellaneous concrete	7	EA	$3,500.00	$24,500
	Paving	1	LS	$25,000.00	$25,000
	Subtotal Direct Construction				**$4,535,210**
	Contingency > $2 million@ 10%				$453,521
	Total Construction				**$4,988,731**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$499,000
	Construction Management > $2 million@ 10%				$499,000
	Total Engineering and Administration				**$998,000**
Total Estimated Cost					**$5,986,731**
Total Estimated Cost - Rounded					**$5,990,000**
Annual Cost - 30 Years @ 5% Interest					**$389,400**

Table D-__

Cost Estimate for Conceptual Project Evaluation for San Sevaine Basins

Item #	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	LS	5%	$ 335,316
2	Basin 5 Infiltration Improvements				
	Excavation	118,148	Cu. Yds.	$ 6	$ 662,201
	Fine Grading	4,074	Cu. Yds.	$ 17	$ 68,504
	Material Haul Onsite	118,148	Cu. Yds.	$ 3	$ 354,444
	Interior Berm Compacted Fill	1,541	Cu. Yds.	$ 7	$ 10,363
	Interior Berm Excavation	1,541	Cu. Yds.	$ 3	$ 5,181
3	Recycyled Water Pipeline (SSV 5 to SSV3)				
	Turnout Modifications	1	LS	$ 15,000	$ 15,000
	30" Diameter CMLC	3500	Lin. Ft.	$ 379	$ 1,326,105
	30" Gate Valve	2	EA	$ 9,450	$ 18,900
	Basin Discharge Concrete Structure	11	Cu. Yds.	$ 1,345	$ 14,946
	Sluice Gate	1	$/in-dia	$ 17,850	$ 17,850
	Excavation	3889	Cu. Yds.	$ 6	$ 21,797
	Fine Grading	519	Cu. Yds.	$ 17	$ 8,719
	Backfill and Compaction (Native)	2151	Cu. Yds.	$ 6	$ 12,054
	Import Pipe Bedding Material	583	Cu. Yds.	$ 15	$ 8,750
	Surface Rehabilitation	1400	Sq. Ft.	$ 25	$ 35,000
	Habitat Area Mitigation	1	LS	$ 144,412	$ 144,412
	Environmental Studies (RW)	0	LS	$ 144,412	$ -
4	StormWater Pipeline and Pump Station				
	Basin Discharge Concrete Structure	11	Cu. Yds.	$ 1,345	$ 14,946
	18" Diameter CMLC	3700	Lin. Ft.	$ 279	$ 1,032,748
	18" Gate Valve	1	EA	$ 5,670	$ 5,670
	Booster Pump Station	150	$ /HP	$ 5,000	$ 750,000
	CMU Building	300	Sq. Ft.	$ 300	$ 90,000
	Concrete Structure	44	Cu. Yds.	$ 1,345	$ 59,785
	Excavation	3563	Cu. Yds.	$ 6	$ 19,970
	Fine Grading	274	Cu. Yds.	$ 17	$ 4,608
	Backfill and Compaction (Native)	2499	Cu. Yds.	$ 6	$ 14,004
	Import Pipe Bedding Material	548	Cu. Yds.	$ 15	$ 8,222
	Basin Discharge Concrete Structure	10	Cu. Yds.	$ 1,345	$ 13,452
	Sluice Gate	1	$/in-dia	$ 10,710	$ 10,710
	Surface Rehabilitation	1480	Sq. Ft.	$ 25	$ 37,000
	Habitat Area Mitigation	1	LS	$ 199,995	$ 199,995
	Electrical @ 25%	1	LS	$ 228,682.80	$ 228,683
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ 22,868	$ 22,868
5	Turnout CB-13 Improvements				
	Electrical Allowance	1	LS	$ 40,000	$ 40,000
	Turnout Modifications	1	LS	$ 1,051,000	$ 1,051,000
	Turnout Valve and Metering	1	LS	$ 25,000	$ 25,000
	Electrical @ 25%	1	LS	$ 131,375	$ 131,375
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ 13,138	$ 13,138
6	Miscellaneous Improvements				
	Interior Berm Excavation	59	Cu. Yds.	$ 3	$ 199
	Excavation	296	Cu. Yds.	$ 6	$ 1,661
	Material Haul Onsite	296	Cu. Yds.	$ 3	$ 889
	Interior Berm Compacted Fill	296	Cu. Yds.	$ 7	$ 1,993
	Fine Grading	148	Cu. Yds.	$ 17	$ 2,491
	Interior Berm Excavation	5324	Cu. Yds.	$ 3	$ 17,904
	Material Haul Onsite	2662	Cu. Yds.	$ 3	$ 7,986
	Basin Discharge Concrete Structure	10	Cu. Yds.	$ 1,345	$ 13,452
	24" Diameter CMLC	230	Lin. Ft.	$ 330	$ 75,800
	Interior Berm Compacted Fill	2652	Cu. Yds.	$ 7	$ 17,837
	Backfill and Compaction (Native)	136	Cu. Yds.	$ 6	$ 764
	Sluice Gate	2	$/in-dia	$ 14,280	$ 28,560
	Surface Rehabilitation	300	Sq. Ft.	$ 25	$ 7,500
	Interior Berm Excavation	284	Cu. Yds.	$ 3	$ 957
	Excavation	1422	Cu. Yds.	$ 6	$ 7,971
	Material Haul Onsite	1422	Cu. Yds.	$ 3	$ 4,267
	Interior Berm Compacted Fill	1422	Cu. Yds.	$ 7	$ 9,566
	Fine Grading	142	Cu. Yds.	$ 17	$ 2,391
	Basin Discharge Concrete Structure	5	Cu. Yds.	$ 1,345	$ 6,726
Subtotal Direct Construction					**$ 7,040,000**
	Contingency > $2 million@ 10%				$ 704,000
	Total Construction				**$ 7,740,000**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$ 774,000
	Construction Management > $2 million@ 10%				$ 774,000
	Total Engineering and Administration				**$ 1,548,000**
Total Estimated Cost					**$ 9,290,000**
Annual Cost - 30 Years @ 5% Interest					**$ 604,000**

