CONSTRUCTION COST ESTIMATE FOR SOUTHWESTERN ILLINOIS LEVEE CERTIFICATION DESIGN IMPROVEMENTS

PREPARED FOR
SOUTHWESTERN ILLINOIS FLOOD PREVENTION
DISTRICT COUNCIL

PREPARED BY

AMEC EARTH & ENVIRONMENTAL, INC

amec

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1.0 INTRODUCTION

1.1 Background

The purpose of this project is to design improvements such that, upon construction, the subject levee systems will be eligible for accreditation in accordance with 44 CFR 65.10 criteria. The proposed improvements consist of installation or construction of improvements to address deficiencies in the levee systems. The proposed improvements include:

- Olay Caps
- Outoff Walls
- New Relief Wells
- Rehabilitation of Existing Relief Wells
- Seepage Berms
- Gravel Filters
- Pump Station Improvements
- Miscellaneous Appurtenant Civil Improvements

1.2 Purpose

The purpose of this construction cost estimate is to identify and quantify estimated construction costs at the 30% complete design phase of the project. This construction cost estimate is intended to be used for validation of the program budget and to evaluate and compare construction costs of various design solutions. The construction cost estimate will also be used along with other data to prioritize, program and schedule activities through the remainder of the project.

1.3 Classification and Level of Accuracy

As defined by the Association for the Advancement of Construction Cost Engineering International (AACEI, 1999) the construction cost estimate conforms to the criteria of a "Class 3" estimate. The expected accuracy range of a Class 3 estimate is within 20% over the estimate to 10% under the estimate. To reduce the risk of underestimation of construction costs, a contingency as described below is applied to unit costs.

1.4 Methodology & Sources of Information

A combination of estimating methods was used in the development of the construction cost estimate. The construction cost estimate was based primarily on a historical unit cost basis; however price quotes from specialty contractors, vendors and suppliers were also used.

A significant portion of the work aligns with the types of construction that are regularly procured by governmental agencies. Agencies such as IDOT, MoDOT and St. Louis MSD contract for construction on a unit cost basis and maintain historical unit cost bid records. This unit cost data is a reliable representation of local construction cost, and when applied properly produces a reliable construction cost estimate.

A considerable amount of the overall construction cost is associated with non-typical construction such as relief well installation, cutoff wall installation, etc. Because this type of work is not procured by governmental agencies on a regular basis, unit cost data is not available. This non-typical construction will be completed by specialty contractors, some of



which use proprietary methods and equipment. These specialty contractors are available to assist the design team and can provide conceptual construction cost estimates.

In addition to the above, RSMeans construction cost data was used as backup source of information and basis for developing the construction cost estimate. The national average for construction cost can be adjusted to local construction cost by applying the "City Construction cost Index". The City Construction cost Index for East St. Louis is summarized in the following table.

RSMeans City Construction cost Index

East St. Louis, Illinois	Factor
Material	94.0
Installation	106.6
Total	99.6

While material construction cost is 94.0% of the national average, installation is 106.6% of the national average. The higher installation construction cost is a result of local labor rates. The combined index for East St. Louis is 99.6% of the national average. If a specific construction cost item included a high labor to material ratio, the national average was adjusted to account for higher local labor rates. Otherwise, the national average construction cost was used.

Engineering judgment and construction cost data from specific projects were also used to develop and validate unit costs. Limited historical unit cost data was available from the USACE. USACE projects are typically bid as a lump sum; therefore construction costs for specific items cannot be discerned from other construction costs. Prior to acceptance and use, all unit costs were validated by comparison to at least on other source identified above. Refer to Appendix D – Unit cost Development for detailed documentation of the sources and build-up of the unit cost used in the construction cost estimate.

1.5 Basis

The 30% Design Construction Drawings were used a basis of construction cost estimating. The Microstation and Inroads CADD/design software package was utilized to develop construction drawings. The design features of the software were utilized to measure and quantify lengths, volumes, areas, etc. for the various construction cost items.

1.6 Allowances

Provisions for allowances are not currently included in the construction cost estimate. Allowances for certain items may be incorporated into the contract document and construction cost estimate during final design.

1.7 Owner Provided Material

Provisions for owner provided material are not currently included in the construction cost estimate. Owner provided material may be incorporated into the contract document and construction cost estimate during final design.



1.8 Assumptions

The assumptions on which the unit costs are based are identified as part of the development of the unit cost value. Refer to Appendix D – Unit cost Development for detailed documentation of assumption and build-up of the unit cost used in the construction cost estimate. Cost estimate reflects use of Union Labor.

1.9 Exclusions

The construction cost estimate specifically excludes the following:

- oprofessional fees (design, construction management, legal, financial, etc.)
- Operation construction costs
- maintenance construction costs
- Iife-cycle analysis

1.10 Risks and Opportunities

Risk of underestimating construction costs and opportunities to reduce estimated construction costs have been identified at this 30% design phase. As a more detailed design is developed, schedules are refined and contract documents are finalized; the risks should decrease and opportunities to reduce costs will be pursued.

1.10.1 Use of Spoil Material

The cost estimate includes costs for disposal of excess material from installation of clay caps, clay blankets, cutoff walls, etc. The cost estimate also includes costs for hauling on material for construction of seepage berms and clay caps, clay blankets, etc. Although these construction activities may not occur during the same phase of the project, there may be opportunities to use excess material from one solution as fill material for another solution.

1.10.2 Deep Cutoff Wall

We have had several conversations with two international specialty contractors concerning this project. We talked with Arturo Ressi who represented Kiewit during the initial proposal stages of the project. During that period of time Mr. Ressi indicated to us that we could use a budget of \$32 per square foot of wall face as a budgetary number for the deep cutoff walls. He went on to indicate that for the quantities we had on this job, that number would include mobilization and some keying into the bedrock. We have had several other discussion since the proposal effort for this job and Arturo's has indicated that \$32 per square foot of face is still a good budgeting number and has some minor contingency in it.

We also have talked to several executives and project managers from Hayward Baker Int. over the past several months. We asked if HBI would prepare a cost estimate for us on both the deep and shallow cutoff walls. They have one system for the deep walls and several alternatives for the shallow walls. This information is presented in the attached cost estimate. On the deep walls HBI indicated with the limited time they put into the cost estimate that they believe their wall would be constructed of a combination of Cement, Bentonite and Slag which would be mixed insitu with the existing site soils. They would typically expect to see the walls gain some moderate strength of approximately 300 PSI to 500 PSI. Typically the cement makes up about 15% to 20% of the mixture.

Other considerations and qualifications include:



- Seach of the specialty wall contractors has their own proprietary system and piece of equipment used to install the deep cutoff walls. Because of this, comparing one company to another will be difficult to produce apples to apples comparison.
- So Both of the companies we have discussed this project with have worked in this area and are familiar with the site conditions and the local manpower conditions. Both companies indicated they priced the job using union forces and their prices reflect the local market conditions.
- Sould be a big concern to them and their prices do not reflect dealing with these issues.
- So Both companies plan on using cement in the wall. Cement is a commodity and has been subject to fluctuation in pricing although it has remained steady for the last several years.
- So Both companies indicated that it will need to a fairly wide platform (about 50 feet in width) to work from.
- So Both companies have the ability to key the wall into bedrock. This adds a premium to the price for the installation.

1.10.3 Hazardous and Special Waste Disposal

The Wood River and MESD levee systems are in a highly developed industrial area where several know environmental sites exist near and adjacent to select repair locations. As such, there is a potential to encounter either hazardous or special wastes in the construction relief wells or cut-off walls. The impact of encountering those type materials is the need for special handling and proper disposal of the material.

Based on a review of the EDR database report and other relevant information, AMEC environmental professionals identified areas (identified by station numbers) where specific environmental/hazmat protocols were to be used during geotechnical subsurface investigation and construction activities due to the possibility of encountering soil and/or groundwater contaminants.

1.11 Contingencies

For a Class 3 cost estimate, the AACEI recommends adding a 20% to 25% contingency to the estimated construction cost. The cost estimate was developed with a contingency for each cost item. A 30% contingency is applied to cost items associated with cutoff walls. All other cost items include a 20% contingency.

1.12 Escalation

The construction cost estimate includes a present value "Construction Estimate" total cost and a "Construction Estimate Escalated" total cost. The escalated cost was developed based on the USACE guidelines, a reference date of July 1, 2011 and 4 year construction duration. The construction estimate is escalated to the mid-point of 4 years. Refer to Appendix E – Construction Cost Escalation for detailed documentation of assumptions, sources of data and computations.



2.0 CONSTRUCTION COST ESTIMATE

2.1 Overall Construction Cost Estimate

Construction Estimate	Present Value	Escalated
Wood River	\$50,435,000	\$52,170,000
MESD	\$57,713,000	\$59,698,000
PdP/FL	\$17,027,000	\$17,612,000
Total Construction Estimate	\$125,175,000	\$129,480,000



APPENDIX A – OVERALL CONSTRUCTION COST ESTIMATE

	DETAILED SUMMARY -	WOOD F	R۱۷	VER, MESD, F	dP & FISH LA	(E	
Item #	Cost Item	Unit		Unit Cost	Contingency	Quantity	Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	\$		20%	268,311	\$ 3,863,678
2	Clear & Grub - Light Vegetation	AC	\$		20%	185	\$ 1,332,072
3	Clear & Grub - Wooded	AC	\$	•	20%	70	\$ 1,816,500
4	Cutoff Wall - Deep	SF	\$		30%	957,418	\$ 39,828,589
5	Cutoff Wall - Hazardous Waste Premium	SF	\$		20%	45,453	\$ 1,527,221
6	Cutoff Wall - Shallow	SF	\$		30%	158,600	\$ 2,474,160
7	Cutoff Wall - Special Waste Premium	SF 	\$		20%	181,813	\$ 2,399,932
8	Dewatering	LF	\$		20%	11,455	\$ 701,046
9	Drainage - Enclosed - 30" Pipe	LF EA	\$		20%	569 1	\$ 65,549
11	Drainage - Inlet Structure Drainage - Surface - Shallow Ditch	LF	\$		20%	7,200	\$ 2,640
12	Excavation	CY	\$		20%	191,485	\$ 1,218,240 2,527,603
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	\$		20%	47,161	\$ 1,358,237
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	\$		20%	70,017	\$ 2,436,592
15	Gravel Filter - Geotextile - Material & Installation	SY	\$		20%	709,631	\$ 1,703,114
16	Gravel Filter - Sand Material - Haul On & Placement	CY	\$		20%	29,590	\$ 426,096
17	Haul Off of Excess Material	CY	\$		20%	187,835	\$ 1,352,413
18	Mobilization (% varies)	LS	\$	<u>' </u>		1	\$ 1,492,890
19	Pump Station - WR - New - 220+00 UWR	EA	\$		20%	1	\$ 726,600
20	Pump Station - WR - New - 560+00 LWR	EA	\$		20%	1	\$ 839,400
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	\$		20%	1	\$ 1,019,400
22	Pump Station - PdP - Improve Existing - PdP West	EA	\$	849,500	20%	1	\$ 1,019,400
23	Pump Station - Various Improvements	EA	\$	600,000	20%	4	\$ 2,880,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	\$	5 42	20%	1,247	\$ 62,849
25	Pvmt - Improved Roadway	LF	\$	122	20%	3,522	\$ 515,621
26	Pvmt - Roads & Trails - Remove & Replace	SY	\$	50	20%	8,388	\$ 503,280
27	Pvmt - Road Repair	LF	\$		20%	15,840	\$ 836,352
28	Relief Well - Existing - Abandon	EA	\$		20%	42	\$ 100,800
29	Relief Well - Existing - Convert to Type "T"	EA	\$		20%	76	\$ 547,200
30	Relief Well - Existing - Hazardous Waste Premium	EA	\$	•	20%	6	\$ 350,640
31	Relief Well - Existing - Rehabilitate	EA	\$	· · · · · · · · · · · · · · · · · · ·	20%	78	\$ 1,123,200
32	Relief Well - Existing - Special Waste Premium	EA	\$	•	20%	24	\$ 365,760
33	Relief Well - Lateral Pipe (8-Inch)	LF .	\$		20%	3,588	\$ 172,224
34 35	Relief Well - Manifold Manhole Relief Well - Manifold Pipe (12-Inch)	EA LF	\$		20%	29 3,548	\$ 104,400 212,880
36	Relief Well - Manifold Pipe (18-Inch)	LF	\$		20%	3,546	\$ 275,789
37	Relief Well - New - Hazardous Waste Premium	EA	Ş		20%	3,391	\$ 817,740
38	Relief Well - New - Special Waste Premium	EA	Ş	·	20%	51	\$ 1,014,390
39	Relief Well - New Type "D"	EA	Ş	•	20%	215	\$ 8,385,000
40	Relief Well - New Type "T"	EA	\$	·	20%	67	\$ 3,216,000
41	RipRap Bank Protection	CY	\$	•	20%	6,252	\$ 900,288
42	ROW Acquisition - Agricultural	AC	\$	6,500	20%	135	\$ 1,053,000
43	ROW Acquisition - Commercial	AC	\$	\$ 30,000	20%	9	\$ 324,000
44	ROW Acquisition - Governmental	AC	Ş	\$ 25,000	20%	12	\$ 360,000
45	ROW Acquisition - Industrial	AC	\$	30,000	20%	68	\$ 2,448,000
46	ROW Acquisition - Residential	AC	\$	·	20%	1	\$ 21,600
47	ROW Acquisition - Vacant/Undeveloped	AC	\$	23,000	20%	79	\$ 2,180,400
48	Seeding	AC	\$	•	20%	180	\$ 356,420
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	\$		20%	583,346	\$ 8,400,183
50	Slip-Line - 12-Inch Pipe	LF	\$		20%	175	\$ 23,100
51	Slip-Line - 15-Inch Pipe	LF	\$		20%	3 340	\$ 8,280
52	Slip-Line - 18-Inch Pipe	LF	\$		20%	2,340	\$ 339,768 454,608
53 54	Slip-Line - 24-Inch Pipe Slip-Line - 27-Inch Pipe	LF LF	\$		20%	2,870 960	\$ 454,608 158,976
55	Slip-Line - 27-inch Pipe	LF	\$		20%	835	\$ 167,334
56	Slip-Line - 42-Inch Pipe	LF	\$		20%	580	\$ 139,896
57	Slip-Line - 48-Inch Pipe	LF	\$		20%	3,190	\$ 842,160
58	Utility Relocation - High Tension Power (Raise)	EA	\$		20%	5	\$ 1,800,000
59	Utility Relocation - Natural Gas Pipeline	LF	\$		20%	12,190	\$ 7,314,000
60	Utility Relocation - Power Pole / Light Pole	EA	Ş	\$ 10,000	20%	42	\$ 504,000
61	Utility Relocation - Shield OE Power	LF	\$	50	20%	4,048	\$ 242,880
62	Utility Relocation - Underground Communication	LF	\$	100	20%	8,300	\$ 996,000
63	Utility Relocation - Underground Communications Pedestal	EA	Ş	\$ 10,000	20%	2	\$ 24,000
64	Utility Relocation - Various Buried Facilities	LF	\$		20%	3,805	\$ 1,141,500
65	Wetland Mitigation	AC	Ş	\$ 25,000	20%	112	\$ 3,360,000
66	Construction Estimate						\$ 125,175,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$ 129,480,000



APPENDIX B - WOOD RIVER CONSTRUCTION COST ESTIMATE

	WOOD	RIVER	-	SUMMARY			
Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity	Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY		\$ 12	20%	72,980	\$ 1,050,912
2	Clear & Grub - Light Vegetation	AC	_	\$ 6,000	20%	57	\$ 410,472
3	Clear & Grub - Wooded	AC	_	\$ 21,625	20%	0	\$ -
4	Cutoff Wall - Deep	SF	_	\$ 32	30%	633,418	\$ 26,350,189
5 6	Cutoff Wall - Hazardous Waste Premium Cutoff Wall - Shallow	SF SF	_	\$ 28 \$ 12	20% 30%	2,253	\$ 75,701
7	Cutoff Wall - Special Waste Premium	SF	_	\$ 12	20%	50,600 9,013	\$ 789,360 118,972
8	Dewatering	LF	-	\$ 51	20%	4,855	\$ 297,126
9	Drainage - Enclosed - 30" Pipe	LF	_	\$ 96	20%	569	\$ 65,549
	Drainage - Inlet Structure	EA	_	\$ 2,200	20%	1	\$ 2,640
	Drainage - Surface - Shallow Ditch	LF	_	\$ 141	20%	0	\$ -
12	Excavation	CY		\$ 11	20%	38,594	\$ 509,441
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	:	\$ 24	20%	21,399	\$ 616,291
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY		\$ 29	20%	21,827	\$ 759,580
15	Gravel Filter - Geotextile - Material & Installation	SY	-	\$ 2	20%	78,845	\$ 189,228
16	Gravel Filter - Sand Material - Haul On & Placement	CY	_	\$ 12	20%	29,590	\$ 426,096
17	Haul Off of Excess Material	CY	_	\$ 6	20%	38,594	\$ 277,877
18	Mobilization (% varies)	LS	_	\$ 575,815		1	\$ 575,815
19	Pump Station - WR - New - 220+00 UWR	EA	_	\$ 605,500	20%	1	\$ 726,600
	Pump Station - WR - New - 560+00 LWR	EA	_	\$ 699,500	20%	1	\$ 839,400
	Pump Station - MESD - Improve Existing - Phillips Reach	EA	_	\$ 849,500	20%	0	\$ -
22	Pump Station - PdP - Improve Existing - PdP West	EA EA	_	\$ 849,500	20%	0	\$ - 720,000
24	Pump Station - Various Improvements Pvmt - Curb & Gutter - Remove & Replace	LF	_	\$ 600,000 \$ 42	20%	1,247	\$ 720,000 62,849
25	Pvmt - Improved Roadway	LF	_	\$ 122	20%	2,662	\$ 389,717
26	Pvmt - Roads & Trails - Remove & Replace	SY	_	\$ 50	20%	7,388	\$ 443,280
27	Pvmt - Road Repair	LF	-	\$ 44	20%	5,280	\$ 278,784
28	Relief Well - Existing - Abandon	EA	_	\$ 2,000	20%	0	\$ -
29	Relief Well - Existing - Convert to Type "T"	EA	_	\$ 6,000	20%	13	\$ 93,600
30	Relief Well - Existing - Hazardous Waste Premium	EA		\$ 48,700	20%	0	\$ -
31	Relief Well - Existing - Rehabilitate	EA		\$ 12,000	20%	3	\$ 43,200
32	Relief Well - Existing - Special Waste Premium	EA		\$ 12,700	20%	6	\$ 91,440
33	Relief Well - Lateral Pipe (8-Inch)	LF	_	\$ 40	20%	2,088	\$ 100,224
34	Relief Well - Manifold Manhole	EA	_	\$ 3,000	20%	9	\$ 32,400
35	Relief Well - Manifold Pipe (12-Inch)	LF	_	\$ 50	20%	0	\$ -
	Relief Well - Manifold Pipe (18-Inch)	LF	_	\$ 64	20%	1,336	\$ 102,605
37	Relief Well - New - Hazardous Waste Premium	EA	_	\$ 61,950	20%	3	\$ 223,020
38 39	Relief Well - New - Special Waste Premium Relief Well - New Type "D"	EA EA	_	\$ 16,575 \$ 32,500	20%	10 24	\$ 198,900 936,000
40	Relief Well - New Type "T"	EA	_	\$ 40,000	20%	42	\$ 2,016,000
41	RipRap Bank Protection	CY	-	\$ 40,000	20%	6,252	\$ 900,288
42	ROW Acquisition - Agricultural	AC	-	\$ 6,500	20%	31	\$ 241,800
43	ROW Acquisition - Commercial	AC	_	\$ 30,000	20%	9	\$ 324,000
44	ROW Acquisition - Governmental	AC	_	\$ 25,000	20%	12	\$ 360,000
45	ROW Acquisition - Industrial	AC		\$ 30,000	20%	13	\$ 468,000
46	ROW Acquisition - Residential	AC		\$ 18,000	20%	1	\$ 21,600
47	ROW Acquisition - Vacant/Undeveloped	AC		\$ 23,000	20%	31	\$ 855,600
48	Seeding	AC	_	1,650	20%	3	\$ 5,960
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	_	\$ 12	20%	209,722	\$ 3,019,997
50	Slip-Line - 12-Inch Pipe	LF	+	\$ 110	20%	175	\$ 23,100
	Slip-Line - 15-Inch Pipe	LF	_	\$ 115	20%	60	\$ 8,280
52	Slip-Line - 18-Inch Pipe	LF	_	\$ 121	20%	860	\$ 124,872
	Slip-Line - 24-Inch Pipe Slip-Line - 27-Inch Pipe	LF	_	\$ 132	20%	1,710	\$ 270,864
54 55	Slip-Line - 27-inch Pipe Slip-Line - 36-inch Pipe	LF LF	_	\$ 138 \$ 167	20%	960 835	\$ 158,976 167,334
56	Slip-Line - 30-inch Pipe Slip-Line - 42-Inch Pipe	LF	_	\$ 201	20%	270	\$ 65,124
57	Slip-Line - 48-Inch Pipe	LF	_	\$ 220	20%	390	\$ 102,960
58	Utility Relocation - High Tension Power (Raise)	EA	_	\$ 300,000	20%	2	\$ 720,000
59	Utility Relocation - Natural Gas Pipeline	LF	_	\$ 500	20%	0	\$ -
60	Utility Relocation - Power Pole / Light Pole	EA		\$ 10,000	20%	7	\$ 84,000
61	Utility Relocation - Shield OE Power	LF	:	\$ 50	20%	4,048	\$ 242,880
62	Utility Relocation - Underground Communication	LF	,	\$ 100	20%	700	\$ 84,000
63	Utility Relocation - Underground Communications Pedestal	EA		\$ 10,000	20%	0	\$ -
64	Utility Relocation - Various Buried Facilities	LF	_	\$ 250	20%	2,805	\$ 841,500
65	Wetland Mitigation	AC		\$ 25,000	20%	51	\$ 1,530,000
66	Construction Estimate						\$ 50,435,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$ 52,170,000

	WOOD RIVER - CUTOFF WALLS												
Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total					
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY		\$ 12	20%	72,980	\$	1,050,912					
2	Clear & Grub - Light Vegetation	AC	,	\$ 6,000	20%	3	\$	21,672					
3	Clear & Grub - Wooded	AC		\$ 21,625	20%		\$	-					
4	Cutoff Wall - Deep	SF	-	\$ 32	30%	633,418	\$	26,350,189					
5	Cutoff Wall - Hazardous Waste Premium	SF	_	\$ 28	20%	2,253	\$	75,701					
6	Cutoff Wall - Shallow	SF	_	\$ 12	30%	50,600	\$	789,360					
7	Cutoff Wall - Special Waste Premium	SF	_	\$ 11	20%	9,013	\$	118,972					
8	Dewatering	LF	_	\$ 51	20%		\$	-					
9	Drainage - Enclosed - 30" Pipe	LF	_	\$ 96	20%		\$	-					
10	Drainage - Inlet Structure	EA	_	\$ 2,200	20%		\$	-					
11	Drainage - Surface - Shallow Ditch	LF	_	\$ 141	20%		\$	-					
12	Excavation	CY	_	\$ 11	20%	14,831	\$	195,769					
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	_	\$ 24	20%		\$	-					
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	_	\$ 29	20%		\$	-					
15	Gravel Filter - Geotextile - Material & Installation	SY	-	\$ 2	20%		\$	-					
16	Gravel Filter - Sand Material - Haul On & Placement	CY	+	\$ 12	20%		\$	-					
17	Haul Off of Excess Material	CY	_	\$ 6	20%	14,831	\$	106,783					
18	Mobilization	LS	_	\$ 235,315	0%	1	\$	235,315					
19	Pump Station - WR - New - 220+00 UWR	EA	-	\$ 605,500	20%		\$	-					
20	Pump Station - WR - New - 560+00 LWR	EA	_	\$ 699,500	20%		\$	-					
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	_	\$ 849,500	20%		\$	-					
22	Pump Station - PdP - Improve Existing - PdP West	EA	-	\$ 849,500	20%		\$	-					
23	Pump Station - Various Improvements	EA	-	\$ 600,000	20%		\$	-					
24	Pvmt - Curb & Gutter - Remove & Replace	LF	_	\$ 42	20%	1,247	\$	62,849					
25	Pvmt - Improved Roadway	LF	_	\$ 122	20%		\$	-					
26	Pvmt - Roads & Trails - Remove & Replace	SY	-	\$ 50	20%	5,915	\$	354,900					
27	Pvmt - Road Repair	LF	_	\$ 44	20%		\$	-					
28	Relief Well - Existing - Abandon	EA	_	\$ 2,000	20%		\$	-					
29	Relief Well - Existing - Convert to Type "T"	EA	-	\$ 6,000	20%		\$	-					
30	Relief Well - Existing - Hazardous Waste Premium	EA	_	\$ 48,700	20%		\$	-					
31	Relief Well - Existing - Rehabilitate	EA	_	\$ 12,000	20%		\$	-					
32	Relief Well - Existing - Special Waste Premium	EA	-	\$ 12,700	20%		\$	-					
33	Relief Well - Lateral Pipe (8-Inch)	LF	_	\$ 40	20%		\$	-					
34	Relief Well - Manifold Manhole	EA	_	\$ 3,000	20%		\$	-					
35	Relief Well - Manifold Pipe (12-Inch)	LF	_	\$ 50	20%		\$	-					
36	Relief Well - Manifold Pipe (18-Inch)	LF	_	\$ 64	20%		\$	-					
37	Relief Well - New - Hazardous Waste Premium	EA	_	\$ 61,950	20%		\$	-					
38	Relief Well - New - Special Waste Premium	EA	-	\$ 16,575	20%		\$	-					
	Relief Well - New Type "D"	EA	_	\$ 32,500	20%		\$	-					
40	Relief Well - New Type "T"	EA	-	\$ 40,000	20%		\$	-					
41	RipRap Bank Protection	CY	-	\$ 120	20%		\$	-					
42	ROW Acquisition - Agricultural	AC	_	\$ 6,500	20%		\$	-					
43	ROW Acquisition - Commercial	AC	_	\$ 30,000	20%		\$	-					
44	ROW Acquisition - Governmental	AC	_	\$ 25,000	20%	3	\$	90,000					
45	ROW Acquisition - Industrial	AC	-	\$ 30,000	20%	4	\$	144,000					
46	ROW Acquisition - Residential	AC	_	\$ 18,000	20%		\$	-					
47	ROW Acquisition - Vacant/Undeveloped	AC	_	\$ 23,000	20%		\$	-					
48	Seeding	AC	_	\$ 1,650	20%	3	\$	5,960					
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	_	\$ 12	20%		\$	-					
50	Slip-Line - 12-Inch Pipe	LF	+	\$ 110	20%		\$	-					
	Slip-Line - 15-Inch Pipe	LF	_	\$ 115	20%		\$	-					
52	Slip-Line - 18-Inch Pipe	LF	_	\$ 121	20%		\$	-					
53	Slip-Line - 24-Inch Pipe	LF	-	\$ 132	20%		\$	-					
54	Slip-Line - 27-Inch Pipe	LF	-	\$ 138	20%	ļ	\$	-					
55	Slip-Line - 36-Inch Pipe	LF	_	\$ 167	20%		\$	-					
56	Slip-Line - 42-Inch Pipe	LF	_	\$ 201	20%		\$	-					
57	Slip-Line - 48-Inch Pipe	LF	-	\$ 220	20%		\$	-					
58	Utility Relocation - High Tension Power (Raise)	EA	_	\$ 300,000	20%		\$	-					
59	Utility Relocation - Natural Gas Pipeline	LF	_	\$ 500	20%		\$	-					
60	Utility Relocation - Power Pole / Light Pole	EA	-	\$ 10,000	20%	5	\$	60,000					
61	Utility Relocation - Shield OE Power	LF	_	\$ 50	20%	ļ	\$	-					
62	Utility Relocation - Underground Communication	LF	-	\$ 100	20%	700	\$	84,000					
63	Utility Relocation - Underground Communications Pedestal	EA		\$ 10,000	20%		\$	-					
64	Utility Relocation - Various Buried Facilities	LF	_	\$ 250	20%		\$	-					
65	Wetland Mitigation	AC	L	\$ 25,000	20%	18	\$	540,000					
66	Construction Estimate						\$	30,286,000					
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$	31,328,000					

	WOOD R	IVER -	R	ELIEF WELLS				
Item #	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	Ş	5 12	20%		\$	-
2	Clear & Grub - Light Vegetation	AC	\$,	20%		\$	-
3	Clear & Grub - Wooded	AC	_	\$ 21,625	20%		\$	-
4	Cutoff Wall - Deep	SF	Ş		30%		\$	-
5	Cutoff Wall - Hazardous Waste Premium	SF	Ş		20%		\$	-
6 7	Cutoff Wall - Shallow	SF	4		30%		\$	-
8	Cutoff Wall - Special Waste Premium Dewatering	SF LF	,		20% 20%		\$	-
9	Drainage - Enclosed - 30" Pipe	LF			20%	120	\$	13,824
10	Drainage - Inlet Structure	EA	\$		20%	120	\$	-
11	Drainage - Surface - Shallow Ditch	LF	\$,	20%		\$	_
12	Excavation	CY	Ş		20%		\$	-
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	ζ		20%		\$	-
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	Ş	\$ 29	20%		\$	-
15	Gravel Filter - Geotextile - Material & Installation	SY	Ş	\$ 2	20%		\$	-
16	Gravel Filter - Sand Material - Haul On & Placement	CY	Ç	5 12	20%		\$	-
17	Haul Off of Excess Material	CY	Ç	\$ 6	20%		\$	-
18	Mobilization	LS	\$	· · · · · · · · · · · · · · · · · · ·	0%	1	\$	3,437
19	Pump Station - WR - New - 220+00 UWR	EA	Ş		20%		\$	-
20	Pump Station - WR - New - 560+00 LWR	EA	Ş	· · · · · · · · · · · · · · · · · · ·	20%		\$	-
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	Ş	·	20%		\$	-
22	Pump Station - PdP - Improve Existing - PdP West	EA	Ş	•	20%		\$	-
23	Pump Station - Various Improvements	EA	Ş		20%		\$	-
24	Pvmt - Curb & Gutter - Remove & Replace	LF	Ş		20%		\$	-
25	Pvmt - Improved Roadway	LF	\$		20%		\$	-
26	Pvmt - Roads & Trails - Remove & Replace	SY	Ş		20%		\$	-
27	Pvmt - Road Repair	LF	\$		20%		\$	-
28 29	Relief Well - Existing - Abandon Relief Well - Existing - Convert to Type "T"	EA EA	\$,	20%		\$	
30	Relief Well - Existing - Convert to Type T	EA	Ş	•	20%		\$	-
31	Relief Well - Existing - Rehabilitate	EA	_	\$ 12,000	20%	3	\$	43,200
32	Relief Well - Existing - Special Waste Premium	EA	_	\$ 12,700	20%	6	\$	91,440
33	Relief Well - Lateral Pipe (8-Inch)	LF	3		20%	932	\$	44,736
34	Relief Well - Manifold Manhole	EA	\$		20%	332	Ś	,,, 50
35	Relief Well - Manifold Pipe (12-Inch)	LF		,	20%		\$	-
36	Relief Well - Manifold Pipe (18-Inch)	LF	Ş		20%		\$	-
37	Relief Well - New - Hazardous Waste Premium	EA	Ş	\$ 61,950	20%	3	\$	223,020
38	Relief Well - New - Special Waste Premium	EA	Ş	\$ 16,575	20%	10	\$	198,900
39	Relief Well - New Type "D"	EA	Ş	\$ 32,500	20%	24	\$	936,000
40	Relief Well - New Type "T"	EA	,	\$ 40,000	20%	41	\$	1,968,000
41	RipRap Bank Protection	CY	\$	120	20%	389	\$	56,016
42	ROW Acquisition - Agricultural	AC	\$		20%	29	\$	226,200
43	ROW Acquisition - Commercial	AC	_	\$ 30,000	20%		\$	-
44	ROW Acquisition - Governmental	AC	_	\$ 25,000	20%	5	\$	150,000
45	ROW Acquisition - Industrial	AC	_	\$ 30,000	20%		\$	
46	ROW Acquisition - Residential	AC	_	\$ 18,000	20%	1	\$	21,600
47	ROW Acquisition - Vacant/Undeveloped	AC	_	\$ 23,000	20%	3	\$	82,800
48	Seeding	AC	\$	·	20%		\$	-
49 50	Seepage Berm Material - Haul On and Placement (Hauled)	CY LF	Ş		20%		\$	-
50 51	Slip-Line - 12-Inch Pipe Slip-Line - 15-Inch Pipe	LF	Ş		20%		\$	-
52	Slip-Line - 15-Inch Pipe Slip-Line - 18-Inch Pipe	LF	Ş		20%		\$	-
53	Slip-Line - 16-inch Pipe	LF	Ş		20%		\$	
54	Slip-Line - 27-Inch Pipe	LF	Ş		20%		\$	
55	Slip-Line - 36-Inch Pipe	LF	Ş		20%		\$	
56	Slip-Line - 42-Inch Pipe	LF	Ş		20%		\$	-
57	Slip-Line - 48-Inch Pipe	LF	\$		20%		\$	_
58	Utility Relocation - High Tension Power (Raise)	EA	Ş		20%		\$	-
59	Utility Relocation - Natural Gas Pipeline	LF	\$		20%		\$	-
60	Utility Relocation - Power Pole / Light Pole	EA	-	\$ 10,000	20%		\$	-
61	Utility Relocation - Shield OE Power	LF	Ş		20%	525	\$	31,500
62	Utility Relocation - Underground Communication	LF	\$		20%		\$	-
63	Utility Relocation - Underground Communications Pedestal	EA	_	\$ 10,000	20%		\$	-
64	Utility Relocation - Various Buried Facilities	LF	\$		20%		\$	-
65	Wetland Mitigation	AC	Ş	\$ 25,000	20%	5	\$	150,000
66	Construction Estimate						\$	4,241,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$	4,387,000

	WOOD F	RIVER - S	EEF	PAGE BERMS	}			
Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	\$	12	20%		\$	-
2	Clear & Grub - Light Vegetation	AC	\$	6,000	20%	38	\$	273,600
3	Clear & Grub - Wooded	AC	\$	21,625	20%		\$	-
4 5	Cutoff Wall - Deep	SF SF	\$	32	30%		\$	-
6	Cutoff Wall - Hazardous Waste Premium Cutoff Wall - Shallow	SF SF	\$	28 12	20% 30%		\$	
7	Cutoff Wall - Special Waste Premium	SF	\$	11	20%		\$	
8	Dewatering	LF	\$	51	20%		\$	-
9	Drainage - Enclosed - 30" Pipe	LF	\$	96	20%	449	\$	51,725
10	Drainage - Inlet Structure	EA	\$	2,200	20%	1	\$	2,640
11	Drainage - Surface - Shallow Ditch	LF	\$	141	20%		\$	-
12	Excavation	CY	\$	11	20%		\$	-
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	\$	24	20%		\$	-
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	\$	29	20%		\$	-
15 16	Gravel Filter - Geotextile - Material & Installation Gravel Filter - Sand Material - Haul On & Placement	SY CY	\$	12	20% 20%		\$	-
17	Haul Off of Excess Material	CY	\$	6	20%		\$	
18	Mobilization	LS	\$	120,497	0%	1	\$	120,497
19	Pump Station - WR - New - 220+00 UWR	EA	\$	605,500	20%		\$	-
20	Pump Station - WR - New - 560+00 LWR	EA	\$	699,500	20%		\$	-
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	\$	849,500	20%		\$	-
22	Pump Station - PdP - Improve Existing - PdP West	EA	\$	849,500	20%		\$	
23	Pump Station - Various Improvements	EA	\$	600,000	20%		\$	-
24	Pvmt - Curb & Gutter - Remove & Replace	LF	\$	42	20%		\$	-
25	Pvmt - Improved Roadway	LF	\$	122	20%	2,662	\$	389,717
26	Pvmt - Roads & Trails - Remove & Replace	SY	\$	50	20%	1,473	\$	88,380
27	Pvmt - Road Repair	LF	\$	44	20%		\$	-
28	Relief Well - Existing - Abandon	EA	\$	2,000	20%	13	\$	
29 30	Relief Well - Existing - Convert to Type "T" Relief Well - Existing - Hazardous Waste Premium	EA EA	\$	6,000 48,700	20%	13	\$	93,600
31	Relief Well - Existing - Rehabilitate	EA	\$	12,000	20%		\$	
32	Relief Well - Existing - Special Waste Premium	EA	\$	12,700	20%		\$	_
33	Relief Well - Lateral Pipe (8-Inch)	LF	\$	40	20%	1,156	\$	55,488
34	Relief Well - Manifold Manhole	EA	\$	3,000	20%	9	\$	32,400
35	Relief Well - Manifold Pipe (12-Inch)	LF	\$	50	20%		\$	-
36	Relief Well - Manifold Pipe (18-Inch)	LF	\$	64	20%	1,336	\$	102,605
37	Relief Well - New - Hazardous Waste Premium	EA	\$	61,950	20%		\$	-
38	Relief Well - New - Special Waste Premium	EA	\$	16,575	20%		\$	-
39	Relief Well - New Type "D"	EA	\$	32,500	20%		\$	-
40 41	Relief Well - New Type "T" RipRap Bank Protection	EA CY	\$	40,000 120	20% 20%	1	\$	48,000
42	ROW Acquisition - Agricultural	AC	\$	6,500	20%		\$	
43	ROW Acquisition - Commercial	AC	\$	30,000	20%	7	\$	252,000
44	ROW Acquisition - Governmental	AC	\$	25,000	20%		\$	-
45	ROW Acquisition - Industrial	AC	\$	30,000	20%	9	\$	324,000
46	ROW Acquisition - Residential	AC	\$	18,000	20%		\$	-
47	ROW Acquisition - Vacant/Undeveloped	AC	\$	23,000	20%	22	\$	607,200
48	Seeding	AC	\$	1,650	20%		\$	-
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	\$	12	20%	209,722	\$	3,019,997
50	Slip-Line - 12-Inch Pipe	LF	\$	110	20%		\$	-
	Slip-Line - 15-Inch Pipe	LF	\$	115	20%		\$	-
52 53	Slip-Line - 18-Inch Pipe Slip-Line - 24-Inch Pipe	LF LF	\$	121	20% 20%		\$	-
54	Slip-Line - 24-IIICH Pipe Slip-Line - 27-Inch Pipe	LF	\$	138	20%		\$	
55	Slip-Line - 36-Inch Pipe	LF	\$	167	20%		\$	-
56	Slip-Line - 42-Inch Pipe	LF	\$	201	20%		\$	-
57	Slip-Line - 48-Inch Pipe	LF	\$	220	20%		\$	-
58	Utility Relocation - High Tension Power (Raise)	EA	\$	300,000	20%	2	\$	720,000
59	Utility Relocation - Natural Gas Pipeline	LF	\$	500	20%		\$	-
60	Utility Relocation - Power Pole / Light Pole	EA	\$	10,000	20%	2	\$	24,000
61	Utility Relocation - Shield OE Power	LF	\$	50	20%	2,123	\$	127,380
62	Utility Relocation - Underground Communication	LF EA	\$	100	20%		\$	-
63	Utility Relocation - Underground Communications Pedestal	EA	\$	10,000	20%	2 005	\$	041 500
64 65	Utility Relocation - Various Buried Facilities Wetland Mitigation	LF AC	\$	250 25,000	20% 20%	2,805	\$	841,500
66	Construction Estimate	AC	ڔ	23,000	2070		\$	7,175,000
							Y	,,2,5,000

Control Cont		WOOD RIVER -	CIVI	L	IMPROVEME	NTS			
Control March Marc	Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total
Control Wall - Nepart September Sept	1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY		\$ 12	20%		\$	-
Confer Wall - Shadlow S				-			16		115,200
Second Filter				+					-
Control West Shallow Se S				+					-
Tour Order Vall Special Water Premium SF S 11 20% 4,855 5 207,126				_	•				-
B Dirainage - Enclosed - 30" Pripe				-					-
9			_	_			4.855		297.126
10 Drainage- Fielder Structure				_	•		1,000		-
22 Sacwation Cr S	10	Drainage - Inlet Structure	EA	,	\$ 2,200	20%		\$	-
13 Gravel Fitter - OSD-4* Material - Haul On & Placement	11	Drainage - Surface - Shallow Ditch	LF	,	\$ 141	20%		\$	-
14 Gravel Filter - 2050-2* Material - Haul On & Placement	12	Excavation	CY		\$ 11	20%	23,763	\$	313,672
15 Gravel Filter - Genteratie Material & Installation				-	•				
16 Gravel Filter - Sand Makerfail - Haul On & Placement				_					
17 Nau Off of Excess Material			+	-					•
18				+					
19 Pump Station - WR. New - 220+00 UWR				_					
20				_					
Pump Station - MISD - Improve Existing - PPM Vest				+					
22 Pump Station - Various Improvements				-	· · · · · · · · · · · · · · · · · · ·				-
242 Pornt - Curb & Gutter - Remove & Replace LF S 122 20% S S S	22	Pump Station - PdP - Improve Existing - PdP West	EA		\$ 849,500	20%		\$	-
25 Pemt - Improved Roadway	23	Pump Station - Various Improvements	EA		\$ 600,000	20%	1	\$	720,000
26 Pwnt. Roads & Trails - Remove & Replace SY S S0 20% S S S S S S S S S	24	Pvmt - Curb & Gutter - Remove & Replace	LF	-		20%			-
Part - Road Repair				-				<u> </u>	-
Relief Well - Existing - Abandon				-				_	-
Relief Well - Existing - Convert to Type "T"				-			5,280		278,784
Sellef Well - Existing - Hazardous Waste Premium				-					-
Relief Well - Existing - Rehabilitate		,		+					-
Relief Well - Existing - Special Waste Premium				_					-
Relief Well - Lateral Pipe (8-Inch)				-	· · · · · · · · · · · · · · · · · · ·				
Relief Well - Manifold Manhole EA \$ 3,000 20% \$ \$ \$ \$ \$ \$ \$ \$ \$			_	_					_
Relief Well - Manifold Pipe (18-Inch)				_		20%			-
Relief Well - New - Hazardous Waste Premium	35	Relief Well - Manifold Pipe (12-Inch)	LF		\$ 50	20%		\$	-
38 Relief Well - New - Special Waste Premium EA \$ 16,575 20% \$ 39 Relief Well - New Type "D" EA \$ 32,500 20% \$ \$ 40 Relief Well - New Type "D" EA \$ 40,000 20% \$ \$ 41 RipRap Bank Protection CY \$ 120 20% 5,863 \$ 844,272 42 ROW Acquisition - Agricultural AC \$ 6,500 20% 2 \$ 15,600 43 ROW Acquisition - Governmental AC \$ 30,000 20% 4 \$ 120,000 44 ROW Acquisition - Industrial AC \$ 25,000 20% 4 \$ 120,000 45 ROW Acquisition - Residential AC \$ 30,000 20% \$ \$ - 46 ROW Acquisition - Residential AC \$ 18,000 20% 6 \$ 165,600 48 Seeding	36	Relief Well - Manifold Pipe (18-Inch)	LF		\$ 64	20%		\$	-
Relief Well - New Type "D"	37	Relief Well - New - Hazardous Waste Premium	EA	_		20%			-
Relief Well - New Type "T"				+				<u> </u>	=
41 RipRap Bank Protection CY \$ 120 20% 5,863 \$ 844,272 42 ROW Acquisition - Agricultural AC \$ 6,500 20% 2 \$ 15,600 43 ROW Acquisition - Covernmental AC \$ 30,000 20% 2 \$ 7,2000 44 ROW Acquisition - Governmental AC \$ 25,000 20% 4 \$ 120,000 45 ROW Acquisition - Industrial AC \$ 30,000 20% \$ \$ - 46 ROW Acquisition - Residential AC \$ 18,000 20% \$ \$ - 47 ROW Acquisition - Vacant/Undeveloped AC \$ 18,000 20% \$ \$ - 48 Seeding AC \$ 1,650 20% \$ \$ - 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ \$				_					-
42 ROW Acquisition - Agricultural AC \$ 6,500 20% 2 \$ 15,600 43 ROW Acquisition - Commercial AC \$ 30,000 20% 2 \$ 72,000 44 ROW Acquisition - Governmental AC \$ 25,000 20% 4 \$ 120,000 45 ROW Acquisition - Industrial AC \$ 30,000 20% \$ \$ - 46 ROW Acquisition - Nesidential AC \$ 18,000 20% \$ \$ - 47 ROW Acquisition - Vacant/Undeveloped AC \$ 1,850 20% \$ - 6 \$ 165,600 48 Seeding AC \$ 1,650 20% \$ \$ - 6 \$ 165,600 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ \$ - - 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% 175 \$ 23,100 51 Slip-Line - 18-Inch Pipe LF \$ 115 20% 60 \$ 8,280 52		7		-			F 963		- 044 272
AC \$ 30,000 20% 2 \$ 72,000			_	+			,	-	
44 ROW Acquisition - Governmental AC \$ 25,000 20% 4 \$ 120,000 45 ROW Acquisition - Industrial AC \$ 30,000 20% \$ - 46 ROW Acquisition - Residential AC \$ 18,000 20% \$ - 47 ROW Acquisition - Vacant/Undeveloped AC \$ 23,000 20% 6 \$ 165,600 48 Seeding AC \$ 1,650 20% \$ - 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ - 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% 175 \$ 23,100 51 Slip-Line - 18-Inch Pipe LF \$ 115 20% 60 \$ 8,280 52 Slip-Line - 18-Inch Pipe LF \$ 115 20% 60 \$ 8,280 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% 80 \$ 124,872 53 Slip-Line - 18-Inch Pipe LF \$ 133			_	_					
AC \$ 30,000 20% \$ \$ \$ \$ \$ \$ \$ \$ \$			+	_					
AC \$ 18,000 20% \$ \$ -			_	-					-
48 Seeding AC \$ 1,650 20% \$ - 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ - 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% 175 \$ 23,100 51 Slip-Line - 15-Inch Pipe LF \$ 115 20% 60 \$ 8,280 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% 860 \$ 124,872 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% 1,710 \$ 270,864 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% 960 \$ 158,976 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% 835 \$ 167,334 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 44-Inch Pipe LF \$ 201 20% 390 \$ 102,960 58 Utility Relocation - High Tension Power (Raise) LF \$ 200 20%	46	ROW Acquisition - Residential	AC		\$ 18,000	20%		\$	-
49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ - 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% 175 \$ 23,100 51 Slip-Line - 15-Inch Pipe LF \$ 115 20% 60 \$ 8,280 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% 860 \$ 124,872 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% 1,710 \$ 270,864 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% 960 \$ 158,976 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% 835 \$ 167,334 56 Slip-Line - 48-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% 390 \$ 102,960	47	ROW Acquisition - Vacant/Undeveloped	AC		\$ 23,000	20%	6	\$	165,600
50 Slip-Line - 12-Inch Pipe LF \$ 110 20% 175 \$ 23,100 51 Slip-Line - 15-Inch Pipe LF \$ 115 20% 60 \$ 8,280 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% 860 \$ 124,872 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% 1,710 \$ 270,864 54 Slip-Line - 24-Inch Pipe LF \$ 138 20% 960 \$ 158,976 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% 835 \$ 167,334 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% 835 \$ 167,334 56 Slip-Line - 48-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% 390 \$ 102,960			_	_					-
51 Slip-Line - 15-Inch Pipe LF \$ 115 20% 60 \$ 8,280 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% 860 \$ 124,872 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% 1,710 \$ 270,864 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% 960 \$ 158,976 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% 835 \$ 167,334 56 Slip-Line - 36-Inch Pipe LF \$ 201 20% 835 \$ 167,334 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 48-Inch Pipe LF \$ 201 20% 390 \$ 102,960 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ -			_	_					-
52 Slip-Line - 18-Inch Pipe LF \$ 121 20% 860 \$ 124,872 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% 1,710 \$ 270,864 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% 960 \$ 158,976 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% 835 \$ 167,334 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% 390 \$ 102,960 58 Utility Relocation - High Tension Power (Raise) LF \$ 220 20% 390 \$ 102,960 58 Utility Relocation - Natural Gas Pipeline LF \$ 300,000 20% \$ \$ - 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ - 60 Utility Relocation - Shield OE Power LF \$ 500 20% \$ 84,000 61 Utility Relocation - Underground Communication				+					
53 Slip-Line - 24-Inch Pipe LF \$ 132 20% 1,710 \$ 270,864 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% 960 \$ 158,976 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% 835 \$ 167,334 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% 390 \$ 102,960 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ - 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ - 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ - 61 Utility Relocation - Shield OE Power LF \$ 50 20% 1,400 \$ 84,000 62 Utility Relocation - Underground Communication LF \$ 10,000 20% \$ - 63 Utility Relocation - Various Buried Facilities LF				_					
54 Slip-Line - 27-Inch Pipe LF \$ 138 20% 960 \$ 158,976 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% 835 \$ 167,334 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% 390 \$ 102,960 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ - 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ - 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ - 61 Utility Relocation - Shield OE Power LF \$ 50 20% 1,400 \$ 84,000 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ - 63 Utility Relocation - Various Buried Facilities EA \$ 10,000 20% \$ - 64 Utility Relocation - Various Buried Facilities LF <td< td=""><td></td><td>,</td><td></td><td>_</td><td>•</td><td></td><td></td><td></td><td></td></td<>		,		_	•				
55 Slip-Line - 36-Inch Pipe LF \$ 167 20% 835 \$ 167,334 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% 390 \$ 102,960 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ - 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ - 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ - 61 Utility Relocation - Shield OE Power LF \$ 50 20% 1,400 \$ 84,000 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ - 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ - 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 840,000 65 Wetland Mitigation AC \$ 25,000			+	+					
56 Slip-Line - 42-Inch Pipe LF \$ 201 20% 270 \$ 65,124 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% 390 \$ 102,960 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ - 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ - 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ - 61 Utility Relocation - Shield OE Power LF \$ 50 20% 1,400 \$ 84,000 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ - 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ - 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 840,000 66 Wetland Mitigation AC \$ 25,000 20% 28 \$ 840,000				+					
57 Slip-Line - 48-Inch Pipe LF \$ 220 20% 390 \$ 102,960 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ - 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ - 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ - 61 Utility Relocation - Shield OE Power LF \$ 50 20% 1,400 \$ 84,000 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ - 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ - 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 3 - 65 Wetland Mitigation AC \$ 25,000 20% 28 \$ 840,000 66 Construction Estimate \$ 8,733,000			_	_	•				
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60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ - 61 Utility Relocation - Shield OE Power LF \$ 50 20% 1,400 \$ 84,000 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ - 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ - 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ - 65 Wetland Mitigation AC \$ 25,000 20% 28 \$ 840,000 66 Construction Estimate \$ 8,733,000			EΑ					\$	
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62 Utility Relocation - Underground Communication LF \$ 100 20% \$ - 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ - 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ - 65 Wetland Mitigation AC \$ 25,000 20% 28 \$ 840,000 66 Construction Estimate \$ 8,733,000			_	+					-
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64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ - 65 Wetland Mitigation AC \$ 25,000 20% 28 \$ 840,000 66 Construction Estimate \$ 8,733,000				+					-
65 Wetland Mitigation AC \$ 25,000 20% 28 \$ 840,000 66 Construction Estimate \$ 8,733,000			_	+					-
66 Construction Estimate \$ 8,733,000				-			30	_	940.000
			AC		25,000	20%	28		·
				F					