Table D-__
Cost Estimate for Conceptual Project Evaluation for Victoria Basin

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	LS	5%	$ 85,279
2	Remove Mid-Level Outlet				
	36" Steel Bulkhead	1	LS	$ 7,500	$ 7,500
	Existing Concrete Outlet Modifications (Concrete Deck and Fill)	1	LS	$ 15,000	$ 15,000
3	Basin Grading				
	Basin Excavation & Haul Offsite	111111	Cu. Yds.	$ 14	$ 1,556,900
	Fine Grading	3333	Cu. Yds.	$ 17	$ 56,048
4	Lysimeter Relocation				
	Relocating Allowance	1	LS	$ 55,000	$ 55,000
	Electrical @ 25%	1	LS	$ 13,750	$ 13,750
	Instrumentation @ 10%	1	LS	$ 1,375	$ 1,375
Subtotal Direct Construction					**$ 1,790,000**
	Contingency $1 - $2 million @ 15%				$ 179,000
	Total Construction				**$ 1,970,000**
Engineering and Administration Costs					
	Engineering and Admin $1 - $2 million @ 15%				$ 295,500
	Construction Management $1 - $2 million @ 15%				$ 295,500
	Total Engineering and Administration				**$ 591,000**
Total Estimated Cost					**$ 2,560,000**
Annual Cost - 30 Years @ 5% Interest					**$ 167,000**