APPENDIX C – MESD CONSTRUCTION COST ESTIMATE

	MES	SD - SU	J١	MMARY				
Item #	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	-	\$ 12	20%	183,618	\$	2,644,099
2	Clear & Grub - Light Vegetation	AC	-	\$ 6,000	20%	90	\$	648,000
3	Clear & Grub - Wooded	AC	+	\$ 21,625	20%	58	\$	1,505,100
4	Cutoff Wall - Deep	SF	+	\$ 32	30%	324,000	\$	13,478,400
5	Cutoff Wall - Hazardous Waste Premium	SF	_	\$ 28	20%	43,200	\$	1,451,520
6 7	Cutoff Wall - Shallow	SF	-	\$ 12 \$ 11	30%	108,000	\$	1,684,800
8	Cutoff Wall - Special Waste Premium Dewatering	SF LF	-	\$ 11 \$ 51	20%	172,800 6,600	\$	2,280,960 403,920
9	Drainage - Enclosed - 30" Pipe	LF	_	\$ 96	20%	0,000	\$	403,320
	Drainage - Inlet Structure	EA	-	\$ 2,200	20%	0	\$	
	Drainage - Surface - Shallow Ditch	LF	-	\$ 141	20%	6,000	\$	1,015,200
12	Excavation	CY	_	\$ 11	20%	141,178	\$	1,863,550
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	_	\$ 24	20%	25,762	\$	741,946
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY		\$ 29	20%	48,190	\$	1,677,012
15	Gravel Filter - Geotextile - Material & Installation	SY		\$ 2	20%	630,786	\$	1,513,886
16	Gravel Filter - Sand Material - Haul On & Placement	CY		\$ 12	20%	0	\$	-
17	Haul Off of Excess Material	CY		\$ 6	20%	137,528	\$	990,202
18	Mobilization (% varies)	LS	_	\$ 674,192		1	\$	674,193
19	Pump Station - WR - New - 220+00 UWR	EA		\$ 605,500	20%	0	\$	-
	Pump Station - WR - New - 560+00 LWR	EA	-	\$ 699,500	20%	0	\$	-
	Pump Station - MESD - Improve Existing - Phillips Reach	EA	-	\$ 849,500	20%	1	\$	1,019,400
22	Pump Station - PdP - Improve Existing - PdP West	EA	+	\$ 849,500	20%	0	\$	-
23	Pump Station - Various Improvements	EA	_	\$ 600,000	20%	2	\$	1,440,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	-	\$ 42	20%	0	\$	-
25	Pvmt - Improved Roadway	LF	-	\$ 122	20%	0	\$	-
26	Pvmt - Roads & Trails - Remove & Replace	SY	-	\$ 50	20%	1,000	\$	60,000
27	Pvmt - Road Repair	LF	-	\$ 44	20%	5,280	\$	278,784
28 29	Relief Well - Existing - Abandon Relief Well - Existing - Convert to Type "T"	EA EA	-	\$ 2,000 \$ 6,000	20%	15 25	\$	36,000 180,000
30	Relief Well - Existing - Convert to Type T	EA	+	\$ 48,700	20%	6	\$	350,640
31	Relief Well - Existing - Rehabilitate	EA	_	\$ 12,000	20%	42	\$	604,800
32	Relief Well - Existing - Special Waste Premium	EA	-	\$ 12,700	20%	18	\$	274,320
33	Relief Well - Lateral Pipe (8-Inch)	LF	-	\$ 40	20%	1,500	\$	72,000
	Relief Well - Manifold Manhole	EA	_	\$ 3,000	20%	0	Ś	-
35	Relief Well - Manifold Pipe (12-Inch)	LF	T	\$ 50	20%	0	\$	-
36	Relief Well - Manifold Pipe (18-Inch)	LF		\$ 64	20%	0	\$	-
37	Relief Well - New - Hazardous Waste Premium	EA		\$ 61,950	20%	8	\$	594,720
38	Relief Well - New - Special Waste Premium	EA		\$ 16,575	20%	41	\$	815,490
39	Relief Well - New Type "D"	EA		\$ 32,500	20%	35	\$	1,365,000
40	Relief Well - New Type "T"	EA	-	\$ 40,000	20%	25	\$	1,200,000
41	RipRap Bank Protection	CY	!	\$ 120	20%	0	\$	-
42	ROW Acquisition - Agricultural	AC	_	\$ 6,500	20%	12	\$	93,600
43	ROW Acquisition - Commercial	AC	_	\$ 30,000	20%	0	\$	-
44	ROW Acquisition - Governmental	AC	-	\$ 25,000	20%	0	\$	-
45	ROW Acquisition - Industrial	AC	+	\$ 30,000	20%	55	\$	1,980,000
46	ROW Acquisition - Residential	AC	_	\$ 18,000	20%	0	\$	-
47	ROW Acquisition - Vacant/Undeveloped	AC	-	\$ 23,000	20%	48	\$	1,324,800
48	Seeding Seeding Seeding Haul On and Placement (Hauled)	AC	_	5 1,650	20%	100	\$	198,000
49 50	Seepage Berm Material - Haul On and Placement (Hauled)	CY LF	_	\$ 12 \$ 110	20%	88,800 0	\$	1,278,720
	Slip-Line - 12-Inch Pipe Slip-Line - 15-Inch Pipe	LF	-	\$ 110	20%	0	\$	
52	Slip-Line - 15-inch Pipe	LF	_	\$ 115	20%	1,480	\$	214,896
_	Slip-Line - 16-inch Pipe	LF	_	\$ 132	20%	880	\$	139,392
54	Slip-Line - 27-Inch Pipe	LF	+	\$ 138	20%	0	\$	135,352
	Slip-Line - 36-Inch Pipe	LF	+	\$ 167	20%	0	\$	
56	Slip-Line - 42-Inch Pipe	LF	_	\$ 201	20%	310	\$	74,772
57	Slip-Line - 48-Inch Pipe	LF	+	\$ 220	20%	2,800	\$	739,200
58	Utility Relocation - High Tension Power (Raise)	EA	_	\$ 300,000	20%	3	\$	1,080,000
59	Utility Relocation - Natural Gas Pipeline	LF	-	\$ 500	20%	12,190	\$	7,314,000
60	Utility Relocation - Power Pole / Light Pole	EA	-	\$ 10,000	20%	15	\$	180,000
61	Utility Relocation - Shield OE Power	LF	_	\$ 50	20%	0	\$	-
62	Utility Relocation - Underground Communication	LF	;	\$ 100	20%	1,600	\$	192,000
63	Utility Relocation - Underground Communications Pedestal	EA	Ι	\$ 10,000	20%	0	\$	=
64	Utility Relocation - Various Buried Facilities	LF	[\$ 250	20%	1,000	\$	300,000
65	Wetland Mitigation	AC	Ĺ	\$ 25,000	20%	58	\$	1,740,000
66	Construction Estimate						\$	57,713,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$	59,698,000

	MESD	- CL	A	Y CAPS			
Item #	Cost Item	Unit		Unit Cost	Contingency	Quantity	Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	-	\$ 12	20%	183,618	\$ 2,644,099
2	Clear & Grub - Light Vegetation	AC	Ş	· · · · · · · · · · · · · · · · · · ·	20%	31	\$ 223,200
3	Clear & Grub - Wooded	AC	-	\$ 21,625	20%	13	\$ 337,350
4	Cutoff Wall - Deep	SF	-	\$ 32	30%		\$ -
5 6	Cutoff Wall - Hazardous Waste Premium Cutoff Wall - Shallow	SF SF	_	\$ 28 \$ 12	20% 30%		\$
7	Cutoff Wall - Special Waste Premium	SF	_	\$ 12	20%		\$
8	Dewatering	LF	-	\$ 51	20%		\$
9	Drainage - Enclosed - 30" Pipe	LF	_	\$ 96	20%		\$ -
10	Drainage - Inlet Structure	EA	Ş	2,200	20%		\$ -
11	Drainage - Surface - Shallow Ditch	LF	,	\$ 141	20%		\$ -
12	Excavation	CY	9,	\$ 11	20%	60,753	\$ 801,940
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	,	\$ 24	20%		\$ -
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	_	\$ 29	20%		\$ -
15	Gravel Filter - Geotextile - Material & Installation	SY	-	\$ 2	20%		\$ -
16	Gravel Filter - Sand Material - Haul On & Placement	CY	-	\$ 12	20%	60.753	\$ 427.422
17	Haul Off of Excess Material	CY LS	_	\$ 6 \$ 135,934	20%	60,753	\$ 437,422
18 19	Mobilization Pump Station - WR - New - 220+00 UWR	EA	_	\$ 135,934 \$ 605,500	20%	1	\$ 135,934
20	Pump Station - WR - New - 220+00 OWR Pump Station - WR - New - 560+00 LWR	EA	-	\$ 699,500	20%		\$ -
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	_	\$ 849,500	20%		\$
22	Pump Station - PdP - Improve Existing - PdP West	EA	_	\$ 849,500	20%		\$ -
23	Pump Station - Various Improvements	EA	-	\$ 600,000	20%		\$ -
24	Pvmt - Curb & Gutter - Remove & Replace	LF	_	\$ 42	20%		\$ -
25	Pvmt - Improved Roadway	LF	,	\$ 122	20%		\$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	9,	\$ 50	20%		\$ -
27	Pvmt - Road Repair	LF	_	\$ 44	20%		\$ -
28	Relief Well - Existing - Abandon	EA	Ş	· · · · · · · · · · · · · · · · · · ·	20%		\$ -
29	Relief Well - Existing - Convert to Type "T"	EA	Ş		20%		\$ -
30	Relief Well - Existing - Hazardous Waste Premium	EA	_	\$ 48,700	20%		\$ -
31	Relief Well - Existing - Rehabilitate	EA	-	\$ 12,000	20%		\$ -
32 33	Relief Well - Existing - Special Waste Premium Relief Well - Lateral Pipe (8-Inch)	EA LF	-	\$ 12,700 \$ 40	20% 20%		\$ -
34	Relief Well - Manifold Manhole	EA	3		20%		\$
35	Relief Well - Manifold Pipe (12-Inch)	LF	٠.	\$ 50	20%		\$ -
36	Relief Well - Manifold Pipe (18-Inch)	LF	_	\$ 64	20%		\$ -
37	Relief Well - New - Hazardous Waste Premium	EA	1	\$ 61,950	20%		\$ -
38	Relief Well - New - Special Waste Premium	EA		\$ 16,575	20%		\$ -
39	Relief Well - New Type "D"	EA	•	\$ 32,500	20%		\$ -
40	Relief Well - New Type "T"	EA	-	\$ 40,000	20%		\$ -
41	RipRap Bank Protection	CY	-	\$ 120	20%		\$ -
42	ROW Acquisition - Agricultural	AC	Ş		20%	6	\$ 46,800
43	ROW Acquisition - Commercial	AC	_	\$ 30,000	20%		\$ -
44 45	ROW Acquisition - Governmental ROW Acquisition - Industrial	AC AC	-	\$ 25,000	20%	7	\$ 252,000
45	ROW Acquisition - Residential	AC	-	\$ 30,000 \$ 18,000	20%	,	\$ 252,000
47	ROW Acquisition - Vacant/Undeveloped	AC	_	\$ 23,000	20%	14	\$ 386,400
48	Seeding	AC	-	1,650	20%	44	\$ 87,120
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	_	\$ 12	20%		\$ -
50	Slip-Line - 12-Inch Pipe	LF	_	\$ 110	20%		\$ -
51	Slip-Line - 15-Inch Pipe	LF	Ş	\$ 115	20%		\$
52	Slip-Line - 18-Inch Pipe	LF	_	\$ 121	20%		\$ -
53	Slip-Line - 24-Inch Pipe	LF	-	\$ 132	20%		\$ -
54	Slip-Line - 27-Inch Pipe	LF	-	\$ 138	20%		\$ -
55	Slip-Line - 36-Inch Pipe	LF	_	\$ 167	20%		\$ -
56	Slip-Line - 42-Inch Pipe	LF	_	\$ 201	20%		\$ -
57 58	Slip-Line - 48-Inch Pipe Ittility Palacation - High Tension Power (Paise)	LF EA	-	\$ 220	20% 20%		\$ -
58 59	Utility Relocation - High Tension Power (Raise) Utility Relocation - Natural Gas Pipeline	LF	_	\$ 300,000 \$ 500	20%		\$ -
60	Utility Relocation - Natural Gas Pipeline Utility Relocation - Power Pole / Light Pole	EA	_	\$ 10,000	20%		\$
61	Utility Relocation - Fower Fore / Light Fore Utility Relocation - Shield OE Power	LF	-	\$ 50	20%		\$ -
62	Utility Relocation - Underground Communication	LF	_	\$ 100	20%		\$ -
63	Utility Relocation - Underground Communications Pedestal	EA	-	\$ 10,000	20%		\$ -
64	Utility Relocation - Various Buried Facilities	LF	-	\$ 250	20%		\$ -
65	Wetland Mitigation	AC	Ŀ	\$ 25,000	20%	2	\$ 60,000
66	Construction Estimate						\$ 5,412,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$ 5,598,000

2 0 3 0 4 0 5 0 6 0 7 0 8 [Cost Item Clay Cap/Clay Blanket Material - Haul On & Placement Clear & Grub - Light Vegetation Clear & Grub - Wooded Cutoff Wall - Deep	Unit CY AC	\$	Unit Cost	Contingency 20%	Quantity	\$	Total
2 0 3 0 4 0 5 0 6 0 7 0 8 [Clear & Grub - Light Vegetation Clear & Grub - Wooded Cutoff Wall - Deep	AC	_	12	20%		¢	
3 (4 (5 (6 (7 (6 (7 (7 (7 (7 (7 (7 (7 (7 (7 (7 (7 (7 (7	Clear & Grub - Wooded Cutoff Wall - Deep						۲	-
4 (5 (6 (7 (8 [Cutoff Wall - Deep		\$	6,000	20%	11	\$	79,200
5 (6 (7 (8 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1		AC	\$	·	20%	5	\$	129,750
6 (7 (8 [SF	\$		30%	324,000	\$	13,478,400
7 (8 [Cutoff Wall - Hazardous Waste Premium	SF	\$		20%	43,200	\$	1,451,520
8 [Cutoff Wall - Shallow	SF	\$		30%	108,000	\$	1,684,800
	Cutoff Wall - Special Waste Premium Dewatering	SF LF	\$		20% 20%	172,800	\$	2,280,960
9 [Drainage - Enclosed - 30" Pipe	LF	\$		20%		\$	
	Drainage - Inlet Structure	EA	\$		20%		\$	_
	Drainage - Surface - Shallow Ditch	LF	\$,	20%		\$	-
	Excavation	CY	\$		20%		\$	-
13 (Gravel Filter - D50=#4 Material - Haul On & Placement	CY	\$	3 24	20%		\$	-
14 (Gravel Filter - D50=2" Material - Haul On & Placement	CY	\$	29	20%		\$	-
15 (Gravel Filter - Geotextile - Material & Installation	SY	\$	5 2	20%		\$	-
16	Gravel Filter - Sand Material - Haul On & Placement	CY	\$		20%		\$	-
	Haul Off of Excess Material	CY	\$		20%		\$	-
	Mobilization	LS	\$		0%	1	\$	125,819
	Pump Station - WR - New - 220+00 UWR	EA	\$		20%		\$	-
	Pump Station - WR - New - 560+00 LWR	EA	\$, , , , , , , , , , , , , , , , , , ,	20%		\$	-
	Pump Station - MESD - Improve Existing - Phillips Reach Pump Station - PdP - Improve Existing - PdP West	EA EA	\$,	20%		\$	-
	Pump Station - PdP - Improve Existing - PdP West Pump Station - Various Improvements	EA	\$	·	20%		\$	-
	Pvmt - Curb & Gutter - Remove & Replace	LF	\$		20%		\$	
	Pvmt - Improved Roadway	LF	\$		20%		\$	_
	Pvmt - Roads & Trails - Remove & Replace	SY	\$		20%	500	\$	30,000
	Pvmt - Road Repair	LF	\$		20%		\$	-
	Relief Well - Existing - Abandon	EA	\$	2,000	20%		\$	-
29 F	Relief Well - Existing - Convert to Type "T"	EA	\$	6,000	20%		\$	-
30 F	Relief Well - Existing - Hazardous Waste Premium	EA	\$	48,700	20%		\$	-
31 F	Relief Well - Existing - Rehabilitate	EA	\$	12,000	20%		\$	-
32 F	Relief Well - Existing - Special Waste Premium	EA	\$		20%		\$	-
-	Relief Well - Lateral Pipe (8-Inch)	LF	\$		20%		\$	-
	Relief Well - Manifold Manhole	EA	\$,	20%		\$	-
	Relief Well - Manifold Pipe (12-Inch)	LF	\$		20%		\$	-
-	Relief Well - Manifold Pipe (18-Inch)	LF	\$		20%		\$	-
	Relief Well - New - Hazardous Waste Premium Relief Well - New - Special Waste Premium	EA EA	\$	· · · · · · · · · · · · · · · · · · ·	20%		\$	-
	Relief Well - New Type "D"	EA	\$	·	20%		\$	
	Relief Well - New Type "T"	EA	\$	· · · · · · · · · · · · · · · · · · ·	20%		\$	
	RipRap Bank Protection	CY	\$		20%		\$	_
	ROW Acquisition - Agricultural	AC	\$		20%	2	\$	15,600
-	ROW Acquisition - Commercial	AC	\$		20%		\$	-
44 F	ROW Acquisition - Governmental	AC	\$	25,000	20%		\$	-
45 F	ROW Acquisition - Industrial	AC	\$	30,000	20%	6	\$	216,000
46 F	ROW Acquisition - Residential	AC	\$	· · · · · · · · · · · · · · · · · · ·	20%		\$	-
	ROW Acquisition - Vacant/Undeveloped	AC	\$		20%	8	\$	220,800
	Seeding	AC	\$	·	20%		\$	-
	Seepage Berm Material - Haul On and Placement (Hauled)	CY	\$		20%		\$	-
	Slip-Line - 12-Inch Pipe	LF	\$		20%		\$	-
	Slip-Line - 15-Inch Pipe	LF LF	\$		20% 20%		\$	-
	Slip-Line - 18-Inch Pipe Slip-Line - 24-Inch Pipe	LF	\$		20%		\$	-
	Slip-Line - 27-Inch Pipe	LF	\$		20%		\$	
	Slip-Line - 36-Inch Pipe	LF	\$		20%		\$	-
	Slip-Line - 42-Inch Pipe	LF	\$		20%		\$	-
	Slip-Line - 48-Inch Pipe	LF	\$		20%		\$	-
-	Utility Relocation - High Tension Power (Raise)	EA	\$		20%		\$	-
-	Utility Relocation - Natural Gas Pipeline	LF	\$		20%	9,790	\$	5,874,000
60 l	Utility Relocation - Power Pole / Light Pole	EA	\$	10,000	20%		\$	-
61 l	Utility Relocation - Shield OE Power	LF	\$		20%		\$	-
	Utility Relocation - Underground Communication	LF	\$		20%	1,600	\$	192,000
-	Utility Relocation - Underground Communications Pedestal	EA	\$		20%		\$	-
	Utility Relocation - Various Buried Facilities	LF	\$		20%	1,000	\$	300,000
	Wetland Mitigation	AC	\$	25,000	20%	2	\$	60,000
	Construction Estimate Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$	26,139,000 27,038,000

	MESD -	REL	ΙE	F WELLS			
Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity	Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	\$	12	20%		\$ -
2	Clear & Grub - Light Vegetation	AC	\$	6,000	20%	13	\$ 93,600
3	Clear & Grub - Wooded	AC	\$		20%	5	\$ 129,750
4	Cutoff Wall - Deep	SF	\$		30%		\$ -
5	Cutoff Wall - Hazardous Waste Premium	SF	\$		20%		\$ -
6	Cutoff Wall - Shallow	SF	\$		30%		\$ -
7 8	Cutoff Wall - Special Waste Premium	SF LF	\$		20% 20%		\$ -
9	Dewatering Drainage - Enclosed - 30" Pipe	LF	\$		20%		\$ -
	Drainage - Inlet Structure	EA	\$		20%		\$
	Drainage - Surface - Shallow Ditch	LF	\$,	20%	4,000	\$ 676,800
12	Excavation	CY	\$		20%	.,000	\$ -
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	\$		20%		\$ -
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	\$	29	20%		\$ -
15	Gravel Filter - Geotextile - Material & Installation	SY	\$	2	20%		\$ -
16	Gravel Filter - Sand Material - Haul On & Placement	CY	\$	12	20%		\$ -
17	Haul Off of Excess Material	CY	\$	6	20%		\$ -
18	Mobilization	LS	\$	·	0%	1	\$ 31,134
19	Pump Station - WR - New - 220+00 UWR	EA	\$	·	20%		\$ -
	Pump Station - WR - New - 560+00 LWR	EA	\$,	20%		\$ -
	Pump Station - MESD - Improve Existing - Phillips Reach	EA	\$		20%		\$ -
	Pump Station - PdP - Improve Existing - PdP West	EA	\$		20%		\$ -
23	Pump Station - Various Improvements	EA	\$		20%		\$ -
	Pvmt - Curb & Gutter - Remove & Replace	LF	\$		20%		\$ -
25 26	Pvmt - Improved Roadway	LF	\$		20%	F00	\$ 20,000
26	Pvmt - Roads & Trails - Remove & Replace	SY LF	\$		20%	500	\$ 30,000
	Pvmt - Road Repair Relief Well - Existing - Abandon	EA	\$		20%		\$
29	Relief Well - Existing - Abdition Relief Well - Existing - Convert to Type "T"	EA	\$,	20%	25	\$ 180,000
30	Relief Well - Existing - Hazardous Waste Premium	EA	\$		20%	6	\$ 350,640
	Relief Well - Existing - Rehabilitate	EA	\$		20%	42	\$ 604,800
32	Relief Well - Existing - Special Waste Premium	EA	\$		20%	18	\$ 274,320
33	Relief Well - Lateral Pipe (8-Inch)	LF	\$		20%	1,500	\$ 72,000
34	Relief Well - Manifold Manhole	EA	\$	3,000	20%		\$ -
35	Relief Well - Manifold Pipe (12-Inch)	LF	\$	50	20%		\$ -
36	Relief Well - Manifold Pipe (18-Inch)	LF	\$	64	20%		\$ -
37	Relief Well - New - Hazardous Waste Premium	EA	\$	·	20%	8	\$ 594,720
	Relief Well - New - Special Waste Premium	EA	\$		20%	41	\$ 815,490
	Relief Well - New Type "D"	EA	\$	·	20%	35	\$ 1,365,000
40	Relief Well - New Type "T"	EA	\$		20%	25	\$ 1,200,000
41	RipRap Bank Protection	CY	\$		20%		\$ 24 200
42	ROW Acquisition - Agricultural	AC	\$		20%	4	\$ 31,200
43 44	ROW Acquisition - Commercial ROW Acquisition - Governmental	AC AC	\$	·	20% 20%		\$
45	ROW Acquisition - Industrial	AC	\$	·	20%	14	\$ 504,000
46	ROW Acquisition - Residential	AC	\$		20%	14	\$ 304,000
47	ROW Acquisition - Nesideritial ROW Acquisition - Vacant/Undeveloped	AC	\$	·	20%		\$
48	Seeding	AC	\$	·	20%	18	\$ 35,640
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	\$	·	20%		\$
50	Slip-Line - 12-Inch Pipe	LF	\$		20%		\$ -
51	Slip-Line - 15-Inch Pipe	LF	\$	115	20%		\$ -
52	Slip-Line - 18-Inch Pipe	LF	\$	121	20%		\$ -
53	Slip-Line - 24-Inch Pipe	LF	\$	132	20%		\$
54	Slip-Line - 27-Inch Pipe	LF	\$	138	20%		\$ -
	Slip-Line - 36-Inch Pipe	LF	\$		20%		\$ -
	Slip-Line - 42-Inch Pipe	LF	\$		20%		\$ -
	Slip-Line - 48-Inch Pipe	LF	\$		20%		\$ -
58	Utility Relocation - High Tension Power (Raise)	EA	\$		20%		\$ -
59	Utility Relocation - Natural Gas Pipeline	LF	\$		20%		\$ -
60	Utility Relocation - Power Pole / Light Pole	EA	\$		20%		\$ -
61	Utility Relocation - Shield OE Power	LF	\$		20%		\$ -
62	Utility Relocation - Underground Communication	LF EA	\$		20%		\$ -
63 64	Utility Relocation - Underground Communications Pedestal Utility Relocation - Various Buried Facilities	LF	\$	·	20% 20%		\$ -
65	Wetland Mitigation	AC	\$ \$		20%	10	\$ 300,000
	Construction Estimate	7.0	۲	23,000	20/8	10	\$ 7,289,000
66	Construction Estimate						

	MESD	- SEEP	٩GI	E BERMS			
Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity	Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	\$	12	20%		\$ -
2	Clear & Grub - Light Vegetation	AC	\$	6,000	20%	12	\$ 86,400
3	Clear & Grub - Wooded	AC	\$	21,625	20%	25	\$ 648,750
4	Cutoff Wall - Deep	SF	\$	32	30%		\$ -
5	Cutoff Wall - Hazardous Waste Premium	SF	\$	28	20%		\$ -
6	Cutoff Wall - Shallow	SF	\$	12	30%	 	\$
7 8	Cutoff Wall - Special Waste Premium Downtoring	SF LF	\$ \$	11 51	20%	 	\$
	Dewatering Drainage - Enclosed - 30" Pipe	LF	\$	96	20%	 	\$
	Drainage - Inlet Structure	EA	\$	2,200	20%		\$
	Drainage - Surface - Shallow Ditch	LF	\$	141	20%	2,000	\$ 338,400
12	Excavation	CY	\$	11	20%	2,000	\$ 330,400
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	\$	24	20%		\$ _
	Gravel Filter - D50=2" Material - Haul On & Placement	CY	\$	29	20%		\$
	Gravel Filter - Geotextile - Material & Installation	SY	\$	2	20%		\$ _
	Gravel Filter - Sand Material - Haul On & Placement	CY	\$	12	20%		\$ -
	Haul Off of Excess Material	CY	\$	6	20%		\$ -
18	Mobilization	LS	\$	72,825	0%	1	\$ 72,825
19	Pump Station - WR - New - 220+00 UWR	EA	\$	605,500	20%		\$ -
20	Pump Station - WR - New - 560+00 LWR	EA	\$	699,500	20%		\$ -
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	\$	849,500	20%		\$ -
22	Pump Station - PdP - Improve Existing - PdP West	EA	\$	849,500	20%		\$ -
23	Pump Station - Various Improvements	EA	\$	600,000	20%		\$ -
24	Pvmt - Curb & Gutter - Remove & Replace	LF	\$	42	20%		\$ -
	Pvmt - Improved Roadway	LF	\$	122	20%		\$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	\$	50	20%		\$ -
	Pvmt - Road Repair	LF	\$	44	20%		\$ -
	Relief Well - Existing - Abandon	EA	\$	2,000	20%	15	\$ 36,000
29	Relief Well - Existing - Convert to Type "T"	EA	\$	6,000	20%		\$ -
	Relief Well - Existing - Hazardous Waste Premium	EA	\$	48,700	20%	 	\$ -
	Relief Well - Existing - Rehabilitate	EA	\$	12,000	20%		\$ -
	Relief Well - Existing - Special Waste Premium	EA LF	\$ \$	12,700 40	20%		\$ -
	Relief Well - Lateral Pipe (8-Inch) Relief Well - Manifold Manhole	EA	\$	3,000	20%	 	\$
	Relief Well - Manifold Manifole Relief Well - Manifold Pipe (12-Inch)	LF	\$	50	20%		\$
	Relief Well - Manifold Pipe (18-Inch)	LF	\$	64	20%		\$
37	Relief Well - New - Hazardous Waste Premium	EA	\$	61,950	20%		\$
	Relief Well - New - Special Waste Premium	EA	\$	16.575	20%		\$ _
	Relief Well - New Type "D"	EA	\$	32,500	20%		\$ _
40	Relief Well - New Type "T"	EA	\$	40,000	20%		\$ -
41	RipRap Bank Protection	CY	\$	120	20%		\$ -
42	ROW Acquisition - Agricultural	AC	\$	6,500	20%		\$ -
43	ROW Acquisition - Commercial	AC	\$	30,000	20%		\$ -
44	ROW Acquisition - Governmental	AC	\$	25,000	20%		\$ -
45	ROW Acquisition - Industrial	AC	\$	30,000	20%	14	\$ 504,000
46	ROW Acquisition - Residential	AC	\$	18,000	20%		\$ -
47	ROW Acquisition - Vacant/Undeveloped	AC	\$	23,000	20%	13	\$ 358,800
48	Seeding	AC	\$	1,650	20%	38	\$ 75,240
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	\$	12	20%	88,800	\$ 1,278,720
50	Slip-Line - 12-Inch Pipe	LF	\$	110	20%		\$
	Slip-Line - 15-Inch Pipe	LF	\$	115	20%		\$ -
52	Slip-Line - 18-Inch Pipe	LF	\$	121	20%		\$ -
	Slip-Line - 24-Inch Pipe	LF	\$	132	20%	 	\$ -
54	Slip-Line - 27-Inch Pipe	LF	\$	138	20%	 	\$ -
	Slip-Line - 36-Inch Pipe	LF	\$	167	20%	 	\$ -
	Slip-Line - 42-Inch Pipe	LF	\$	201	20%	 	\$ -
57 58	Slip-Line - 48-Inch Pipe	LF EA	\$	300,000	20%	3	\$ 1 000 000
58 59	Utility Relocation - High Tension Power (Raise) Utility Relocation - Natural Gas Pipeline	LF	\$	500	20%	2,400	\$ 1,080,000 1,440,000
60	Utility Relocation - Natural Gas Pipeline Utility Relocation - Power Pole / Light Pole	EA	\$	10,000	20%	2,400	\$ 180,000
61	Utility Relocation - Power Pole / Light Pole Utility Relocation - Shield OE Power	LF	\$	50	20%	13	\$ 100,000
62	Utility Relocation - Underground Communication	LF	\$	100	20%	 	\$
63	Utility Relocation - Underground Communications Pedestal	EA	\$	10,000	20%	 	\$ -
64	Utility Relocation - Various Buried Facilities	LF	\$	250	20%	 	\$
65	Wetland Mitigation	AC	\$	25,000	20%	11	\$ 330,000
66	Construction Estimate	- 10	Ÿ	25,000	2070		\$ 6,429,000
00							

	MESD -	CIVIL IM	1P	ROVEMENTS			
Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity	Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	1	\$ 12	20%		\$ -
2	Clear & Grub - Light Vegetation	AC	,	\$ 6,000	20%	23	\$ 165,600
3	Clear & Grub - Wooded	AC		\$ 21,625	20%	10	\$ 259,500
4	Cutoff Wall - Deep	SF	-	\$ 32	30%		\$ -
5	Cutoff Wall - Hazardous Waste Premium	SF	_	\$ 28	20%		\$ -
6	Cutoff Wall - Shallow	SF	_	\$ 12	30%		\$ -
7	Cutoff Wall - Special Waste Premium	SF	_	\$ 11	20%		\$
8	Dewatering	LF	_	\$ 51	20%	6,600	\$ 403,920
9	Drainage - Enclosed - 30" Pipe	LF	-	\$ 96	20%		\$ -
10	Drainage - Inlet Structure	EA	Ş		20%		\$ -
11	Drainage - Surface - Shallow Ditch	LF	_	\$ 141	20%	00.425	\$ - 4 004 640
12	Excavation	CY	_	\$ 11	20%	80,425	\$ 1,061,610
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	-	\$ 24	20%	25,762	\$ 741,946
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY SY	_	\$ 29 \$ 2	20%	48,190	\$ 1,677,012
15 16	Gravel Filter - Geotextile - Material & Installation Gravel Filter - Sand Material - Haul On & Placement	CY	_	\$ 2 \$ 12	20%	630,786	\$ 1,513,886
17	Haul Off of Excess Material	CY	+	\$ 6	20%	76,775	\$ 552,780
18	Mobilization	LS	_	\$ 308,481	0%	10,773	\$ 308,481
19	Pump Station - WR - New - 220+00 UWR	EA	_	\$ 605,500	20%	1	\$ 300,461
20	Pump Station - WR - New - 220+00 OWR	EA	-	\$ 699,500	20%		\$
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	-	\$ 849,500	20%	1	\$ 1,019,400
22	Pump Station - PdP - Improve Existing - PdP West	EA	_	\$ 849,500	20%	1	\$ 1,013,400
23	Pump Station - Various Improvements	EA	-	\$ 600,000	20%	2	\$ 1,440,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	_	\$ 42	20%		\$ 1,440,000
25	Pvmt - Improved Roadway	LF	_	\$ 122	20%		\$
26	Pvmt - Roads & Trails - Remove & Replace	SY	_	\$ 50	20%		\$
27	Pvmt - Road Repair	LF	_	\$ 44	20%	5,280	\$ 278,784
28	Relief Well - Existing - Abandon	EA	3		20%	3,200	\$ -
29	Relief Well - Existing - Convert to Type "T"	EA	,		20%		\$ _
30	Relief Well - Existing - Hazardous Waste Premium	EA	_	\$ 48,700	20%		\$ _
31	Relief Well - Existing - Rehabilitate	EA	_	\$ 12,000	20%		\$ _
32	Relief Well - Existing - Special Waste Premium	EA	_	\$ 12,700	20%		\$ _
33	Relief Well - Lateral Pipe (8-Inch)	LF	_	\$ 40	20%		\$ -
34	Relief Well - Manifold Manhole	EA	5	•	20%		\$ -
35	Relief Well - Manifold Pipe (12-Inch)	LF		\$ 50	20%		\$ -
36	Relief Well - Manifold Pipe (18-Inch)	LF	_	\$ 64	20%		\$ -
37	Relief Well - New - Hazardous Waste Premium	EA	_	\$ 61,950	20%		\$ -
38	Relief Well - New - Special Waste Premium	EA	_	\$ 16,575	20%		\$ -
39	Relief Well - New Type "D"	EA		\$ 32,500	20%		\$ -
40	Relief Well - New Type "T"	EA		\$ 40,000	20%		\$ -
41	RipRap Bank Protection	CY	,	\$ 120	20%		\$ -
42	ROW Acquisition - Agricultural	AC	,	\$ 6,500	20%		\$ -
43	ROW Acquisition - Commercial	AC		\$ 30,000	20%		\$ -
44	ROW Acquisition - Governmental	AC		\$ 25,000	20%		\$ -
45	ROW Acquisition - Industrial	AC		\$ 30,000	20%	14	\$ 504,000
46	ROW Acquisition - Residential	AC		\$ 18,000	20%		\$
47	ROW Acquisition - Vacant/Undeveloped	AC		\$ 23,000	20%	13	\$ 358,800
48	Seeding	AC	_	\$ 1,650	20%		\$ -
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	_	\$ 12	20%		\$ -
50	Slip-Line - 12-Inch Pipe	LF	,	\$ 110	20%		\$ -
51	Slip-Line - 15-Inch Pipe	LF	_	\$ 115	20%		\$ -
52	Slip-Line - 18-Inch Pipe	LF	_	\$ 121	20%	1,480	\$ 214,896
53	Slip-Line - 24-Inch Pipe	LF	_	\$ 132	20%	880	\$ 139,392
54	Slip-Line - 27-Inch Pipe	LF	_	\$ 138	20%		\$ -
55	Slip-Line - 36-Inch Pipe	LF	_	\$ 167	20%		\$ -
56	Slip-Line - 42-Inch Pipe	LF	_	\$ 201	20%	310	\$ 74,772
57	Slip-Line - 48-Inch Pipe	LF	_	\$ 220	20%	2,800	\$ 739,200
58	Utility Relocation - High Tension Power (Raise)	EA	_	\$ 300,000	20%		\$ -
59	Utility Relocation - Natural Gas Pipeline	LF	_	\$ 500	20%		\$ -
60	Utility Relocation - Power Pole / Light Pole	EA	-	\$ 10,000	20%		\$ -
61	Utility Relocation - Shield OE Power	LF	_	\$ 50	20%		\$ -
62	Utility Relocation - Underground Communication	LF	_	\$ 100	20%		\$ -
63	Utility Relocation - Underground Communications Pedestal	EA	-	\$ 10,000	20%		\$ -
64	Utility Relocation - Various Buried Facilities	LF	_	\$ 250	20%		\$ -
65	Wetland Mitigation	AC	L	\$ 25,000	20%	33	\$ 990,000
66	Construction Estimate						\$ 12,444,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$ 12,872,000



APPENDIX D - PDP/FL CONSTRUCTION COST ESTIMATE

PdP & FISH LAKE - SUMMARY										
Item #	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total		
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	\$	12	20%	11,713	\$	168,667		
2	Clear & Grub - Light Vegetation	AC	\$,	20%	38	\$	273,600		
3	Clear & Grub - Wooded	AC	\$		20%	12	\$	311,400		
4	Cutoff Wall - Deep	SF	\$		30%	0	\$	-		
5	Cutoff Wall - Hazardous Waste Premium	SF	\$		20%	0	\$	-		
6 7	Cutoff Wall - Shallow Cutoff Wall - Special Waste Premium	SF	\$		30%	0	\$	-		
8	Dewatering	SF LF	\$		20%	0	\$	-		
9	Drainage - Enclosed - 30" Pipe	LF	\$		20%	0	\$			
	Drainage - Inlet Structure	EA	\$	2,200	20%	0	\$	_		
	Drainage - Surface - Shallow Ditch	LF	\$,	20%	1,200	\$	203,040		
12	Excavation	CY	\$		20%	11,713	\$	154,612		
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	\$	24	20%	0	\$	-		
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	\$	29	20%	0	\$	-		
15	Gravel Filter - Geotextile - Material & Installation	SY	\$	2	20%	0	\$	-		
16	Gravel Filter - Sand Material - Haul On & Placement	CY	\$	12	20%	0	\$	-		
17	Haul Off of Excess Material	CY	\$		20%	11,713	\$	84,334		
18	Mobilization (% varies)	LS	\$			1	\$	242,882		
19	Pump Station - WR - New - 220+00 UWR	EA	\$,	20%	0	\$	-		
	Pump Station - WR - New - 560+00 LWR	EA	\$,	20%	0	\$	-		
	Pump Station - MESD - Improve Existing - Phillips Reach	EA	\$		20%	0	\$	- 1 010 100		
22	Pump Station - PdP - Improve Existing - PdP West	EA	\$		20%	1	\$	1,019,400		
23	Pump Station - Various Improvements	EA LF	\$		20%	0	\$	720,000		
24 25	Pvmt - Curb & Gutter - Remove & Replace Pvmt - Improved Roadway	LF	\$		20%	860	\$	125,904		
26	Pvmt - Roads & Trails - Remove & Replace	SY	\$		20%	0	\$	125,904		
27	Pvmt - Road Repair	LF	\$		20%	5,280	\$	278,784		
	Relief Well - Existing - Abandon	EA	\$	2,000	20%	27	\$	64,800		
29	Relief Well - Existing - Convert to Type "T"	EA	\$	6,000	20%	38	\$	273,600		
30	Relief Well - Existing - Hazardous Waste Premium	EA	\$		20%	0	\$	-		
	Relief Well - Existing - Rehabilitate	EA	\$		20%	33	\$	475,200		
32	Relief Well - Existing - Special Waste Premium	EA	\$	12,700	20%	0	\$	-		
33	Relief Well - Lateral Pipe (8-Inch)	LF	\$	40	20%	0	\$	-		
34	Relief Well - Manifold Manhole	EA	\$	3,000	20%	20	\$	72,000		
35	Relief Well - Manifold Pipe (12-Inch)	LF	\$	50	20%	3,548	\$	212,880		
36	Relief Well - Manifold Pipe (18-Inch)	LF	\$		20%	2,255	\$	173,184		
37	Relief Well - New - Hazardous Waste Premium	EA	\$		20%	0	\$	-		
38	Relief Well - New - Special Waste Premium	EA	\$		20%	0	\$	-		
_	Relief Well - New Type "D"	EA	\$		20%	156	\$	6,084,000		
40	Relief Well - New Type "T"	EA	\$		20%	0	\$	-		
41	RipRap Bank Protection	CY	\$		20%	0	\$	- 717 600		
42 43	ROW Acquisition - Agricultural ROW Acquisition - Commercial	AC AC	\$	6,500 30,000	20%	92	\$	717,600		
44	ROW Acquisition - Commercial	AC	\$		20%	0	\$			
45	ROW Acquisition - Industrial	AC	\$		20%	0	\$			
46	ROW Acquisition - Residential	AC	\$		20%	0	\$	_		
47	ROW Acquisition - Vacant/Undeveloped	AC	\$		20%	0	\$	-		
48	Seeding	AC	\$	1,650	20%	77	\$	152,460		
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	\$		20%	284,824	\$	4,101,466		
	Slip-Line - 12-Inch Pipe	LF	\$	110	20%	0	\$	-		
51	Slip-Line - 15-Inch Pipe	LF	\$	115	20%	0	\$	=		
52	Slip-Line - 18-Inch Pipe	LF	\$		20%	0	\$	-		
	Slip-Line - 24-Inch Pipe	LF	\$		20%	280	\$	44,352		
54	Slip-Line - 27-Inch Pipe	LF	\$		20%	0	\$	-		
	Slip-Line - 36-Inch Pipe	LF	\$		20%	0	\$	-		
56	Slip-Line - 42-Inch Pipe	LF	\$		20%	0	\$	-		
57	Slip-Line - 48-Inch Pipe	LF	\$		20%	0	\$	-		
58	Utility Relocation - High Tension Power (Raise)	EA	\$		20%	0	\$	-		
59	Utility Relocation - Natural Gas Pipeline	LF	\$		20%	0	\$	- 240,000		
60	Utility Relocation - Power Pole / Light Pole	EA	\$		20%	20	\$	240,000		
61	Utility Relocation - Shield OE Power	LF	\$		20%	6 000	\$	720.000		
62	Utility Relocation - Underground Communication	LF EA	\$		20%	6,000	\$	720,000		
63 64	Utility Relocation - Underground Communications Pedestal Utility Relocation - Various Buried Facilities	LF	\$		20%	0	\$	24,000		
65	Wetland Mitigation	AC	\$		20%	3	\$	90,000		
66	Construction Estimate	AC	ڔ	23,000	20%	3	\$	17,027,000		
67	Construction Estimate Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$	17,612,000		