Table D-__

Cost Estimate for Conceptual Project Evaluation for Lower Day Basin

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	LS	5%	$ 30,559.94
2	Mid-Level Gate Structure				
	Sluice Gate	1	$/in-dia	$ 35,700	$ 35,700
	Basin Excavation & Haul Offsite	11,111	Cu. Yds.	$ 14	$ 155,690
	Concrete Structure	0	Cu. Yds.	$ 1,345	$ -
	Basin Discharge Concrete Structure	50	Cu. Yds.	$ 1,345	$ 67,258
	Coarse Drain Material	100	Ton	$ 26	$ 2,578
	Backfill and Compaction (Native)	5,481	Cu. Yds.	$ 6	$ 30,718
	Interior Berm Compacted Fill	5,481	Cu. Yds.	$ 7	$ 36,861
	Fine Grading	548	Cu. Yds.	$ 34	$ 18,431
3	Basin Diversion Inlet Modifications				
	Sluice Gate	1	Cu. Yds.	$ 28,560	$ 28,560
	Concrete Structure	75	Cu. Yds.	$ 1,345	$ 100,887
	Existing Inlet Channel Modification Allowance	100	Cu. Yds.	$ 1,345	$ 134,516
Subtotal Direct Construction					**$ 642,000**
	Contingency < $1 million@ 20%				$ 128,400
	Total Construction				**$ 770,000**
Engineering and Administration Costs					
	Engineering and Admin < $1 million@ 20%				$ 154,000
	Construction Management < $1 million@ 20%				$ 154,000
	Total Engineering and Administration				**$ 308,000**
Total Estimated Cost					**$ 1,080,000**
Annual Cost - 30 Years @ 5% Interest					**$ 70,000**

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Cost Estimate for Conceptual Project Evaluation for RP3 Basins

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	LS	5%	$ 187,892.97
2	Increase Conservation Storage - Inlet Structure				
	Concrete Structure	208	Cu. Yds.	$ 1,345	$ 280,242
	Sluice Gate	1	$/in-dia	$ 28,560	$ 28,560
	Channel Demolition	69	Cu. Yds.	$ 1,345	$ 93,414
	Modify Channel for Conduit Inlet	69	Cu. Yds.	$ 1,345	$ 93,414
	Basin Excavation & Haul Offsite	6,944	Cu. Yds.	$ 14	$ 97,306
	48" Dia. RCP	30	Lin. Ft.	$ 376	$ 11,266
	Compacted Embankment	5,208	Cu. Yds.	$ 7	$ 35,030
	Import Pipe Bedding Material	694	Cu. Yds.	$ 15	$ 10,417
	Surface Rehabilitation	750	Sq. Ft.	$ 25	$ 18,750
	Inlet Channel Allowance - Misc	1	LS	$ 162,412	$ 162,412
3	Increase Conservation Storage - Basin Excavation				
	Basin Excavation & Haul Offsite	125,840	Cu. Yds.	$ 14	$ 1,763,282
	Compacted Embankment	94,380	Cu. Yds.	$ 7	$ 634,782
	Fine Grading	31,460	Cu. Yds.	$ 17	$ 528,985
Subtotal Direct Construction					**$ 3,900,000**
	Contingency > $2 million@ 10%				$ 390,000
	Total Construction				**$ 4,300,000**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$ 430,000
	Construction Management > $2 million@ 10%				$ 430,000
	Total Engineering and Administration				**$ 860,000**
Total Estimated Cost					**$ 5,200,000**
Annual Cost - 30 Years @ 5% Interest					**$ 338,000**

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Cost Estimate for Conceptual Project Evaluation for Jurupa Basin