PdP & FISH LAKE - CLAY CAPS										
Item #	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total		
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	\$		20%	11,713	\$	168,667		
	Clear & Grub - Light Vegetation	AC	\$		20%	4	\$	28,800		
	Clear & Grub - Wooded	AC	\$		20%	1	\$	25,950		
	Cutoff Wall - Deep	SF	\$		30%		\$	-		
5 6	Cutoff Wall - Hazardous Waste Premium Cutoff Wall - Shallow	SF SF	\$		20% 30%		\$	-		
	Cutoff Wall - Special Waste Premium	SF	\$		20%		\$	-		
	Dewatering	LF	\$		20%		\$			
_	Drainage - Enclosed - 30" Pipe	LF	\$		20%		\$	-		
10	Drainage - Inlet Structure	EA	\$	2,200	20%		\$	-		
11	Drainage - Surface - Shallow Ditch	LF	\$	141	20%		\$	-		
12	Excavation	CY	\$	11	20%	11,713	\$	154,612		
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	\$	24	20%		\$	-		
	Gravel Filter - D50=2" Material - Haul On & Placement	CY	\$		20%		\$	-		
	Gravel Filter - Geotextile - Material & Installation	SY	\$		20%		\$	-		
	Gravel Filter - Sand Material - Haul On & Placement	CY	\$		20%	44.740	\$	-		
	Haul Off of Excess Material	CY LS	\$		20%	11,713	\$	84,334		
	Mobilization Pump Station - WR - New - 220+00 UWR	EA	\$		0% 20%	1	\$	14,227		
	Pump Station - WR - New - 220+00 OWR Pump Station - WR - New - 560+00 LWR	EA	\$,	20%		\$	-		
	Pump Station - MESD - Improve Existing - Phillips Reach	EA	\$		20%		\$	-		
	Pump Station - PdP - Improve Existing - PdP West	EA	\$		20%		\$	-		
	Pump Station - Various Improvements	EA	\$,	20%		\$	-		
	Pvmt - Curb & Gutter - Remove & Replace	LF	\$		20%		\$	-		
25	Pvmt - Improved Roadway	LF	\$	122	20%		\$	-		
26	Pvmt - Roads & Trails - Remove & Replace	SY	\$	50	20%		\$	-		
27	Pvmt - Road Repair	LF	\$	44	20%		\$	-		
	Relief Well - Existing - Abandon	EA	\$	2,000	20%		\$	-		
	Relief Well - Existing - Convert to Type "T"	EA	\$		20%		\$	-		
	Relief Well - Existing - Hazardous Waste Premium	EA	\$		20%		\$	-		
_	Relief Well - Existing - Rehabilitate	EA	\$		20%		\$	-		
	Relief Well - Existing - Special Waste Premium	EA LF	\$	·	20% 20%		\$	-		
	Relief Well - Lateral Pipe (8-Inch) Relief Well - Manifold Manhole	EA	\$		20%		\$	-		
	Relief Well - Manifold Pipe (12-Inch)	LF	\$		20%		\$			
	Relief Well - Manifold Pipe (18-Inch)	LF	\$		20%		\$	_		
_	Relief Well - New - Hazardous Waste Premium	EA	\$		20%		\$	-		
38	Relief Well - New - Special Waste Premium	EA	\$		20%		\$	-		
39	Relief Well - New Type "D"	EA	\$	32,500	20%		\$	-		
40	Relief Well - New Type "T"	EA	\$	40,000	20%		\$	-		
41	RipRap Bank Protection	CY	\$	120	20%		\$	-		
	ROW Acquisition - Agricultural	AC	\$		20%	1	\$	7,800		
	ROW Acquisition - Commercial	AC	\$		20%		\$	-		
	ROW Acquisition - Governmental	AC	\$,	20%		\$	-		
	ROW Acquisition - Industrial	AC	\$		20%		\$	-		
	ROW Acquisition - Residential ROW Acquisition - Vacant/Undeveloped	AC AC	\$		20% 20%		\$	-		
48	Seeding	AC	\$,	20%	6	\$	11,880		
	Seepage Berm Material - Haul On and Placement (Hauled)	CY	\$		20%		\$	-		
	Slip-Line - 12-Inch Pipe	LF	\$		20%		\$	-		
	Slip-Line - 15-Inch Pipe	LF	\$		20%		\$	-		
	Slip-Line - 18-Inch Pipe	LF	\$		20%		\$	-		
53	Slip-Line - 24-Inch Pipe	LF	\$	132	20%		\$	-		
54	Slip-Line - 27-Inch Pipe	LF	\$		20%		\$	-		
	Slip-Line - 36-Inch Pipe	LF	\$		20%		\$	-		
	Slip-Line - 42-Inch Pipe	LF	\$		20%		\$	-		
	Slip-Line - 48-Inch Pipe	LF	\$		20%		\$	-		
58	Utility Relocation - High Tension Power (Raise)	EA	\$	·	20%		\$	-		
59 60	Utility Relocation - Natural Gas Pipeline	LF EA	\$		20%		\$	-		
60 61	Utility Relocation - Power Pole / Light Pole	EA LF	\$		20%		\$	-		
62	Utility Relocation - Shield OE Power Utility Relocation - Underground Communication	LF	\$		20%		\$	-		
63	Utility Relocation - Underground Communication Utility Relocation - Underground Communications Pedestal	EA	\$		20%		\$			
64	Utility Relocation - Various Buried Facilities	LF	\$		20%		\$			
65	Wetland Mitigation	AC	\$		20%		\$	-		
66	Construction Estimate		Ĺ	-,			\$	496,000		
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$	513,000		

12 Sexwation		PdP & FISH LAKE - RELIEF WELLS										
2	Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total			
3 Clear & Craft - Wooderd	1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	Ç	\$ 12	20%		\$	-			
A	2	Clear & Grub - Light Vegetation	AC	\$	6,000	20%			-			
Sociation Section Se				+					-			
6		and the state of t		+					-			
7				_					-			
Severating				<u> </u>				_	-			
9 Drainage - Enclosed - 30" Pipe				_					-			
10 Orlange - Infel Structure		•		_					-			
13		·		-				_				
12 Sexwation		·		+ -			1.200		203,040			
13 Gravel Filter - DSQ-** Material - Haud On & Placement		·		_			1,200		-			
15 Gravel Filter - Gentzertalle - Material & Installation				_					-			
16 Gravel Filter - Sand Makerial - Haul On & Placement	14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	ç	\$ 29	20%		\$	-			
17 Natural Off of Sexes Material CY S 6 20% S	15	Gravel Filter - Geotextile - Material & Installation	SY	Ş	\$ 2	20%		\$	-			
18 Mobilization	16	Gravel Filter - Sand Material - Haul On & Placement	CY	Ç	\$ 12	20%		\$	-			
19 Pump Station - WR. New - 220-00 UWR	17	Haul Off of Excess Material	CY	٧,	\$ 6	20%		\$	-			
20 Pump Station - WFS - Improve Existing - Pollipsis Reach 5	18	Mobilization	LS	_		0%	1		19,833			
221 Pump Station - MSDs - Improve Existing - PRIIIIps Reach EA S 849-500 20% 5	19	-	EA	+					-			
22 Pump Station - PaPP - Improve Existing - PaPP West				-	· · · · · · · · · · · · · · · · · · ·			_	-			
22 Pump Station - Various Improvements				<u> </u>					-			
24				-					-			
25 Pwntt - Improved Bandway		'		_					-			
Pomt - Roads & Trails - Remove & Replace		·		<u> </u>					-			
Pmrt - Road Repair		,		+ :								
Relief Well - Existing - Abandon		·		_					-			
29 Relief Well - Existing - Convert to Type "" EA S 6,000 20% 38 \$ 273,6 30 Relief Well - Existing - Hazardous Waste Premium EA \$ 48,700 20% \$ \$ 31 Relief Well - Existing - Hazardous Waste Premium EA \$ 12,000 20% 33 \$ 475,2 32 Relief Well - Existing - Special Waste Premium EA \$ 12,000 20% \$ \$ 33 Relief Well - Manifold Manhole EA \$ 12,700 20% \$ \$ 34 Relief Well - Manifold Manhole EA \$ 3,000 20% 20 \$ 72,0 35 Relief Well - Manifold Pipe (18-Inch) LF \$ 50 20% 3,548 \$ 212,8 36 Relief Well - Manifold Pipe (18-Inch) LF \$ 50 20% 2,255 \$ 173,1 37 Relief Well - Manifold Pipe (18-Inch) LF \$ 50 20% 2,255 \$ 173,1 38 Relief Well - New - Hazardous Waste Premium EA \$ 61,950 20% \$ \$ 39 Relief Well - New - Hazardous Waste Premium EA \$ 61,950 20% \$ \$ 39 Relief Well - New - Type "D" EA \$ 32,500 20% 156 \$ 6,084,0 40 Relief Well - New Type "D" EA \$ 32,500 20% 156 \$ 6,084,0 41 Riphap Bank Protection CY \$ 120 20% \$ \$ 42 ROW Acquisition - Agricultural AC \$ 6,500 20% 3 \$ \$ \$ 43 ROW Acquisition - Governmental AC \$ 3,000 20% \$ \$ \$ 44 ROW Acquisition - Governmental AC \$ 3,000 20% \$ \$ \$ 45 ROW Acquisition - Facsidential AC \$ 3,000 20% \$ \$ \$ 46 ROW Acquisition - Facsidential AC \$ 3,000 20% \$ \$ \$ 47 ROW Acquisition - Vacant/Indeveloped AC \$ 3,000 20% \$ \$ \$ 48 Seegage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ \$ \$ 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ \$ \$ 50 Silp-Line - 13-Inch Pipe LF \$ 110 20% \$ \$ \$ 51 Silp-Line - 13-Inch Pipe LF \$ 110 20% \$ \$ \$ 52 Silp-Line - 34-Inch Pipe LF \$ 16 20% \$ \$ \$ 53 Silp-Line - 34-Inch Pipe LF \$ 16 20% \$ \$ \$ 54		•		<u> </u>								
Selief Well - Existing - Hazardous Waste Premium		-		+ -			38		273 600			
Relief Well - Existing - Rehabilitate				+			36		273,000			
Relief Well - Existing - Special Waste Premium				_			33		475,200			
Relief Well - Lateral Pipe (8-Inch)		-		_			33					
Relief Well - Manifold Manhole		<u> </u>		_					-			
Relief Well - Manifold Pipe (18-Inch)	34	• • •	EA	_		20%	20	\$	72,000			
Relief Well - New - Hazardous Waste Premium	35	Relief Well - Manifold Pipe (12-Inch)	LF	ç	\$ 50	20%	3,548	\$	212,880			
Relief Well - New - Special Waste Premium	36	Relief Well - Manifold Pipe (18-Inch)	LF	Ç	\$ 64	20%	2,255	\$	173,184			
Relief Well - New Type "D"	37	Relief Well - New - Hazardous Waste Premium	EA	ζ,	\$ 61,950	20%		\$	-			
Relief Well - New Type "T"	38	Relief Well - New - Special Waste Premium	EA	9,	\$ 16,575	20%		\$	-			
RipRap Bank Protection	39		EA	_		20%	156		6,084,000			
AC \$ 6,500 20% 33 \$ 257,4		71		_				_	-			
AC \$ 30,000 20% \$ \$ \$ \$ \$ \$ \$ \$ \$			_	-								
44 ROW Acquisition - Governmental AC \$ 25,000 20% \$ 45 ROW Acquisition - Industrial AC \$ 30,000 20% \$ 46 ROW Acquisition - Residential AC \$ 18,000 20% \$ 47 ROW Acquisition - Vacant/Undeveloped AC \$ 23,000 20% \$ 48 Seeding AC \$ 1,650 20% \$ 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% \$ 51 Slip-Line - 18-Inch Pipe LF \$ 110 20% \$ 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% \$ 53 Slip-Line - 24-Inch Pipe LF \$ 121 20% \$ 54 Slip-Line - 22-Inch Pipe LF \$ 138 20% \$				_			33		257,400			
AC \$ 30,000 20% \$ \$ \$ \$ \$ \$ \$ \$ \$		•		_					-			
46 ROW Acquisition - Residential AC \$ 18,000 20% \$ 47 ROW Acquisition - Vacant/Undeveloped AC \$ 23,000 20% \$ 48 Seeding AC \$ 1,650 20% \$ 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% \$ 51 Slip-Line - 15-Inch Pipe LF \$ 115 20% \$ 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% \$ 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 54 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 55 Slip-Line - 42-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 42-Inch Pipe LF \$ 167 20% \$		·		+-					-			
47 ROW Acquisition - Vacant/Undeveloped AC \$ 23,000 20% \$ 48 Seeding AC \$ 1,650 20% \$ 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% \$ 51 Slip-Line - 15-Inch Pipe LF \$ 115 20% \$ 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% \$ 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% \$ 55 Slip-Line - 42-Inch Pipe LF \$ 201 20% \$ 56 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 57<			_	+					-			
48 Seeding AC \$ 1,650 20% \$ 49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% \$ 51 Slip-Line - 15-Inch Pipe LF \$ 115 20% \$ 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% \$ 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% \$ 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 58 Utility Relocation - Pigh Tension Power (Raise) EA \$ 300,000 20% \$		•		_					-			
49 Seepage Berm Material - Haul On and Placement (Hauled) CY \$ 12 20% \$ 50 Slip-Line - 12-Inch Pipe LF \$ 110 20% \$ 51 Slip-Line - 15-Inch Pipe LF \$ 115 20% \$ 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% \$ 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 27-Inch Pipe LF \$ 167 20% \$ 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% \$ 56 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ <td></td> <td></td> <td>_</td> <td>+-</td> <td></td> <td></td> <td></td> <td></td> <td></td>			_	+-								
50 Slip-Line - 12-Inch Pipe LF \$ 110 20% \$ 51 Slip-Line - 15-Inch Pipe LF \$ 115 20% \$ 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% \$ 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 36-Inch Pipe LF \$ 138 20% \$ 56 Slip-Line - 36-Inch Pipe LF \$ 201 20% \$ 56 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$		0		_								
51 Slip-Line - 15-Inch Pipe LF \$ 115 20% \$ 52 Slip-Line - 18-Inch Pipe LF \$ 121 20% \$ 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% \$ 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 58 Utility Relocation - High Tension Power (Raise) LF \$ 200 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 300,000 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$				_					-			
52 Slip-Line - 18-Inch Pipe LF \$ 121 20% \$ 53 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% \$ 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 201 20% \$ 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ 61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 10,000				+-				_	-			
53 Slip-Line - 24-Inch Pipe LF \$ 132 20% \$ 54 Slip-Line - 27-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% \$ 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% \$ 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ 61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ 63 Utility Relocation - Various Buried Facilities LF \$				_					-			
54 Slip-Line - 27-Inch Pipe LF \$ 138 20% \$ 55 Slip-Line - 36-Inch Pipe LF \$ 167 20% \$ 56 Slip-Line - 42-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% \$ 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ 61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ 64 Utility Relocation - Various Buried Facilities				_					-			
56 Slip-Line - 42-Inch Pipe LF \$ 201 20% \$ 57 Slip-Line - 48-Inch Pipe LF \$ 220 20% \$ 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ 61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ 64 Utility Relocation - Various Buried Facilities LF \$ 25 20% \$ 65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate F			_	+		20%			-			
57 Slip-Line - 48-Inch Pipe LF \$ 220 20% \$ 58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ 61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ 64 Utility Relocation - Various Buried Facilities LF \$ 25 20% \$ 65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate \$ 7,771,0	55	Slip-Line - 36-Inch Pipe	LF	\$	167	20%		\$	-			
58 Utility Relocation - High Tension Power (Raise) EA \$ 300,000 20% \$ 59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ 61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate \$ 7,771,0	56	Slip-Line - 42-Inch Pipe	LF	\$	201	20%			-			
59 Utility Relocation - Natural Gas Pipeline LF \$ 500 20% \$ 60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ 61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate \$ 7,771,0			_	+ -					-			
60 Utility Relocation - Power Pole / Light Pole EA \$ 10,000 20% \$ 61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate \$ 7,771,0				_					-			
61 Utility Relocation - Shield OE Power LF \$ 50 20% \$ 62 Utility Relocation - Underground Communication LF \$ 100 20% \$ 63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate \$ 7,771,0		•		+ :					-			
62 Utility Relocation - Underground Communication 63 Utility Relocation - Underground Communications Pedestal 64 Utility Relocation - Various Buried Facilities 65 Wetland Mitigation 66 Construction Estimate 67 State S				+					-			
63 Utility Relocation - Underground Communications Pedestal EA \$ 10,000 20% \$ 64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate \$ 7,771,0				_					-			
64 Utility Relocation - Various Buried Facilities LF \$ 250 20% \$ 65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate \$ 7,771,0 \$ 7,771,0				+					-			
65 Wetland Mitigation AC \$ 25,000 20% \$ 66 Construction Estimate \$ 7,771,0				+-				_	-			
66 Construction Estimate \$ 7,771,0		•		_					-			
			AC	,	\$ 25,000	20%			7 774 000			
P / II OUNTRICTION ESTIMATE ESCALATOR TO MILICAPOINT OF A MYS. ALL III III III III III III III III III	67	Construction Estimate Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%		H				\$	8,038,000			

	PdP & FISH LAKE - SEEPAGE BERMS										
Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total			
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	Ş	\$ 12	20%		\$	-			
2	Clear & Grub - Light Vegetation	AC	\$		20%	34	\$	244,800			
3	Clear & Grub - Wooded	AC	-	\$ 21,625	20%	11	\$	285,450			
4	Cutoff Wall - Deep	SF	-	\$ 32	30%		\$	-			
5	Cutoff Wall - Hazardous Waste Premium	SF	_	\$ 28	20%		\$	-			
6 7	Cutoff Wall - Shallow	SF	_	\$ 12 \$ 11	30%		\$	-			
8	Cutoff Wall - Special Waste Premium Dewatering	SF LF	_	\$ 11 \$ 51	20%		\$	-			
9	Drainage - Enclosed - 30" Pipe	LF	_	\$ 96	20%		\$				
10	Drainage - Inlet Structure	EA	\$		20%		\$	_			
11	Drainage - Surface - Shallow Ditch	LF	Ş		20%		\$	_			
12	Excavation	CY	_	\$ 11	20%		\$	-			
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	_	\$ 24	20%		\$	-			
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	Ş	\$ 29	20%		\$	-			
15	Gravel Filter - Geotextile - Material & Installation	SY	,	\$ 2	20%		\$	-			
16	Gravel Filter - Sand Material - Haul On & Placement	CY	Ç	\$ 12	20%		\$	-			
17	Haul Off of Excess Material	CY	9	\$ 6	20%		\$	-			
18	Mobilization	LS	_	\$ 146,946	0%	1	\$	146,946			
19	Pump Station - WR - New - 220+00 UWR	EA	,	\$ 605,500	20%		\$	-			
20	Pump Station - WR - New - 560+00 LWR	EA	_	\$ 699,500	20%		\$	-			
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	_	\$ 849,500	20%		\$	-			
22	Pump Station - PdP - Improve Existing - PdP West	EA	-	\$ 849,500	20%		\$	-			
23	Pump Station - Various Improvements	EA	_	\$ 600,000	20%		\$	-			
24	Pvmt - Curb & Gutter - Remove & Replace	LF	_	\$ 42	20%		\$	-			
25	Pvmt - Improved Roadway	LF	_	5 122	20%	860	\$	125,904			
26	Pvmt - Roads & Trails - Remove & Replace	SY	-	\$ 50	20%		\$	-			
27	Pvmt - Road Repair	LF	\$	\$ 44	20%	27	\$				
28 29	Relief Well - Existing - Abandon Relief Well - Existing - Convert to Type "T"	EA EA	\$		20%	27	\$	64,800			
30	Relief Well - Existing - Convert to Type T	EA	-	\$ 48,700	20%		\$	-			
31	Relief Well - Existing - Rehabilitate	EA	_	\$ 48,700	20%		\$				
32	Relief Well - Existing - Reliabilitate Relief Well - Existing - Special Waste Premium	EA	_	\$ 12,700	20%		\$				
33	Relief Well - Lateral Pipe (8-Inch)	LF	_	\$ 40	20%		\$	_			
34	Relief Well - Manifold Manhole	EA	\$		20%		Ś	_			
35	Relief Well - Manifold Pipe (12-Inch)	LF	_	\$ 50	20%		\$	-			
36	Relief Well - Manifold Pipe (18-Inch)	LF	5	\$ 64	20%		\$	-			
37	Relief Well - New - Hazardous Waste Premium	EA	,	\$ 61,950	20%		\$	-			
38	Relief Well - New - Special Waste Premium	EA	(\$ 16,575	20%		\$	-			
39	Relief Well - New Type "D"	EA	,	\$ 32,500	20%		\$	-			
40	Relief Well - New Type "T"	EA	9,	\$ 40,000	20%		\$	-			
41	RipRap Bank Protection	CY	Ş	120	20%		\$	-			
42	ROW Acquisition - Agricultural	AC	\$		20%	58	\$	452,400			
43	ROW Acquisition - Commercial	AC	_	\$ 30,000	20%		\$	-			
44	ROW Acquisition - Governmental	AC	_	\$ 25,000	20%		\$	-			
45	ROW Acquisition - Industrial	AC	-	\$ 30,000	20%		\$	-			
46	ROW Acquisition - Residential	AC	_	\$ 18,000	20%		\$	-			
47	ROW Acquisition - Vacant/Undeveloped	AC	_	\$ 23,000	20%		\$	440.500			
48	Seeding	AC	\$		20%	71	\$	140,580			
49 50	Seepage Berm Material - Haul On and Placement (Hauled)	CY LF	_	\$ 12 \$ 110	20%	284,824	\$	4,101,466			
50 51	Slip-Line - 12-Inch Pipe Slip-Line - 15-Inch Pipe	LF LF	ç		20%		\$	-			
52	Slip-Line - 15-inch Pipe	LF	_	5 121	20%		\$				
53	Slip-Line - 16-inch Pipe	LF	_	3 132	20%		\$				
54	Slip-Line - 27-Inch Pipe	LF	+ -	132	20%		\$				
55	Slip-Line - 36-Inch Pipe	LF	ς,		20%		\$	-			
56	Slip-Line - 42-Inch Pipe	LF	_	5 201	20%		\$				
57	Slip-Line - 48-Inch Pipe	LF	_	220	20%		\$	-			
58	Utility Relocation - High Tension Power (Raise)	EA	+ -	\$ 300,000	20%		\$	-			
59	Utility Relocation - Natural Gas Pipeline	LF	_	5 500	20%		\$	-			
60	Utility Relocation - Power Pole / Light Pole	EA	_	\$ 10,000	20%	20	\$	240,000			
61	Utility Relocation - Shield OE Power	LF	-	\$ 50	20%		\$	-			
62	Utility Relocation - Underground Communication	LF	Ş	5 100	20%	6,000	\$	720,000			
63	Utility Relocation - Underground Communications Pedestal	EA	Ş	\$ 10,000	20%	2	\$	24,000			
64	Utility Relocation - Various Buried Facilities	LF	_	\$ 250	20%		\$	-			
65	Wetland Mitigation	AC	,	\$ 25,000	20%	3	\$	90,000			
66	Construction Estimate						\$	6,636,000			
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%						\$	6,864,000			