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	LS	5%	$ 872,285
2	Basin Inlet Structure Improvements				
	Channel Demolition	400	Cu. Yds.	$ 62	$ 24,661
	Concrete Structure	200	Cu. Yds.	$ 1,345	$ 269,032
	Modify Channel for Conduit Inlet	200	Cu. Yds.	$ 1,345	$ 269,032
	Concrete Channel & Weir	200	Cu. Yds.	$ 560	$ 112,097
	48" Dia. RCP	100	Lin. Ft.	$ 751	$ 75,105
	Sluice Gate	1	$/in-dia	$ 28,560	$ 28,560
	Electrical @ 25%	1	LS	$ 311,395	$ 311,395
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ 31,139	$ 31,139
3	Turnout CB-18 Modifications (Shall be completed only if Inlet Structure Capacity Increased				
	Turnout Modifications	1	LS	$ 273,000	$ 273,000
	Electrical @ 25%	1	LS	$ 68,250	$ 68,250
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ 6,825	$ 6,825
4	Conservation Berm Outlet Structure				
	Excavation	148	Cu. Yds.	$ 6	$ 830
	Concrete Structure	10	Cu. Yds.	$ 1,345	$ 13,452
	Backfill and Compaction (Native)	89	Cu. Yds.	$ 6	$ 498
	Interior Berm Compacted Fill	89	Cu. Yds.	$ 7	$ 598
	Sluice Gate	1	EA	$ 14,280	$ 14,280
	18" Diameter CMLC Steel	15	Lin. Ft.	$ 279	$ 4,187
5	GWR Pump Station Expansion				
	Booster Pump Station	300	$ /HP	$ 841	$ 252,218
	18" Diameter CMLC Steel	50	Lin. Ft.	$ 279	$ 13,956
	Electrical @ 25%	1	LS	$ 63,054	$ 63,054
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ 6,305	$ 6,305
6	Increase Conservation Storage				
	Basin Excavation & Haul Offsite	994,500	Cu. Yds.	$ 14	$ 13,935,030
	Fine Grading	99,450	Cu. Yds.	$ 17	$ 1,672,204
Subtotal Direct Construction					**$ 18,320,000**
	Contingency > $2 million@ 10%				$ 1,832,000
	Total Construction				**$ 20,200,000**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$ 2,020,000
	Construction Management > $2 million@ 10%				$ 2,020,000
	Total Engineering and Administration				**$ 4,040,000**
Total Estimated Cost					**$ 24,200,000**
Annual Cost - 30 Years @ 5% Interest					**$ 1,574,000**

Table D-__

Cost Estimate for Conceptual Project Evaluation for Turner 2 Basin

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	LS	5%	$ 21,447
2	Raise Turner 2 Spillway				
	Channel Demolition	307	Cu. Yds.	$ 62	$ 18,953
	Basin Excavation & Haul Offsite	2,152	Cu. Yds.	$ 14	$ 30,152
	Replace Compacted Fill	2,152	Cu. Yds.	$ 17	$ 36,182
	Concrete Spillway Structure	333	Cu. Yds.	$ 897	$ 298,925
	Compacted Embankment	1,076	Cu. Yds.	$ 7	$ 7,236
	Surface Rehabilitation	1,500	Sq. Ft.	$ 25	$ 37,500
Subtotal Direct Construction					**$ 450,000**
	Contingency < $1 million@ 20%				$ 90,000
	Total Construction				**$ 500,000**
Engineering and Administration Costs					
	Engineering and Admin < $1 million@ 20%				$ 100,000
	Construction Management < $1 million@ 20%				$ 100,000
	Total Engineering and Administration				**$ 200,000**
Total Estimated Cost					**$ 700,000**
Annual Cost - 30 Years @ 5% Interest					**$ 46,000**

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Cost Estimate for Conceptual Project Evaluation for Montclair Basins