PdP & FISH LAKE - CIVIL IMPROVEMENTS										
Item#	Cost Item	Unit		Unit Cost	Contingency	Quantity		Total		
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	,	\$ 12	20%		\$	-		
2	Clear & Grub - Light Vegetation	AC	Ş	· · · · · · · · · · · · · · · · · · ·	20%		\$	-		
3	Clear & Grub - Wooded	AC	-	\$ 21,625	20%		\$	-		
4	Cutoff Wall - Deep	SF	-	\$ 32	30%		\$	-		
5	Cutoff Wall - Hazardous Waste Premium	SF	_	\$ 28	20%		\$	-		
6 7	Cutoff Wall - Shallow	SF	_	\$ 12 \$ 11	30%		\$	-		
8	Cutoff Wall - Special Waste Premium Dewatering	SF LF	_	\$ 11 \$ 51	20%		\$			
	Drainage - Enclosed - 30" Pipe	LF	_	\$ 96	20%		\$			
	Drainage - Inlet Structure	EA	3		20%		\$	_		
	Drainage - Surface - Shallow Ditch	LF		· · · · · · · · · · · · · · · · · · ·	20%		\$	-		
12	Excavation	CY	_	\$ 11	20%		\$	-		
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	,	\$ 24	20%		\$	-		
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	,	\$ 29	20%		\$	-		
15	Gravel Filter - Geotextile - Material & Installation	SY		\$ 2	20%		\$	-		
16	Gravel Filter - Sand Material - Haul On & Placement	CY	,	\$ 12	20%		\$	-		
17	Haul Off of Excess Material	CY	_	\$ 6	20%		\$	-		
18	Mobilization	LS	_	\$ 61,876	0%	1	\$	61,876		
19	Pump Station - WR - New - 220+00 UWR	EA	-	\$ 605,500	20%		\$	-		
	Pump Station - WR - New - 560+00 LWR	EA	_	\$ 699,500	20%		\$	-		
	Pump Station - MESD - Improve Existing - Phillips Reach	EA	_	\$ 849,500	20%		\$	4.040.400		
	Pump Station - PdP - Improve Existing - PdP West	EA	_	\$ 849,500	20%	1	\$	1,019,400		
23	Pump Station - Various Improvements	EA LF	-	\$ 600,000 \$ 42	20%	1	\$	720,000		
	Pvmt - Curb & Gutter - Remove & Replace	LF	_	\$ 42 \$ 122	20%		\$	-		
26	Pvmt - Improved Roadway Pvmt - Roads & Trails - Remove & Replace	SY	_	\$ 50	20%		\$			
	Pvmt - Road Repair	LF	-	\$ 44	20%	5,280	\$	278,784		
	Relief Well - Existing - Abandon	EA	3		20%	3,280	\$	270,704		
29	Relief Well - Existing - Convert to Type "T"	EA	ç	· · · · · · · · · · · · · · · · · · ·	20%		\$	_		
	Relief Well - Existing - Hazardous Waste Premium	EA	-	\$ 48,700	20%		\$	_		
	Relief Well - Existing - Rehabilitate	EA	_	\$ 12,000	20%		\$	-		
	Relief Well - Existing - Special Waste Premium	EA	1	\$ 12,700	20%		\$	-		
33	Relief Well - Lateral Pipe (8-Inch)	LF	,	\$ 40	20%		\$	-		
34	Relief Well - Manifold Manhole	EA	Ç	3,000	20%		\$	-		
35	Relief Well - Manifold Pipe (12-Inch)	LF	9,	\$ 50	20%		\$	-		
36	Relief Well - Manifold Pipe (18-Inch)	LF	_	\$ 64	20%		\$	-		
37	Relief Well - New - Hazardous Waste Premium	EA	_	\$ 61,950	20%		\$	-		
	Relief Well - New - Special Waste Premium	EA	-	\$ 16,575	20%		\$	-		
	Relief Well - New Type "D"	EA	_	\$ 32,500	20%		\$	-		
	Relief Well - New Type "T"	EA	-	\$ 40,000	20%		\$	-		
41	RipRap Bank Protection	CY	-	\$ 120	20%		\$	-		
42 43	ROW Acquisition - Agricultural	AC	Ş		20%		\$			
43	ROW Acquisition - Commercial ROW Acquisition - Governmental	AC AC	_	\$ 30,000 \$ 25,000	20%		\$			
45	ROW Acquisition - Industrial	AC	-	\$ 30,000	20%		\$	-		
46	ROW Acquisition - Residential	AC	-	\$ 18,000	20%		\$	_		
47	ROW Acquisition - Vacant/Undeveloped	AC	_	\$ 23,000	20%		\$	_		
48	Seeding	AC	-	1,650	20%		\$	-		
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	_	\$ 12	20%		\$	-		
50	Slip-Line - 12-Inch Pipe	LF	_	\$ 110	20%		\$	-		
51	Slip-Line - 15-Inch Pipe	LF	Ş	\$ 115	20%		\$	-		
52	Slip-Line - 18-Inch Pipe	LF	ç	\$ 121	20%		\$	-		
	Slip-Line - 24-Inch Pipe	LF	-	\$ 132	20%	280	\$	44,352		
54	Slip-Line - 27-Inch Pipe	LF	-	\$ 138	20%		\$	-		
	Slip-Line - 36-Inch Pipe	LF	Ş		20%		\$	-		
	Slip-Line - 42-Inch Pipe	LF	_	\$ 201	20%		\$	-		
	Slip-Line - 48-Inch Pipe	LF	-	\$ 220	20%		\$	-		
58	Utility Relocation - High Tension Power (Raise)	EA	_	\$ 300,000	20%		\$	-		
59	Utility Relocation - Natural Gas Pipeline	LF	_	\$ 500	20%		\$	-		
60	Utility Relocation - Power Pole / Light Pole	EA	-	\$ 10,000	20%		\$	-		
61	Utility Relocation - Shield OE Power Utility Relocation - Underground Communication	LF LF	_	\$ 50 \$ 100	20%		\$	-		
62 63		EA	_	\$ 100 \$ 10,000	20%		\$	-		
64	Utility Relocation - Underground Communications Pedestal Utility Relocation - Various Buried Facilities	LF	-	\$ 10,000	20%		\$	-		
65	Wetland Mitigation	AC	_	\$ 25,000	20%		\$			
66	Construction Estimate	AC	ľ	23,000	20/0		\$	2,124,000		
, , ,	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%		Н				\$	2,197,000		



APPENDIX E – UNIT COST DEVELOPMENT

	Cost Item #01 -	- Clav Cap/Cla	v Blanket Material	- Haul On & Placement	
Description	cost item nor	Unit	Cost	Quantity / Unit	Total
Clay Cap/Clay Blanket Material - Haul On &	Placement	CY	\$12.00	1.00	\$12.00
, , ,			·		·
Total		\$/CY			\$12.00
Unit Cost value used in Cost Estimate		\$/CY			\$12.00
Champion: Hasty					
Grampion: Hasey					
Includes:					
- clay fill material					
- haul on					
- placement & compaction					
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Excludes:					
- contingency					
- mobilization					
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Basis / Assumptions:					
- 12 mile one-way haul distance					
- based on haul cost = \$0.52 / CY / mile					
- based on IDOT bid tabs					
- material is non-bentonite					
-					
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	Cost Item #02 -	Clear & Grub	- Light Vegetation		
Description	COSt Itelli #02 -	Unit	Cost	Quantity / Unit	Total
Cut & chip light trees to 6" dia		AC	\$4,125.00	1.00	\$4,125.00
Grub stumps & remove		AC	\$1,950.00	1.00	\$1,950.00
Proceedings of the second of t			, ,		, ,
Total		\$/AC			\$6,075.00
		4100			44.444
Unit Cost value used in Cost Estimate		\$/AC			\$6,000.00
Champion, Cofford					
Champion: Safford					
Includes:					
- clearing					
- grubbing					
- removal & disposal of material					
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Excludes:					
- contingency					
- mobilization					
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Basis / Assumptions:					
- based on RSMeans cost data					
- validated by comparison to IDOT bid tabs					
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Cost Ite	m #03 - Clear & Grub	- Wooded		
Description	Unit	Cost	Quantity / Unit	Total
Cut & chip heavy trees to 24" dia	AC	\$13,800.00	1.00	\$13,800.00
Grub stumps & remove	AC	\$7,825.00	1.00	\$7,825.00
,		, ,		, ,
Total	\$/AC			\$21,625.00
Unit Cost value used in Cost Estimate	\$/AC			\$21,625.00
Champion, Cofford				
Champion: Safford				
Includes:				
- clearing				
- grubbing				
- removal & disposal of material				
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Excludes:				
- contingency				
- mobilization				
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Basis / Assumptions:				
- based on RSMeans cost data				
- validated by comparison to IDOT bid tabs				
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Cost Ite	m #04 - Cutoff Wall	- Deep		
Description	Unit	Cost	Quantity / Unit	Total
Cutoff wall over 50' in depth	SF	\$32.00	1.00	\$32.00
Average	\$/SF			\$32.00
Unit Cost value used in Cost Estimate	\$/SF			\$32.00
	_			

	Sawitz	

Includes:

- design
- completed wall in place
- equipment
- material
- installation
- haul off & disposal of spoils
- staging
- restoration
- wall keyed into rock

Excludes:

- contingency
- mobilization
- large obstructions such as boulders
- hazardous or special waste handling
- contractor standby or delays not attributed to contractor
- .
- _
- Basis / Assumptions:
- refer to section 1.11.2 for additional cutoff wall cost discussion
- applicable for cutoff walls over 90' in depth not capable by conventional techniques
- based on cost data provided by Arturo Ressi of Kiewit
- based on cost data provided by Jeff Hill of Hayward Baker (see conceptual estimated costs included in Appendix F)
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	em #05 - Cutoff Wall - H			
Description	Unit	Cost	Quantity / Unit	Total
Cutoff Wall - Hazardous Waste Premium	SF	\$28.00	1.00	\$28.00
Total	\$/SF			\$28.00
Unit Cost value used in Cost Estimate	\$/SF			\$28.00
Champion: Sawitzki				
includes:				
- mobilization				
- waste characterization				
- transport & disposal of soil				
- contractor extra handling and production decrease				
-				
-				
-				
-				
-				
-				
Excludes:				
- contingency				
- cutoff wall construction				
- special waste disposal				
-				
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- Pacis / Assumptions				
Basis / Assumptions:	(1101)			
- based on various costs data provided by Contractor		ience		
- soil must be taken to a hazardous waste disposal fa				
- cost est. for daily sampling, worker PPE and Equipm	ent costs - \$0.50/SF			
- cost to stage waste on site, double handle and prod	luction slowdown - \$4.50	/SF		
- assumes that within reaches identified to be "environment of the control of the			impacted soil	
- assumes that 20% of impacted soil will be Hazardou				
- assumes that 80% of impacted soil will be Special W				
- assumes that 60% of impacted soft will be special W	aste			
-				
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Description	Unit	Cost	Quantity / Unit	Total
Cutoff wall up to 50' in depth	SF	\$12.00	1.00	\$12.00
Average	\$/SF			\$12.00
Unit Cost value used in Cost Estimate	\$/SF			\$12.00

Champion: Sawitzki

Includes:

- design
- completed wall in place
- equipment
- material
- installation
- haul off & disposal of spoils
- staging
- restoration
- wall keyed into clay layer

Excludes:

- contingency
- mobilization
- large obstructions such as boulders
- hazardous or special waste handling
- contractor standby or delays not attributed to contractor
- -
- -

Basis / Assumptions:

- applicable for cutoff walls up to 50' in depth
- based on cost data provided by Arturo Ressi of Kiewit
- based on cost data provided by Jeff Hill of Hayward Baker (see conceptual estimated costs included in Appendix F)
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Cost Ite	em #07 - Cutoff Wall - Sp	ecial Waste Pre	mium	
Description	Unit	Cost	Quantity / Unit	Total
Cutoff Wall - Special Waste Premium	SF	\$11.00	1.00	\$11.0
Total	\$/SF			\$11.0
Unit Cost value used in Cost Estimate	\$/SF			\$11.0
Champion: Sawitzki				
Includes:				
- mobilization				
- waste characterization				
- transport & disposal of soil				
- contractor extra handling and production decrease				
contractor extra nanaling and production decrease				
-				
-				
-				
-				
-				
Excludes:				
- contingency				
- cutoff wall construction				
- hazardous waste disposal				
- nazardous waste disposai				
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_				
Basis / Assumptions:				
 - based on various cost data provided by HBI and pas 	tiah aynarianaa			
- soil must be taken to a local special waste disposal f				
- cost est. for daily sampling, worker PPE and Equipm	ent costs - \$0.50/SF			
- cost to stage waste on site, double handle and prod	uction slowdown - \$4.50/	'SF		
- assumes that within reaches identified to be "environment of the control of the			n impacted soil	
- assumes that 20% of impacted soil will be Hazardou				
- assumes that 80% of impacted soil will be Special W	asie			
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-				

Cost Item #08 - Dewatering					
Description	Unit	Cost	Quantity / Unit	Total	
6" Centrifugal Pump (5 cfs)	DAY	\$400.00	2.00	\$800.00	
Labor	DAY	\$360.00	1.00	\$360.00	
Diesel Fuel	GAL/DAY	\$6.00	240.00	\$1,440.00	
Excavation of Diversion Ditches & Sump Hole	EA/DAY	\$215.78	2.00	\$431.56	
Fill In of Diversion Ditches & Sump Hole	EA/DAY	\$511.11	2.00	\$1,022.22	
Initial Drawdown	LS	\$5,200.00	1.00	\$5,200.00	
Construction Duration Time	DAY	5	Subtotal:	\$25,468.89	
Total	\$/LF			\$50.94	
Unit Cost value used in Cost Estimate	\$/LF			\$51.00	

Champion: Safford

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- 6 hrs labor per day
- equipment rental
- 20' of suction hose
- 100' of discharge hose
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Excludes:

- contingency
- mobilization
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- applicable for existing ponds and/or gravel pits with standing water identified for "Gravel Filter" installation
- groundwater flow of 2 cfs / 100'
- 5 day duration / 500'
- 24 hours / day
- required to dewater 500'
- labor = \$60 / hr
- diesel cost includes transport to job site
- initial drawdown is accomplished in 2 days, w/ 2 pumps, and not included in the construction duration time
- diversion ditches are 100' long x 30' wide x 1' deep
- based on RSMeans Cost Data
- -
- -

Cost Item #09 - Drainage - Enclosed - 30" Pipe						
Description	Unit	Cost	Quantity / Unit	Total		
30" dia pipe, bedding & installation	LF	\$85.00	1.00	\$85.00		
excavation & backfill	CY	\$11.00	0.98	\$10.78		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
Total	\$/LF			\$95.78		
Unit Cost value used in Cost Estimate	\$/LF			\$96.00		

Champion: Hast	.y	

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- pipe
- bedding
- installation
- excavation
- backfill
- shoring / bracing
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- contingency
- mobilization
- sodding
- restoration
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- RCP class III pipe
- trench with = 4.08'
- trench depth = 6.50'
- pipe cost and installation based on standard St. Louis MSD historical unit cost
- excavation cost based on IDOT bid tabs
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Cost Item #10 - Drainage - Inlet Structure						
Description	Unit	Cost	Quantity / Unit	Total		
Inlet structure & appurtenances	EA	\$1,500.00	1.00	\$1,500.00		
Standard manhole construction	LF	\$195.00	2.50	\$487.50		
Excavation	CY	\$11.00	15.00	\$165.00		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
				\$0.00		
Total	\$/LF			\$2,152.50		
Unit Cost value used in Cost Estimate	\$/LF			\$2,200.00		

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- structure
- bedding
- installation
- excavation
- backfill
- shoring / bracing

- contingency
- mobilization
- sodding
- restoration

- precast concrete area inlet structure
- structure cost and installation based on standard St. Louis MSD historic unit cost
- excavation cost based on IDOT bid tabs

Cost Item #11 - Drainage - Surface - Shallow Ditch						
Description	Unit	Cost	Quantity / Unit	Total		
Excavation	CY	\$11.00	2.74	\$30.14		
Haul Off	CY	\$5.20	2.74	\$14.25		
Riprap, IDOT, Class 3, D50 = 6"	SY	\$30.00	2.80	\$84.00		
Clear & Grub - Light Vegetation	AC	\$6,000.00	0.00	\$10.20		
Seeding	AC	\$1,650.00	0.00	\$1.82		
Total	\$/LF			\$140.40		
Unit Cost value used in Cost Estimate	\$/LF			\$141.00		

Champion: Coronel

Includes:

- channel excavation
- clearing and grubbing
- riprap placement
- seeding along banks
- restoration
- -
- -
- -

Excludes:

- contingency
- mobilization
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- applicable for minor shallow ditching to control/direct surface drainage from relief wells or stormwater runoff
- assumes a "V" ditch with an average depth of 4'
- 10 mile one-way haul distance
- based on haul cost = \$0.52 / CY / mile
- based on IDOT bid tabs
- riprap cost based on IDOT bid tabs
- excavation cost based on IDOT bid tabs
- seeding cost based on standard MoDOT historical unit cost
- seeding cost adjust based on IDOT bid tabs
- clear & grub costs based RSMeans Cost Data
- clear & grub costs validated by comparison to IDOT bid tabs
- -
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	Cost Item #12	2 - Excavation			
Description		Unit	Cost	Quantity / Unit	Total
xcavation		CY	\$11.00	1.00	\$11.00
					\$0.00
Total		\$/CY			\$11.00
		1			,
Unit Cost value used in Cost Estimate		\$/CY			\$11.00
one cost value used in cost Estimate		Ψ/ ε.			711.00
Champion: Coronel					
Shampion. Coronei					
Includes:					
	Javon fons -+-				
- excavation of trenches, benching into	ievee iace, etc.				
- stockpiling of excavated material					
- loading of excavated material					
-					
-					
-					
-					
-					
-					
-					
Excludes:					
- contingency					
- mobilization					
- mass grading					
- transporting of excavated material					
- transporting of excavated material					
-					
-					
-					
-					
-					
-					
Basis / Assumptions:					
- applicable for linear type excavation s	such as trenching or h	benching into face	of levee		
- excavation cost based on IDOT bid tal	os				
-					
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Cost Item #13 - Gravel Filter - D50=#4 Material - Haul On & Placement				
Unit	Cost	Quantity / Unit	Total	
CY	\$10.53	1.00	\$10.53	
CY	\$11.34	1.00	\$11.34	
CY	\$1.99	1.00	\$1.99	
\$/CY			\$23.86	
\$/CY			\$24.00	
	Unit CY CY CY CY CY	Unit Cost CY \$10.53 CY \$11.34 CY \$1.99 \$/CY	Unit Cost Quantity / Unit CY \$10.53 1.00 CY \$11.34 1.00 CY \$1.99 1.00 SY/CY \$1.99 1.00	

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- gravel material
- haul on
- placement
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- contingency
- mobilization
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- one-way haul distance = 50 miles (Winter Brothers Quarry)
- haul cost = \$11.34 / CY (Butch Sigg of Winter Brothers Quarry)
- material costs = \$10.53 / CY
- based on prices from local suppliers (Sinter Brothers Quarry, Keysport Sand & Gravel, etal)
- placement based on RSMeans cost data
- validated by comparison to IDOT bid tabs
- other potential sources of fill material include Bussen Quarries, Walker Aggregates, Inc., Columbia Quarry Company
- -
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	Cost Item #14 -	Gravel Filter	- D50=2" Material -	Haul On & Placemen	t
Description		Unit	Cost	Quantity / Unit	Total
Gravel material (D50=2")		CY	\$15.39	1.00	\$15.39
Haul on		CY	\$11.34	1.00	\$11.34
Placement of gravel material		CY	\$1.99	1.00	\$1.99
Total		\$/CY			\$28.72
Unit Cost value used in Cost Estimate		\$/CY			\$29.00

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- gravel material
- haul on
- placement
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- Excludes:
- contingency
- mobilization
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- one-way haul distance = 50 miles (Winter Brothers Quarry)
- haul cost = \$11.34 / CY (Butch Sigg of Winter Brothers Quarry)
- material costs = \$15.39 / CY
- based on prices from local suppliers (Sinter Brothers Quarry, Keysport Sand & Gravel, etal)
- placement based on RSMeans cost data
- validated by comparison to IDOT bid tabs
- Other potential sources of fill material include Bussen Quarries, Walker Aggregates, Inc., Columbia Quarry Company,
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	Cost Item #15 -	Gravel Filter	- Geotextile - Mate	erial & Installation	
Description		Unit	Cost	Quantity / Unit	Total
Gravel Filter - Geotextile - Material & Installa	ation	SY	\$2.00	1.00	\$2.00
Total		\$/SY			\$2.00
Unit Cost value used in Cost Estimate		\$/SY			\$2.00
Champion: Coronel					
Includes:					
- Geotextile fabric material					
- Geotextile fabric installation					
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Excludes:					
- contingency					
- mobilization					
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Posis / Assumentions					
Basis / Assumptions: - based on IDOT bid tabs					
- based oil ibo'l bid labs					
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	Cost Item #16 - Gi	ravel Filter	- Sand Material - H	aul On & Placement	
Description	COSC ICCIII II I O	Unit	Cost	Quantity / Unit	Total
Sand material		CY	\$12.00	1.00	\$12.00
			•		·
Total		\$/CY			\$12.00
Unit Cost value used in Cost Estimate		\$/CY			\$12.00
Champion: Coronel					ļ
Includes:					
- material					
- haul on					
- placement					
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Excludes:					
- contingency					
- mobilization					
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Basis / Assumptions:					
- based on prices from local contractors (Ba	axmeyer Excavating, L	uhr Brothei	rs, etal)		
- other potential sources of fill material incl	lude Bussen Quarries,	Walker Ag	gregates, Inc., Colu	mbia Quarry Company	
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Cost Item #1	L7 - Haul Off of Exc	cess Material		
Description	Unit	Cost	Quantity / Unit	Total
Haul Off of Excess Material	CY	\$5.20	1.00	\$5.20
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Total	\$/CY			\$5.20
Unit Cost value used in Cost Estimate	\$/CY			\$6.00
Onit Cost value used in Cost Estimate	3/61			Ş0.00
Champion: Hasty				
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Includes:				
- haul off				
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Fundada				
Excludes: - contingency				
- mobilization				
- loading				
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Basis / Assumptions:				
- 10 mile one-way haul distance				
- based on haul cost = \$0.52 / CY / mile				
- loading cost included in excavation				
- assumes no cost dumping				
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Cost Item #18 -	Mobilization	1		
Description	Unit	Cost	Quantity / Unit	Total
Total				
Total				
Unit Cost value used in Cost Estimate	LS			varies
				50.1100
Champion: Hasty				
Includes:				
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Excludes:				
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Basis / Assumptions:				
- mobilization varies with type of construction and unit cost				
- refer to individual cost estimates for lump sum mobilization of				
- mobilization cost are included in the unit cost of cost items 5	, 7, 28, 29, 30), 31, 32, 37, 38, 39,	40, 58, 59, 60, 61, 6	2, 63,
64 & 65				
- ROW acquisition cost items 42, 43, 44, 45, 46 & 47 have no m				
- mobilization for cost items 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15,			, 26, 27, 33, 34, 35, 3	6, 41,
48, 49, 50, 51, 52, 53, 54, 55, 56 & 57 is based on 3% of estim				
- mobilization for cost items 4 & 6 is based on proration of the	quoted mob	ilization cost to the	estimated construct	ion
costs				
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Cost Item #19 - Pump Station - WR - New - 220+00 UWR					
Description	Unit	Cost	Quantity / Unit	Total	
Canopies & Enclosures	LS	\$10,000.00	1.00	\$10,000.00	
Cast In Place Conc Wet Well	LS	\$110,000.00	1.00	\$110,000.00	
Controls & Instrumentation	LS	\$65,000.00	1.00	\$65,000.00	
Electric Service, Wiring & Switchgear	LS	\$105,000.00	1.00	\$105,000.00	
Force Main - 10" Dia	LF	\$95.00	400.00	\$38,000.00	
Gravity Drain - 12" Dia	LF	\$140.00	400.00	\$56,000.00	
Piping, Valves & Mech Appurtenances	LS	\$26,500.00	1.00	\$26,500.00	
Pump	EA	\$97,500.00	1.00	\$65,000.00	
Valve Vaults & Discharge Structure	LS	\$130,000.00	1.00	\$130,000.00	
Total	\$/EA			\$605,500.00	
Unit Cost value used in Cost Estimate	\$/EA			\$605,500.00	

Includes:

- completed pump station in place
- equipment
- material
- installation
- excavation, haul off & disposal of excess material
- electric service
- restoration
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Excludes:

- contingency
- mobilization
- building
- VFDs

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- Design Capacity = 3 cfs
- TDH = 35'
- based on RSMeans cost data
- validated by comparison to historical cost data from similar projects
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Cost Item #20 - Pump Station - WR - New - 560+00 LWR					
Description	Unit	Cost	Quantity / Unit	Total	
Canopies & Enclosures	LS	\$10,000.00	1.00	\$10,000.00	
Cast In Place Conc Wet Well	LS	\$110,000.00	1.00	\$110,000.00	
Controls & Instrumentation	LS	\$65,000.00	1.00	\$65,000.00	
Electric Service, Wiring & Switchgear	LS	\$105,000.00	1.00	\$105,000.00	
Force Main - 10" Dia	LF	\$95.00	400.00	\$38,000.00	
Gravity Drain - 12" Dia	LF	\$140.00	400.00	\$56,000.00	
Piping, Valves & Mech Appurtenances	LS	\$26,500.00	1.00	\$26,500.00	
Pump	EA	\$159,000.00	1.00	\$159,000.00	
Valve Vaults & Discharge Structure	LS	\$130,000.00	1.00	\$130,000.00	
Total	\$/EA			\$699,500.00	
Unit Cost value used in Cost Estimate	\$/EA			\$699,500.00	

Includes:

- completed pump station in place
- equipment
- material
- installation
- excavation, haul off & disposal of excess material
- electric service
- restoration

Excludes:

- contingency
- mobilization
- building
- VFDs

- Design Capacity = 21 cfs
- TDH = 35'
- based on RSMeans cost data
- validated by comparison to historical cost data from similar projects

Cost Item #21 - Pump Station - MESD - Improve Existing - Phillips Reach				
Description	Unit	Cost	Quantity / Unit	Total
Canopies & Enclosures	LS	\$10,000.00	1.00	\$10,000.00
Cast In Place Conc Wet Well	LS	\$110,000.00	1.00	\$110,000.00
Controls & Instrumentation	LS	\$65,000.00	1.00	\$65,000.00
Electric Service, Wiring & Switchgear	LS	\$105,000.00	1.00	\$105,000.00
Force Main - 10" Dia	LF	\$95.00	400.00	\$38,000.00
Gravity Drain - 12" Dia	LF	\$140.00	400.00	\$56,000.00
Piping, Valves & Mech Appurtenances	LS	\$26,500.00	1.00	\$26,500.00
Pump	EA	\$309,000.00	1.00	\$309,000.00
Valve Vaults & Discharge Structure	LS	\$130,000.00	1.00	\$130,000.00
Total	\$/EA			\$849,500.00
Unit Cost value used in Cost Estimate	\$/EA			\$849,500.00

Includes:

- completed pump station in place
- equipment
- material
- installation
- excavation, haul off & disposal of excess material
- electric service
- restoration
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Excludes:

- contingency
- mobilization
- building
- VFDs
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- Design Capacity = 50 cfs
- TDH = 35'
- based on RSMeans cost data
- validated by comparison to historical cost data from similar projects
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Cost Item #22 - Pump Station - PdP - Improve Existing - PdP West					
Description	Unit	Cost	Quantity / Unit	Total	
Canopies & Enclosures	LS	\$10,000.00	1.00	\$10,000.00	
Cast In Place Conc Wet Well	LS	\$110,000.00	1.00	\$110,000.00	
Controls & Instrumentation	LS	\$65,000.00	1.00	\$65,000.00	
Electric Service, Wiring & Switchgear	LS	\$105,000.00	1.00	\$105,000.00	
Force Main - 10" Dia	LF	\$95.00	400.00	\$38,000.00	
Gravity Drain - 12" Dia	LF	\$140.00	400.00	\$56,000.00	
Piping, Valves & Mech Appurtenances	LS	\$26,500.00	1.00	\$26,500.00	
Pump	EA	\$309,000.00	1.00	\$309,000.00	
Valve Vaults & Discharge Structure	LS	\$130,000.00	1.00	\$130,000.00	
Total	\$/EA			\$849,500.00	
Unit Cost value used in Cost Estimate	\$/EA			\$849,500.00	

Includes:

- completed pump station in place
- equipment
- material
- installation
- excavation, haul off & disposal of excess material
- electric service
- restoration

- contingency
- mobilization
- building
- VFDs

- Basis / Assumptions:
- Design Capacity = 47 cfs
- TDH = 35'
- based on RSMeans cost data
- validated by comparison to historical cost data from similar projects

Cost Item #23 -	Pump Statio	n - Various Impro	vements	
Description Description	Unit	Cost	Quantity / Unit	Total
2000, p. 100			Quantity y state	
Total	\$/EA			\$0.00
Unit Cost value used in Cost Estimate	\$/EA			\$600,000.00
Champion: Hasty				
Includes:				
- construction of 1 new pump station or upgrades to 2 existing	g pump statio	n		
- upgrades include new pumps with higher capacity and upgra	ades to electri	c service		
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Excludes:				
- contingency				
- mobilization				
- building				
- VFDs				
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Basis / Assumptions:				
- based on RSMeans cost data				
- based on standard St. Louis MSD historic unit costs				
- validated by comparison to IDOT bid tabs				
- validated by comparison to historical cost data from similar	projects			
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Cost II	tem #24 - Pvmt - Curb &	Gutter - Remove	& Renlace	
Description	Unit	Cost	Quantity / Unit	Total
Pvmt - Curb & Gutter - Remove & Replace	LF	\$42.00	1.00	\$42.00
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Total	\$/LF			\$42.00
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Unit Cost value used in Cost Estimate	\$/LF			\$42.00
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Champion: Coronel				
Includes:				
- demolition of existing curb & gutter				
- disposal of existing curb & gutter				
- haul off of existing curb & gutter				
- installation of new conc curb & gutter				
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Excludes:				
- contingency				
- mobilization				
- grading				
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Basis / Assumptions:				
- applicable for construction in parking lot areas				
- based on standard St. Louis MSD unit costs				
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	m #25 - Pvmt - Improv			
Description	Unit	Cost	Quantity / Unit	Total
Pvmt - Improved Roadway	SY	\$50.00	2.44	\$122.0
Total	\$/LF			\$122.0
Unit Cost value used in Cost Estimate	\$/LF			\$122.0
Champion: Coronel				
Includes:				
- demolition of existing roadway & improvements				
- disposal of existing roadway & improvements				
- haul off of existing roadway & improvements				
- new crushed limestone base (6" thick)				
- new asphalt pavement (3" thick)				
- new appurtenant roadway improvements				
- grading				
- roadside ditches				
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- Footodes				
Excludes:				
- contingency				
- mobilization				
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Pacie / Accumptions				-
Basis / Assumptions:				
- applicable for areas where seepage berms, fill or oth	er improvements occui	over an existing p	paved roadway	
- based on 22' wide road				
- based on IDOT bid tabs				
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Cost Ite	em #26 - Pvmt - Roads 8	& Trails - Remove	& Replace	
Description	Unit	Cost	Quantity / Unit	Total
vmt - Roads & Trails - Remove & Replace	SY	\$50.00	1.00	\$50.00
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	1.4			
Total	\$/SY			\$50.00
Unit Cost value used in Cost Estimate	\$/SY			\$50.00
Champion: Coronel				
Includes:				
- demolition of existing paved trail or road				
- disposal of existing asphalt				
- haul off of existing asphalt				
- new crushed limestone base (4" thick)				
- new asphalt pavement (2" thick)				
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Excludes:				
- contingency				
- mobilization				
- grading				
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Basis / Assumptions:				
	and an analysis of the state of		-	
- applicable for paved trails & roads on the levee cres			n	
- applicable for paved trails & roads in areas that will	be disturbed during con	struction		
- based on IDOT bid tabs				
- assumes that pavement will go back on original hor	izontal & vertical alignm	ent		
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Cost Item #27 - Pvmt - Road Repair				
Description	Unit	Cost	Quantity / Unit	Total
Asphalt pavement overlay (2" thick)	LF	\$24.00	1.00	\$24.00
Failure repair & rotomilling	LF	\$20.00	1.00	\$20.00
Total	\$/LF			\$44.00
Unit Cost value used in Cost Estimate	\$/LF			\$44.00

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Includes:

- removal & replacement of base & pavement at locations of failures
- disposal of existing base & asphalt
- haul off of existing base & asphalt
- new asphalt pavement overlay (2" thick)
- rotomilling prior to overlay

- contingency
- mobilization
- grading

- Basis / Assumptions:
- applicable for paved trails & public roads on the levee crest that will be subject to construction traffic
- applicable for paved public roads used for access during construction
- assumes that pavement will go back on original horizontal and vertical alignment
- based on a 22' wide road
- based on a 2" asphalt overlay
- based on asphalt cost of \$90 / TN
- assumes 2 CY / TN of asphalt
- based on IDOT bid tabs

	Cost Item #28 -	Relief Well -	Existing - Abandon		
Description	Cost Item #20	Unit	Cost	Quantity / Unit	Total
Relief Well - Existing - Abandon		EA	\$2,000.00	1.00	\$2,000.00
Takal		Ć/FA			ć2 000 00
Total		\$/EA			\$2,000.00
Unit Cost value used in Cost Estimate		\$/EA			\$2,000.00
Offit Cost value used in Cost Estimate		3/ EA			\$2,000.00
Champion: Hladick					
Includes:					
- material					
- grout existing well					
- mobilization					
- removal of well above grade					
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Excludes:					
- contingency					
- special waste costs					
- hazardous waste costs					
- removal of well below grade					
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- David Annual Language					
Basis / Assumptions:			0		
- based on prices from local contractors (Co	ontract Dewatering	Services, Inc.	, Geotechnical Cons	truction Inc.	
and Pensoneau Construction Inc.)					
- validated by comparison to historical cost	: data from similar p	rojects			
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	Cost Item #29 -	Relief Well -	Existing - Convert t	o Tvpe "T"	
Description		Unit	Cost	Quantity / Unit	Total
Relief Well - Existing - Convert to Type "T"		EA	\$6,000.00	1.00	\$6,000.00
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Total		\$/EA			\$6,000.00
Unit Cost value used in Cost Estimate		\$/EA			\$6,000.00
Offit Cost value used in Cost Estimate		3/EA			\$6,000.00
Champion: Hladick					
Includes:					
- material					
- installation					
- mobilization					
- manhole					
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Excludes:					
- contingency					
- special waste costs - hazardous waste costs					
- lateral piping					
- manifold piping					
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Basis / Assumptions:					
- based on prices from local contractors (Co	ntract Dewatering	Services, Inc.	, Geotechnical Cons	struction Inc.	
and Pensoneau Construction Inc.)					
- validated by comparison to historical cost (data from similar p	rojects			
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	tem #30 - Relief Well - E	_		T-4-1
Description	Unit	Cost	Quantity / Unit	Total
Water analysis for waste characterization	EA	\$1,200.00	1.00	\$1,200.00
Fransportation & disposal of water	EA	\$45,000.00	1.00	\$45,000.00
abor	EA	\$2,500.00	1.00	\$2,500.00
Total	\$/EA			\$48,700.00
Jnit Cost value used in Cost Estimate	\$/EA			\$48,700.00
Champion: Hladick				
ncludes:				
- mobilization				

- transportation & disposal of water

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Excludes:

- contingency

- contaminated soil media

- well rehabilitation

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Basis / Assumptions:

- water must be taken to a hazardous waste disposal facility such as Trade Waste
- maximum assumed water volume for well development
- \$0.75 / gallon for disposal
- water must be treated before disposal

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	Cost Item #31 -	Relief Well -	Existing - Rehabilit	ate	
Description	Cost Helli #51	Unit	Cost	Quantity / Unit	Total
Relief Well - Existing - Rehabilitate		EA	\$12,000.00	1.00	\$12,000.00
		4 /			440.000.00
Total		\$/EA			\$12,000.00
Unit Cook walve wood in Cook Fatimate		ć/FA			Ć12 000 00
Unit Cost value used in Cost Estimate		\$/EA			\$12,000.00
Champion: Hladick					
Champion. Hadick					
Includes:					
- mobilization					
- air lifting and/or chemical cleaning to achi	eve desired perfor	mance			
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Excludes:					
- contingency					
- special waste costs					
- hazardous waste costs					
- sleeving					
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Basis / Assumptions:					
- based on prices from local contractors (Co	ntract Dewatering	Services, Inc.	, Geotechnical Con	struction Inc.	
and Pensoneau Construction Inc.)					
- validated by comparison to historical cost	data from similar p	projects			
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Cost I	tem #32 - Relief Well - Ex	2 - Relief Well - Existing - Special Waste Premium			
Description	Unit	Cost	Quantity / Unit	Total	
Water analysis for waste characterization	EA	\$1,200.00	1.00	\$1,200.00	
Transportation & disposal of water	EA	\$9,000.00	1.00	\$9,000.00	
Labor	EA	\$2,500.00	1.00	\$2,500.00	
Total	\$/EA			\$12,700.00	
Unit Cost value used in Cost Estimate	\$/EA			\$12,700.00	

Inc	lud	es:
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- mobilization
- waste characterization
- transportation & disposal of water

- contingency
- contaminated soil media
- well rehabilitation
- hazardous waste disposal

- Basis / Assumptions:
- water must be taken to a special waste disposal facility American Bottoms
- maximum assumed water volume for well development
- \$0.15 / gallon for disposal
- water must be treated before disposal

Cost Item #33 - Relief Well - Lateral Pipe (8-Inch)							
Description Unit Cost Quantity / Unit Total							
8" HDPE Type S	LF	\$8.00	250.00	\$2,000.00			
8" HDPE Type S Elbows	EA	\$125.00	3.00	\$375.00			
8" HDPE Type S Tees	EA	\$225.00	1.00	\$225.00			
Trench Excavation (4' to 6' deep) 1/2 cy Excavator	CY	\$11.00	170.91	\$1,880.01			
Compact Bedding Sand in Trench	CY	\$3.39	5.14	\$17.42			
Trench Backfill	CY	\$1.73	167.69	\$290.10			
Compact Backfill, vibrating roller	CY	\$2.77	167.69	\$464.50			
Geotextile Fabric laid in trench, adverse conditions	SY	\$1.96	33.33	\$65.33			
#2 Stone @ Outfall (12" Thick)	CY	\$53.10	11.00	\$584.10			
Total	\$/LF			\$39.34			
Unit Cost value used in Cost Estimate	\$/LF			\$40.00			

Champion: Hladick

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- pipe
- bedding
- installation
- backfill
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- contingency
- mobilization
- sodding
- restoration
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- Basis / Assumptions:
- per foot costs were built based on a 250' installation
- based on RSMeans cost data
- validated by comparison to standard St. Louis MSD historical unit costs
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	Cost Item #34 - Relief Well -	Manifold Manhole		
Description	Unit	Cost	Quantity / Unit	Total
Manhole & appurtenances	EA	\$1,500.00	1.00	\$1,500.00
Labor	EA	\$1,500.00	1.00	\$1,500.00
		. ,		. ,
Total	\$/EA			\$3,000.00
				. ,
Unit Cost value used in Cost Estimate	\$/EA			\$3,000.00
Champion: Hladick				
Includes:				
- manhole				
- bedding				
- installation				
- backfill				
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Excludes:				
- contingency				
- mobilization				
- sodding				
- restoration				
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Basis / Assumptions:				
- Nyloplast manholes				
- based on RSMeans cost data				
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Cost Item #35 - Relief Well - Manifold Pipe (12-Inch)						
Description	Unit	Cost	Quantity / Unit	Total		
12" HDPE Type S	LF	\$10.00	250.00	\$2,500.00		
12" HDPE Type S Elbows	EA	\$144.00	3.00	\$432.00		
12" HDPE Type S Tees	EA	\$271.00	1.00	\$271.00		
Trench Excavation (4' to 6' deep) 1/2 cy Excavator	CY	\$11.00	225.00	\$2,475.00		
Compact Bedding Sand in Trench	CY	\$23.14	6.17	\$142.77		
Trench Backfill	CY	\$1.73	195.93	\$338.96		
Compact Backfill, vibrating roller	CY	\$2.77	195.93	\$542.73		
Geotextile Fabric laid in trench, adverse conditions	SY	\$1.96	33.33	\$65.33		
#2 Stone @ Outfall (12" Thick)	CY	\$53.10	14.00	\$743.40		
Total	\$/LF			\$50.07		
Unit Cost value used in Cost Estimate	\$/LF			\$50.00		

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L	hampion:	HI	ıad	IICK

Inc	lud	les:
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- pipe
- bedding
- installation
- backfill
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- contingency
- mobilization
- sodding
- restoration
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- Basis / Assumptions:
- per foot costs were built based on a 250' installation
- based on RSMeans cost data
- validated by comparison to standard St. Louis MSD historical unit costs
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Cost Item #36 - Relief Well - Manifold Pipe (18-Inch)						
Description	Unit	Cost	Quantity / Unit	Total		
12" HDPE Type S	LF	\$14.25	250.00	\$3,562.50		
12" HDPE Type S Elbows	EA	\$289.30	3.00	\$867.90		
12" HDPE Type S Tees	EA	\$447.50	1.00	\$447.50		
Trench Excavation (4' to 6' deep) 1/2 cy Excavator	CY	\$11.00	240.00	\$2,640.00		
Compact Bedding Sand in Trench	CY	\$23.14	7.72	\$178.64		
Trench Backfill	CY	\$1.73	235.28	\$407.03		
Compact Backfill, vibrating roller	CY	\$2.77	235.28	\$651.73		
Geotextile Fabric laid in trench, adverse conditions	SY	\$1.96	33.33	\$65.33		
#2 Stone @ Outfall (12" Thick)	CY	\$53.10	14.00	\$743.40		
Total	\$/LF			\$63.76		
Unit Cost value used in Cost Estimate	\$/LF			\$64.00		

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Inc	lud	les:
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- pipe
- bedding
- installation
- backfill
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- contingency
- mobilization
- sodding
- restoration
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- Basis / Assumptions:
- per foot costs were built based on a 250' installation
- based on RSMeans cost data
- validated by comparison to standard St. Louis MSD historical unit costs
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Cost Item #37 - Relief Well - New - Hazardous Waste Premium					
Description	Unit	Cost	Quantity / Unit	Total	
Soil analysis for waste characterization	EA	\$1,750.00	1.00	\$1,750.00	
Transportation & disposal of soil	EA	\$10,000.00	1.00	\$10,000.00	
Labor	EA	\$1,500.00	1.00	\$1,500.00	
Water analysis for waste characterization	EA	\$1,200.00	1.00	\$1,200.00	
Transportation & disposal of water	EA	\$45,000.00	1.00	\$45,000.00	
Labor	EA	\$2,500.00	1.00	\$2,500.00	
Total	\$/EA			\$61,950.00	
Unit Cost value used in Cost Estimate	\$/EA			\$61,950.00	

Champion:	Hla	dick
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- mobilization
- waste characterization
- transportation & disposal of water
- transportation & disposal of soil

- contingency
- well installation & development

- water must be taken to a hazardous waste disposal facility such as Trade Waste
- maximum assumed water volume for well development
- \$0.75 / gallon for disposal
- water must be treated before disposal
- soil must be taken to a hazardous waste disposal facility

Cost Item #38 - Relief Well - New - Special Waste Premium							
Description	Unit	Cost	Quantity / Unit	Total			
Soil analysis for waste characterization	EA	\$750.00	1.00	\$750.00			
Transportation & disposal of soil	EA	\$1,625.00	1.00	\$1,625.00			
Labor	EA	\$1,500.00	1.00	\$1,500.00			
Water analysis for waste characterization	EA	\$1,200.00	1.00	\$1,200.00			
Transportation & disposal of water	EA	\$9,000.00	1.00	\$9,000.00			
Labor	EA	\$2,500.00	1.00	\$2,500.00			
Total	\$/EA			\$16,575.00			
Unit Cost value used in Cost Estimate	\$/EA			\$16,575.00			

Champion:	Hladick
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Inc	lud	es:

- mobilization
- waste characterization
- transportation & disposal
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- contingency
- contaminated soil media
- hazardous waste disposal
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- water must be taken to a special waste disposal facility American Bottoms
- maximum assumed water volume for well development
- \$0.15 / gallon for disposal
- water must be treated prior to disposal
- soil must be taken to a special waste disposal facility
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Cost	Item #39 - Relief Well - N	#39 - Relief Well - New Type "D"				
Description	Unit	Cost	Quantity / Unit	Total		
Relief Well - New Type "D"	EA	\$32,500.00	1.00	\$32,500.0		
				\$0.0		
				\$0.0		
				\$0.0		
				\$0.0		
				\$0.0		
				\$0.0		
				\$0.0		
				\$0.0		
				\$0.0		
Total	\$/EA			\$32,500.0		
Unit Cost value used in Cost Estimate	\$/EA			\$32,500.0		
Champion: Hladick						
Includes:						
- material						
- installation						
- mobilization						
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- Excludes:						
- contingency						
- special waste costs						
- hazardous waste costs						
- "T" type appurtenances						
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Basis / Assumptions:						
basis / Assumptions.						
	Dewatering Services, Inc.,	Geotechnical Con	struction Inc.			
- based on prices from local contractors (Contract I	Dewatering Services, Inc.,	Geotechnical Con	struction Inc.			
 based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 - based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 - based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
 based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			
- based on prices from local contractors (Contract I		Geotechnical Con	struction Inc.			
 - based on prices from local contractors (Contract I and Pensoneau Construction Inc.) 		Geotechnical Con	struction Inc.			

	Cost Item #40 - F	Relief Well -	New Type "T"		
Description		Unit	Cost	Quantity / Unit	Total
Relief Well - New Type "T"		EA	\$40,000.00	1.00	\$40,000.00
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		A /= 4			
Total		\$/EA			\$40,000.00
Unit Cost value used in Cost Estimate		¢/EA			\$40,000.00
Unit Cost value used in Cost Estimate		\$/EA			\$40,000.00
Champion: Hladick					
Champion. Thatler					
Includes:					
- material					
- installation					
- mobilization					
- manhole					
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Excludes:					
- contingency					
- special waste costs					
- hazardous waste costs					
- lateral piping					
- manifold piping					
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Basis / Assumptions:					
 based on prices from local contractors (C 	ontract Dewatering S	Services Inc	Geotechnical Con	struction Inc	
and Pensoneau Construction Inc.)	ontract Dewatering 5	, e. 110cs, 111c.	, George Innear Con	otraction me.	
 validated by comparison to historical cos 	t data from similar pr	roiects			
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Cost Item #4	I1 - RipRap Bank P	rotection		
Description	Unit	Cost	Quantity / Unit	Total
RipRap Bank Protection	CY	\$120.00	1.00	\$120.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
Total	\$/CY			\$120.00
1000	Ψ, σ.			Ψ120.00
Unit Cost value used in Cost Estimate	\$/CY			\$120.00
Champion: Coronel				
Includes:				
- provide & place rock riprap				
- provide & place geotextile				
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Excludes:				
- contingency				
- mobilization				
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Basis / Assumptions:				
- based on standard St. Louis MSD historical unit costs				
- validated by comparison to IDOT bid tabs				
- validated by companson to 1001 bid tabs				
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	tem #42 - ROW Acquisiti	on - Agricultural		
Description	Unit	Cost	Quantity / Unit	Total
ROW Acquisition - Agricultural	AC	\$6,500.00	1.00	\$6,500.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
Total	\$/AC			\$6,500.00
Jnit Cost value used in Cost Estimate	\$/AC			\$6,500.00
Champion: Schneider				
ncludes:				

Includes:	
- land costs associated with fee simple right-of-way acquisition for co	onstru

- contingency

- appraisal / valuation services

- acquisition / negotiation services

- legal / condemnation costs

Basis / Assumptions:

- based on fair market land value

- based on county assessor land value data

- based on fair market values vs. total acreage performed for numerous parcels

- based on land usage type, average cost per acre, per County

- based on comparables from real estate publications, public records and appraiser

Description	Unit	Cost	Quantity / Unit	Total
ROW Acquisition - Commercial	AC	\$30,000.00	1.00	\$30,000.00
·				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
Total	\$/AC			\$30,000.00
Jnit Cost value used in Cost Estimate	\$/AC			\$30,000.00
Champion: Schneider				

Unit Cost value used in Cost Estimate	\$/AC			\$30,000.00
Champion: Schneider				
Includes:				
- land costs associated with fee simple right-of-way	acquisition for constru	ction of levee improv	vements	
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-				

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
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- based on fair market land value
- based on county assessor land value data
- based on fair market values vs. total acreage performed for numerous parcels
- based on land usage type, average cost per acre, per County
- based on comparables from real estate publications, public records and appraiser
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Description	Item #44 - ROW Acquisit	Cost	Quantity / Unit	Total
ROW Acquisition - Governmental	AC	\$25,000.00	1.00	\$25,000.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
Total	\$/AC			\$25,000.00
Unit Cost value used in Cost Estimate	\$/AC			\$25,000.00
Champion: Schneider				

Total	\$/AC	\$25,000.00
Unit Cost value used in Cost Estimate	\$/AC	\$25,000.00
Champion: Schneider		
Includes:		
- land costs associated with fee simple right-of-way	acquisition for construction of levee imp	provements
-		
-		
-		
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-		
-		
Excludes:		
- contingency		
- appraisal / valuation services		
- acquisition / negotiation services		
- legal / condemnation costs		
-		