	Description	Quantity	Unit	Unit Cost	Total Cost
Direct Construction Costs					
1	Mobilization @ 5% Other Direct Construction Cost	1	LS	5%	$ 276,996
2	Basin 4 Material Removal				
	Basin Excavation & Haul Offsite	31850	Cu. Yds.	$ 14	$ 446,285
	Fine Grading	650	Cu. Yds.	$ 17	$ 10,929
3	Pump Station and Pipeline (Basin 4 to Basin 2 and 3)				
	Basin Excavation & Haul Offsite	111	Cu. Yds.	$ 14	$ 1,557
	Interior Berm Excavation	2,778	Cu. Yds.	$ 3	$ 9,341
	Concrete Structure	111	Cu. Yds.	$ 1,345	$ 149,462
	24" Diameter CMLC Steel	50	Lin. Ft.	$ 330	$ 16,478
	Sluice Gate	2	$/in-dia	$ 14,280	$ 28,560
	Booster Pump Station	144	$ /HP	$ 5,605	$ 808,779
	CMU Building	100	Sq. Ft.	$ 300	$ 30,000
	Backfill and Compaction (Native)	556	Cu. Yds.	$ 6	$ 3,114
	Compacted Embankment	1,528	Cu. Yds.	$ 7	$ 10,276
	Coarse Drain Material	50	Ton	$ 26	$ 1,289
	Basin Discharge Concrete Structure	20	Cu. Yds.	$ 1,345	$ 26,903
	Electrical @ 25%	1	LS	$ 209,694.76	$ 209,695
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ 20,969	$ 20,969
	24" Diameter CMLC Steel	2,350	Lin. Ft.	$ 330	$ 774,477
	Excavation	3,046	Cu. Yds.	$ 6	$ 17,074
	Backfill and Compaction (Native)	1,828	Cu. Yds.	$ 6	$ 10,244
	Import Pipe Bedding Material	653	Cu. Yds.	$ 15	$ 9,792
	Surface Rehabilitation	11,750	Sq. Ft.	$ 25	$ 293,750
4	Pump Station and Pipeline (Basin 3 to Basin 2)				
	Basin Excavation & Haul Offsite	111	Cu. Yds.	$ 14	$ 1,557
	Interior Berm Excavation	2,778	Cu. Yds.	$ 3	$ 9,341
	Concrete Structure	111	Cu. Yds.	$ 1,345	$ 149,462
	24" Diameter CMLC Steel	50	Lin. Ft.	$ 330	$ 16,478
	Sluice Gate	2	$/in-dia	$ 14,280	$ 28,560
	Booster Pump Station	72	$ /HP	$ 5,605	$ 404,390
	CMU Building	100	Sq. Ft.	$ 300	$ 30,000
	Backfill and Compaction (Native)	556	Cu. Yds.	$ 6	$ 3,114
	Compacted Embankment	1,528	Cu. Yds.	$ 7	$ 10,276
	Coarse Drain Material	50	Ton	$ 26	$ 1,289
	Basin Discharge Concrete Structure	20	Cu. Yds.	$ 1,345	$ 26,903
	Electrical @ 25%	1	LS	$ 108,597.38	$ 108,597
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ 10,860	$ 10,860
	24" Diameter CMLC Steel	360	Lin. Ft.	$ 330	$ 118,643
	Excavation	467	Cu. Yds.	$ 6	$ 2,616
	Backfill and Compaction (Native)	280	Cu. Yds.	$ 6	$ 1,569
	Import Pipe Bedding Material	100	Cu. Yds.	$ 15	$ 1,500
	Surface Rehabilitation	1,800	Sq. Ft.	$ 25	$ 45,000
5	Basin Inlet Structure to Basin 2 and 3				
	Channel Demolition	250	Cu. Yds.	$ 14	$ 3,503
	Basin Excavation & Haul Offsite	3,704	Cu. Yds.	$ 17	$ 62,276
	Concrete Structure	250	Cu. Yds.	$ 1,345	$ 336,290
	Concrete Channel & Weir	63	Cu. Yds.	$ 560	$ 35,030
	Compacted Embankment	1,852	Cu. Yds.	$ 7	$ 12,455
	Backfill and Compaction (Native)	1,602	Cu. Yds.	$ 6	$ 8,978
	Trench Shoring	300	Lin. Ft.	$ 50	$ 15,000
	Coarse Drain Material	1,200	Ton	$ 26	$ 30,939
	Sluice Gate	2	$/in-dia	$ 21,420	$ 42,840
	36" Dia. RCP	300	Lin. Ft.	$ 303	$ 90,798
	Import Pipe Bedding Material	178	Cu. Yds.	$ 15	$ 2,667
	Basin Discharge Concrete Structure	89	Cu. Yds.	$ 1,345	$ 119,570
	Basin Discharge Concrete Structure	15	Cu. Yds.	$ 1,345	$ 19,928
	Surface Rehabilitation	1,200	Sq. Ft.	$ 25	$ 30,000
	Electrical @ 25%	2	LS	$ 33,410	$ 66,819
	Instrumentation and Controls @ 10% of Electrical	2	LS	$ 3,341	$ 6,682
6	Automate Existing Gate at Basin 1				
	Electrical @ 25%	1	LS	$ 55,000	$ 55,000
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ 5,500	$ 5,500
7	Basin Low Level Drain Outlet (Basin 1 to Basin 2)				
	Basin Excavation & Haul Offsite	74	Cu. Yds.	$ 14	$ 1,037.93
	Interior Berm Excavation	1,852	Cu. Yds.	$ 3	$ 6,227.60
	Concrete Structure	74	Cu. Yds.	$ 1,345	$ 99,641.58
	36" Diameter CMLC Steel	50	Lin. Ft.	$ 429	$ 21,466.53
	Sluice Gate	1	$/in-dia	$ 14,280	$ 14,280.00
	Booster Pump Station	0	$ /HP	$ 5,605	$ -
	CMU Building	0	Sq. Ft.	$ 300	$ -
	Backfill and Compaction (Native)	370	Cu. Yds.	$ 6	$ 2,075.87
	Compacted Embankment	1,019	Cu. Yds.	$ 7	$ 6,850.36
	Coarse Drain Material	50	Ton	$ 26	$ 1,289.11
	Basin Discharge Concrete Structure	10	Cu. Yds.	$ 1,345	$ 13,451.61
	Electrical @ 25%	1	LS	$ -	$ -
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ -	$ -
	36" Diameter CMLC Steel	350	Lin. Ft.	$ 429	$ 150,265.73
	Excavation	363	Cu. Yds.	$ 6	$ 2,034.35
	Backfill and Compaction (Native)	236	Cu. Yds.	$ 6	$ 1,322.33
	Import Pipe Bedding Material	54	Cu. Yds.	$ 15	$ 816.67
	Surface Rehabilitation	2,100	Sq. Ft.	$ 25	$ 52,500.00
8	Basin Low Level Drain Outlet (Basin 2 to Basin 3)				
	Basin Excavation & Haul Offsite	74	Cu. Yds.	$ 14	$ 1,037.93
	Interior Berm Excavation	1,852	Cu. Yds.	$ 3	$ 6,227.60
	Concrete Structure	74	Cu. Yds.	$ 1,345	$ 99,641.58
	36" Diameter CMLC Steel	50	Lin. Ft.	$ 429	$ 21,466.53
	Sluice Gate	1	$/in-dia	$ 14,280	$ 14,280.00
	Booster Pump Station	0	$ /HP	$ 5,605	$ -
	CMU Building	0	Sq. Ft.	$ 300	$ -
	Backfill and Compaction (Native)	370	Cu. Yds.	$ 6	$ 2,075.87
	Compacted Embankment	1,019	Cu. Yds.	$ 7	$ 6,850.36
	Coarse Drain Material	50	Ton	$ 26	$ 1,289.11
	Basin Discharge Concrete Structure	10	Cu. Yds.	$ 1,345	$ 13,451.61
	Electrical @ 25%	1	LS	$ -	$ -
	Instrumentation and Controls @ 10% of Electrical	1	LS	$ -	$ -
	36" Diameter CMLC Steel	350	Lin. Ft.	$ 429	$ 150,265.73
	Excavation	363	Cu. Yds.	$ 6	$ 2,034.35
	Backfill and Compaction (Native)	236	Cu. Yds.	$ 6	$ 1,322.33
	Import Pipe Bedding Material	54	Cu. Yds.	$ 15	$ 816.67
	Surface Rehabilitation	2,100	Sq. Ft.	$ 25	$ 52,500.00
Subtotal Direct Construction					**$ 5,820,000**
	Contingency > $2 million@ 10%				$ 582,000
	Total Construction				**$ 6,400,000**
Engineering and Administration Costs					
	Engineering and Admin > $2 million@ 10%				$ 640,000
	Construction Management > $2 million@ 10%				$ 640,000
	Total Engineering and Administration				**$ 1,280,000**
Total Estimated Cost					**$ 7,680,000**
Annual Cost - 30 Years @ 5% Interest					**$ 500,000**