- based on fair market land value
- based on county assessor land value data
- based on fair market values vs. total acreage performed for numerous parcels
- based on land usage type, average cost per acre, per County
- based on comparables from real estate publications, public records and appraiser
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	Item #45 - ROW Acquisit		Quantity / Unit	Total
Description	Unit	Cost		Total
ROW Acquisition - Industrial	AC	\$30,000.00	1.00	\$30,000.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
Total	\$/AC			\$30,000.00
Unit Cost value used in Cost Estimate	\$/AC			\$30,000.00

		i	φ0.00
Total	\$/AC		\$30,000.00
	44.5		
Unit Cost value used in Cost Estimate	\$/AC		\$30,000.00
Champion: Schneider			
Includes:			
- land costs associated with fee simple right-of-way a	acquisition for construct	tion of levee improvemer	nts
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-			

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
- _
- -
- -

- based on fair market land value
- based on county assessor land value data
- based on fair market values vs. total acreage performed for numerous parcels
- based on land usage type, average cost per acre, per County
- based on comparables from real estate publications, public records and appraiser
- _
- -
- _
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Cost Item #46 - ROW Acquisition - Residential					
Description	Unit	Cost	Quantity / Unit	Total	
ROW Acquisition - Residential	AC	\$18,000.00	1.00	\$18,000.0	
				\$0.0	
				\$0.0	
				\$0.0	
				\$0.0	
				\$0.0	
				\$0.0	
				\$0.0	
				\$0.0	
				\$0.0	
otal	\$/AC			\$18,000.0	
	\$/AC			\$18,000.0	

		\$0.00
Total	\$/AC	\$18,000.00
Unit Cost value used in Cost Estimate	\$/AC	\$18,000.00
Champion: Schneider		
Includes:		
- land costs associated with fee simple right-of-way	acquisition for construction of levee impro	ovements
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-		
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-		
Excludes:		
- contingency		
- appraisal / valuation services		
- acquisition / negotiation services		
- legal / condemnation costs		

- based on fair market land value
- based on county assessor land value data
- based on fair market values vs. total acreage performed for numerous parcels
- based on land usage type, average cost per acre, per County
- based on comparables from real estate publications, public records and appraiser
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	tem #47 - ROW Acquisit			
Description	Unit	Cost	Quantity / Unit	Total
OW Acquisition - Vacant/Undeveloped	AC	\$23,000.00	1.00	\$23,000.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
				\$0.00
otal	\$/AC			\$23,000.00
nit Cost value used in Cost Estimate	\$/AC			\$23,000.00
Champion: Schneider				
ncludes:				
	acquisition for constructi	ion of levee improv	vements	
land costs associated with fee simple right-of-way	acquisition for constructi			

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
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- based on fair market land value
- based on county assessor land value data
- based on fair market values vs. total acreage performed for numerous parcels
- based on land usage type, average cost per acre, per County
- based on comparables from real estate publications, public records and appraiser
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		Cost Item #48 -				
	Description		Unit	Cost	Quantity / Unit	Total
eeding	•		AC	\$1,650.00	1.00	\$1,650.0
<u> </u>				. ,		\$0.0
						\$0.0
			 			\$0.0
			 			\$0.0
						\$0.0
			+			\$0.0
						\$0.0
						\$0.0
						\$0.0
otal			\$/AC			\$1,650.0
nit Cost value use	d in Cost Estimate		\$/AC			\$1,650.0
			\$/AC			\$1,650.0
nampion: Corone						
cludes:						
surface preparation	on					
seed						
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ertilizer						
Citilizei						
ruck irrigation						
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cludes: contingency mobilization finish grading sisis / Assumption	d MoDOT historical unit	cost				

Cost	Item #49 - Seepage Berm	Material - Haul C	n and Placement (Ha	uled)
Description	Unit	Cost	Quantity / Unit	Total
eepage berm fill material	CY	\$12.00	1.00	\$12.0
		•		•
Total	\$/CY			\$12.0
Total	\$/С1			\$12.0
Hait Cook walne wood in Cook Estimate	ċ /cv			\$12.0
Unit Cost value used in Cost Estimate	\$/CY			\$12.0
Chamarian, Cananal				
Champion: Coronel				
Includes:				
- material				
- haul on				
- placement				
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-				
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- Excludes:				
- contingency				
- mobilization				
- clearing & grubbing				
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Basis / Assumptions:				
- based on prices from local contractors (Baxmeyer	Excavating, Luhr Brothers	, etal)		
- validated by comparison to historical cost data fro	om similar projects			
- potential sources of fill material include dredged i		ch as Bangert with	excess canacity on th	eir
existing permits		an an aniger with	supusity on th	
	any harao laanyayaa ayaa	~		
- dredged material could be delivered via a tempor				
 other potential sources of fill material include Bus 	ssen Quarries, Walker Aggi	regates, Inc., Colui	mbia Quarry Company	
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Description Slip-Line - 12-Inch Pipe		Inch Pipe		
	Unit	Cost	Quantity / Unit	Total
IID-LINE - 12-INCN PIDE	LF	\$110.00	1.00	\$110.00
P - P -				, , , , , , , , , , , , , , , , , , , ,
	40-			****
Total	\$/LF			\$110.00
Unit Cost value used in Cost Estimate	\$/LF			\$110.00
Champion: Coronel				
ncludes:				
- rehabilitate existing gravity drain by slip-line constru	ction methods			
- cleaning & preparation	ction inctitous			
- cleaning & preparation - provide & install liner				
- grout annular space				
- reseat flap gates & valves				
- post construction CCTV inspection video				
-				
-				
-				
- -				
- - Excludes:				
- Excludes:				
- E xcludes: - contingency				
- Excludes: - contingency - mobilization				
- Excludes: - contingency - mobilization -				
- Excludes: - contingency - mobilization				
- Excludes: - contingency - mobilization -				
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Excludes: - contingency - mobilization				
Excludes: - contingency - mobilization				

	em #51 - Slip-Line - 15-I	nch Pipe		
Description	Unit	Cost	Quantity / Unit	Total
Slip-Line - 15-Inch Pipe	LF	\$115.00	1.00	\$115.00
· ·		·		·
Total	\$/LF			\$115.00
Unit Cost value used in Cost Estimate	\$/LF			\$115.00
Champion: Coronel				
·				
Includes:				
 rehabilitate existing gravity drain by slip-line constr 	uction methods			
- cleaning & preparation	action methods			
- provide & install liner				
- grout annular space				
- reseat flap gates & valves				
nest construction CCTV inspection video				
- post construction CCTV inspection video				
- post construction CCTV inspection video -				
- - -				
- - - - Excludes:				
Excludes: - contingency				
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Excludes: - contingency				
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Excludes: - contingency - mobilization				
Excludes: - contingency - mobilization				
Excludes: - contingency - mobilization				
Excludes: - contingency - mobilization				

	m #52 - Slip-Line - 18-	nch Pipe		
Description	Unit	Cost	Quantity / Unit	Total
lip-Line - 18-Inch Pipe	LF	\$121.00	1.00	\$121.00
	41			4.0.
Total	\$/LF			\$121.00
Unit Cost value used in Cost Estimate	\$/LF			\$121.00
Champion: Coronel				
ncludes:				
 rehabilitate existing gravity drain by slip-line construct 	ction methods			
- cleaning & preparation				
- provide & install liner				
- grout annular space				
- reseat flap gates & valves				
- post construction CCTV inspection video				
-				
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Excludes:				
- contingency				
- mobilization				
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-				
Basis / Assumptions:				
- based on standard St. Louis MSD historic unit costs				
- validated by comparison to IDOT bid tabs				
- HDPE liner pipe				
- HDFL liller pipe				
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-				
-				
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	53 - Slip-Line - 24-	nch Pipe		
Description	Unit	Cost	Quantity / Unit	Total
lip-Line - 24-Inch Pipe	LF	\$132.00	1.00	\$132.0
	+			
	+			
	1.5-			
Total	\$/LF			\$132.0
Unit Cost value used in Cost Estimate	\$/LF			\$132.00
Champion: Coronel				
'				
Includes:				
	n mathads			
- rehabilitate existing gravity drain by slip-line constructio	ii iiieuious			
- cleaning & preparation				
- provide & install liner				
- grout annular space				
- reseat flap gates & valves				
- post construction CCTV inspection video				
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Excludes:				
- contingency				
- mobilization				
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-				
Basis / Assumptions:				
- based on standard St. Louis MSD historic unit costs				
- validated by comparison to IDOT bid tabs				
- HDPE liner pipe				
- TIDEL liller pipe				
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Description	m #54 - Slip-Line - 27-I	nch Pipe		
	Unit	Cost	Quantity / Unit	Total
Slip-Line - 27-Inch Pipe	LF	\$138.00	1.00	\$138.00
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_				
Total	\$/LF			\$138.00
Unit Cost value used in Cost Estimate	\$/LF			\$138.00
Champion: Coronel				
F				
Includes:				
 rehabilitate existing gravity drain by slip-line construct 	ction mathods			
	ction methods			
- cleaning & preparation				
- provide & install liner				
- grout annular space				
- reseat flap gates & valves				
- post construction CCTV inspection video				
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Excludes: - contingency				
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- contingency - mobilization				

	em #55 - Slip-Line - 36-I	nch Pipe		
Description	Unit	Cost	Quantity / Unit	Total
lip-Line - 36-Inch Pipe	LF	\$167.00	1.00	\$167.0
	1.6			
Total	\$/LF			\$167.00
Unit Cost value used in Cost Estimate	\$/LF			\$167.00
Champion: Coronel				
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Includes:				
	istian mathads			
- rehabilitate existing gravity drain by slip-line constru	action methods			
- cleaning & preparation				
- provide & install liner				
- grout annular space				
- reseat flap gates & valves				
- post construction CCTV inspection video				
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- post construction CCTV inspection video - -				
- reseat flap gates & valves - post construction CCTV inspection video				
- post construction CCTV inspection video Excludes:				
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- post construction CCTV inspection video				

Cost Item #55

Description Unit Cost Slip-Line - 42-Inch Pipe LF \$201.00 LF \$201.00 Total \$/LF Unit Cost value used in Cost Estimate Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video Excludes: - contingency	Quantity / Unit 1.00	\$201.0 \$201.0
Slip-Line - 42-Inch Pipe LF \$201.00		\$201.0
Total \$/LF Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		\$201.0
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Unit Cost value used in Cost Estimate \$/LF Champion: Coronel Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video Excludes:		\$201.0
Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video Excludes:		\$201.0
Includes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video Excludes:		
ncludes: - rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
- rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
- rehabilitate existing gravity drain by slip-line construction methods - cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
- cleaning & preparation - provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
- provide & install liner - grout annular space - reseat flap gates & valves - post construction CCTV inspection video		
- grout annular space - reseat flap gates & valves - post construction CCTV inspection video Excludes:		
- reseat flap gates & valves - post construction CCTV inspection video Excludes:		
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- contingency		
- mobilization		
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Basis / Assumptions:		
- based on standard St. Louis MSD historic unit costs		
- validated by comparison to IDOT bid tabs		
- HDPE liner pipe		
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	n #57 - Slip-Line - 48-	nch Pipe		
Description	Unit	Cost	Quantity / Unit	Total
lip-Line - 48-Inch Pipe	LF	\$220.00	1.00	\$220.00
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	1.5			
Total	\$/LF			\$220.00
Unit Cost value used in Cost Estimate	\$/LF			\$220.00
Champion: Coronel				
Includes:				
- rehabilitate existing gravity drain by slip-line construc	tion methods			
- cleaning & preparation				
- provide & install liner				
- grout annular space				
- reseat flap gates & valves				
- post construction CCTV inspection video				
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Excludes:				
- contingency				
- mobilization				
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Basis / Assumptions:				
- based on standard St. Louis MSD historic unit costs				
- validated by comparison to IDOT bid tabs				
- HDPE liner pipe				
- HDFE liller pipe				
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	Cost Item #58 -	Utility Reloc	ation - High Tensio	n Power (Raise)	
Description		Unit	Cost	Quantity / Unit	Total
Utility Relocation - High Tension Power (Raise		EA	\$300,000.00	1.00	\$300,000.00
, , , , , , , , , , , , , , , , , , ,	,		, ,		, , , , , , , , , , , , , , , , , , , ,
Total		\$/EA			\$300,000.00
Total		7/ [7			7300,000.00
Unit Cost value used in Cost Estimate		\$/EA			\$300,000.00
Onit cost value used in cost Estimate)			7300,000.00
Champion: Loomis					
enampion. Loomis					
Includes:					
- mobilization					
- raise one double circuit transmission lattice	structure tower	to provide re	nuired ground clear	ance in areas of fill	
	. structure tower	to provide re	quireu grounu ciedr	unce in areas Ul IIII	
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Excludes:					
- contingency					
- alignment change					
- right of way acquisition					
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Basis / Assumptions:					
basis / Assumptions:based on cost data provided by Terry Grass	of Ameron				
		Micolania - 1 Di	المساه مساه مساه مساه		
- validated by comparison to historical cost of	iata irom nearby l	iviississippi Rī	ver bridge project		
- all work executed by utility company					
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Cost Item #59 -	Utility Relocat	ion - Natural Gas	Pipeline	
Description	Unit	Cost	Quantity / Unit	Total
Utility Relocation - Natural Gas Pipeline	LF	\$500.00	1.00	\$500.00
othicy relocation - Natural Gas i spelline	+ -	7300.00	1.00	7500.00
	+			
	+ +			
	+			
Total	\$/LF			\$500.00
Unit Cost value used in Cost Estimate	\$/LF			\$500.00
Champion: Loomis				ļ
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Includes:				
- mobilization				
- relocation of a gas pipeline to a new alignment to avoid conf	flict with cutoff	wall construction		
-	mee with eaton	wan construction		
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Excludes:				
- contingency				
- right of way acquisition				
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Pacie / Accumptions:				
Basis / Assumptions:	ConocaDhillia			
- based on conceptual cost data provided by Phil Davidson of (Conocornilips			
- all work executed by utility company				
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Cost Item #60 -	Utility Reloca	tion - Power Pole /	Light Pole	
Description Description	Unit	Cost	Quantity / Unit	Total
Utility Relocation - Power Pole / Light Pole	EA	\$10,000.00	1.00	\$10,000.00
other releasement force for Eight force		Ψ10,000.00	1.00	\$10,000.00
	1			
	+			
Total	\$/EA			\$10,000.00
Unit Cost value used in Cost Estimate	\$/EA			\$10,000.00
Champion: Loomis				
Includes:				
- mobilization				
- relocation of a standard power pole / light pole to a new alig	gnment to avoid	d conflict with leve	e repair construction	
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Excludes:				
- contingency				
- right of way acquisition				
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Basis / Assumptions:				
- based on cost data provided by Terry Grass of Ameren				
- all work executed by utility company				
an work executed by utility company				
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Unit LF	Cost \$50.00	Quantity / Unit	Total \$50.00
LF	\$50.00	1.00	\$50.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
			\$0.00
\$/LF			\$50.00
\$/LF			\$50.00
	\$/LF \$/LF		

Total	\$/LF		\$50.0
Unit Cost value used in Cost Estimate	\$/LF		\$50.0
Champion: Safford			
Includes:			
- mobilization			
- installation of shielding on OE transmission lines as	s required for construc	tion in close proxim	ity to live lines
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- Excludes:			
- contingency			
- de-energizing lines			
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- based on cost data provided by Terry Grass of Ameren
- all work executed by utility company
- shielding is good for a period of 60 days
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Cost itel	n #62 - Othity Relocat	ion - Underground	d Communication	
Description	Unit	Cost	Quantity / Unit	Total
Itility Relocation - Underground Communication	LF	\$100.00	1.00	\$100.0
		7-00:00		\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0 \$0.0
				\$0.0
otal	¢/LE			\$0.0 \$100. 0
otai	\$/LF			\$100.0
Init Cost value used in Cost Estimate	\$/LF			\$100.0
hampion: Loomis ncludes: mobilization				
relocation of buried communication lines to a new ali	ignment to avoid confl	ict with levee rena	ir construction	
relocation of buried communication lines to a new an	igninent to avoid comi	ict with levee repa	II CONSTRUCTION	
xcludes:				
xcludes: contingency				
xcludes: contingency right of way acquisition				
xcludes: contingency right of way acquisition				
xcludes: contingency right of way acquisition				
xcludes: contingency right of way acquisition				
xcludes: contingency right of way acquisition				
xcludes: contingency right of way acquisition				
xcludes: contingency right of way acquisition				
contingency				
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xcludes: contingency right of way acquisition	er Communication			
xcludes: contingency right of way acquisition asis / Assumptions: based on cost data provided by Cory Birk from Charte	er Communication			
contingency right of way acquisition asis / Assumptions: based on cost data provided by Cory Birk from Charte	er Communication			
xcludes: contingency right of way acquisition asis / Assumptions: based on cost data provided by Cory Birk from Charte	er Communication			
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contingency right of way acquisition asis / Assumptions: based on cost data provided by Cory Birk from Charte	er Communication			
xcludes: contingency right of way acquisition asis / Assumptions: based on cost data provided by Cory Birk from Charte	er Communication			
Excludes: - contingency - right of way acquisition	er Communication			

Cost Item #6	63 - Utility Reloca	tion - Underground	d Communications Pe	destal
Description	Unit	Cost	Quantity / Unit	Total
Itility Relocation - Underground Communications Pedesta		\$10,000.00	1.00	\$10,000.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
				\$0.0
otal	\$/EA			\$10,000.
otui	γ/LA			710,000.
nit Cost value used in Cost Estimate	\$/EA			\$10,000.0
hampion: Loomis ncludes: mobilization				
relocation of a communication pedestal to a new alignment	ent to avoid conflic	t with levee repair	construction	
excludes:				
- contingency				
right of way acquisition				
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Pacie / Accumptions:				
	iontion			
- based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
- based on cost data provided by Cory Birk from Charter Co	ommunication			_
based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
based on cost data provided by Cory Birk from Charter Co	ommunication			
- based on cost data provided by Cory Birk from Charter Co	ommunication			
Basis / Assumptions: - based on cost data provided by Cory Birk from Charter Co - all work executed by utility company	ommunication			

Cost Item #64 -	Cost Item #64 - Utility Relocation - Various Buried Facilities							
Description	Unit	Cost	Quantity / Unit	Total				
Utility Relocation - Various Buried Facilities	LF	\$250.00	1.00	\$250.00				
				\$0.00				
				\$0.00				
				\$0.00				
				\$0.00				
				\$0.00				
				\$0.00				
				\$0.00				
				\$0.00				
				\$0.00				
Total	\$/LF			\$250.00				
Unit Cost value used in Cost Estimate	\$/LF			\$250.00				

		1:-
L	hampion:	Loomis

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- mobilization
- relocation of various underground utilities to a new alignment to avoid conflict with levee repair construction
- coax cable
- copper telephone
- water distribution
- gas distribution
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- contingency
- right of way acquisition
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- Basis / Assumptions:
- based on cost data provided by Cory Birk from Charter Communication
- based on cost data provided by Harrisonville Telephone Company
- all work executed by utility company
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Cost Item #65 - Wetland Mitigation							
Description	Unit	Cost	Quantity / Unit	Total			
Wetland Mitigation	AC	\$25,000.00	1.00	\$25,000.00			
				\$0.00			
				\$0.00			
				\$0.00			
				\$0.00			
				\$0.00			
				\$0.00			
				\$0.00			
				\$0.00			
				\$0.00			
Total	\$/AC			\$25,000.00			
Unit Cost value used in Cost Estimate	\$/AC			\$25,000.00			

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- mobilization
- initial grading to bring site to design grade
- initial planting of mitigation site
- maintenance and monitoring for 6 years following construction
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- contingency
- design costs
- legal documentation of conservation easements/deed restrictions

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- property may be purchased at \$6,000 / AC
- extensive replacement plantings will not be necessary
- site preparation & planting costs will be approximately \$10,000 / AC
- monitoring & maintenance will not exceed \$4,000 / AC
- grading to bring site to design grade will not exceed \$5,000 / AC
- wetland will be established in 6 years
- additional monitoring and/or maintenance beyond 6 years will not be required
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Construction cost Estimate for Southwestern Illinois Levee Certification Design Improvements



APPENDIX F - CONSTRUCTION COST ESCALATION

Construction Cost Escalation Rate Calculation for Southwestern Illinois Flood Prevention Initiative

Estimate Reference Date: 7/1/2011 Mid-point of 4 years: 6/30/2013

Assumptions:

- 1. Reference year = 2011
- 2. Quarterly cost indexes were taken from Table A-1 of Reference 1 assuming feature code 11 (Levees and Floodwalls)
- 3. Quarterly escalation indices can be calculated for the quarter of interest by dividing its cost index by that of the preceding quarter

		4Q11	4Q11	1Q12	2Q12	3Q12	4Q12	1Q13	2Q13	3Q13
		April - Jun	Jul - Sep	Oct - Dec	Jan - Mar	April - Jun	Jul - Sep	Oct - Dec	Jan - Mar	April - Jun
Cost Index, Base year = :	1967:	742.25	745.3	748.84	751.85	754.87	757.88	761.28	764.54	767.79
Escalation Index:			1.00411	1.00475	1.00402	1.00402	1.00399	1.00449	1.00428	1.00425

	Period		Quarter	х	Escalation Index
7/1/2011	to	9/30/2011	1		1.00411
10/1/2011	to	12/31/2011	1		1.00475
1/1/2012	to	3/31/2012	1		1.00402
4/1/2012	to	6/30/2012	1		1.00402
7/1/2012	to	9/30/2012	1		1.00399
10/1/2012	to	12/31/2012	1		1.00449
1/1/2013	to	3/31/2013	1		1.00428
4/1/2013	to	6/30/2013	1		1.00425

Reference:

1. Civil Works Construction Cost Index System, US Army Corps of Engineers, Tables Revised as of 30 September 2010 (EM-1110-2-1304)

Construction cost Estimate for Southwestern Illinois Levee Certification Design Improvements



APPENDIX G - HAYWARD BAKER CONCEPTUAL CONSTRUCTION COST ESTIMATE

		Conce	ptual Estima	SW Illinois Levee Project		
Price per Sq Ft]	22-Apr-11		
Technology		Shallow Wall	Dee	o Wall		
	Mobilization	< 50'	> 50'< 90'	> 90'	Pros	Cons
TRD Method*	\$250,000 - 400,000	\$20 - 25	\$25 - 30	\$30 - 35*	Continuous Wall, ultimate in quality control, effectivly cuts rock and boulders, can work in 25' of headroom, spoils can be utilized as fills, inexpensive for deep walls	High Mobilization costs
TRD Method	\$250,000 - 400,000	\$20 - 26	\$25 - 30	\$25 - 30&		
Conventional Excavated Slurry Wall, CB	\$50,000	\$10 - 12	\$14- 18	NA	inexpensive	caving walls at depth, quality control?, cannot cut rock or boulders, requires headroom, spoils will be landfilled
Vinyl Sheeting	\$50,000	12	2 NA	NA	Predictable performance	no tolerance for obstructions, depth limit, splitting sheets will reduce effectiveness
Jet Grout Wall						
Single Panel Wall	\$80,000	\$24-26	\$24-26	\$24-26	Ideal for work around utilties and other	Single panel wall lacks redundancy, concern
Double Panel Wall	\$80,000	\$30 - 35	\$32 - 35	\$35 - 38	crossings, can be used beneath structures, can drill through obstructions, ability to treat at	with vertical alignment of tools resulting in windows
Full Column Wall	\$80,000	\$50 - 60	\$60 - 80	\$60 - 80	depth only, vs back to grade, with small equipment, can work on a limited bench	Williauws
Vibrating Beam	\$80,000	\$12- 15	\$12- 15+	NA	inexpensive, for contaminated areas can be completed without spoils	concern with durability and permeability, limited by very dense sands, may require high pressure method, thinest wall

^{*} Assumes Rock Toe

+ May not be effective at this depth, profile dependent

& Must know elevation of top of rock, for machine to work at top of rock

