CONSTRUCTION COST ESTIMATE
FOR
SOUTHWESTERN ILLINOIS LEVEE CERTIFICATION DESIGN IMPROVEMENTS

PREPARED FOR

SOUTHWESTERN ILLINOIS FLOOD PREVENTION DISTRICT COUNCIL

PREPARED BY

AMEC EARTH & ENVIRONMENTAL, INC

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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:

- Clay Caps
- Cutoff 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:

- professional fees (design, construction management, legal, financial, etc.)
- operation construction costs
- maintenance construction costs
- life-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:

- Each 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.
- 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.
- Both companies stated large obstructions (i.e. boulders) would be a big concern to them and their prices do not reflect dealing with these issues.
- 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.
- Both companies indicated that it will need to a fairly wide platform (about 50 feet in width) to work from.
- 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 RIVER, MESD, PdP & FISH LAKE

Item #	Cost Item	Unit	Unit Cost	Contingency	Quantity	Total
1	Clay Cap/Clay Blanket Material - Haul On & Placement	CY	$ 12	20%	268,311	$ 3,863,678
2	Clear & Grub - Light Vegetation	AC	$ 6,000	20%	185	$ 1,332,072
3	Clear & Grub - Wooded	AC	$ 21,625	20%	70	$ 1,816,500
4	Cutoff Wall - Deep	SF	$ 32	30%	957,418	$ 39,828,589
5	Cutoff Wall - Hazardous Waste Premium	SF	$ 28	20%	45,453	$ 1,527,221
6	Cutoff Wall - Shallow	SF	$ 12	30%	158,600	$ 2,474,160
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%	181,813	$ 2,399,932
8	Dewatering	LF	$ 51	20%	11,455	$ 701,046
9	Drainage - Enclosed - 30" Pipe	LF	$ 96	20%	569	$ 65,549
10	Drainage - Inlet Structure	EA	$ 2,200	20%	1	$ 2,640
11	Drainage - Surface - Shallow Ditch	LF	$ 141	20%	7,200	$ 1,218,240
12	Excavation	CY	$ 11	20%	191,485	$ 2,527,603
13	Gravel Filter - D50=#4 Material - Haul On & Placement	CY	$ 24	20%	47,161	$ 1,358,237
14	Gravel Filter - D50=2" Material - Haul On & Placement	CY	$ 29	20%	70,017	$ 2,436,592
15	Gravel Filter - Geotextile - Material & Installation	SY	$ 2	20%	709,631	$ 1,703,114
16	Gravel Filter - Sand Material - Haul On & Placement	CY	$ 12	20%	29,590	$ 426,096
17	Haul Off of Excess Material	CY	$ 6	20%	187,835	$ 1,352,413
18	Mobilization (% varies)	LS	$ 1,492,890		1	$ 1,492,890
19	Pump Station - WR - New - 220+00 UWR	EA	$ 605,500	20%	1	$ 726,600
20	Pump Station - WR - New - 560+00 LWR	EA	$ 699,500	20%	1	$ 839,400
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	$ 1,019,400
23	Pump Station - Various Improvements	EA	$ 600,000	20%	4	$ 2,880,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	$ 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	$ 44	20%	15,840	$ 836,352
28	Relief Well - Existing - Abandon	EA	$ 2,000	20%	42	$ 100,800
29	Relief Well - Existing - Convert to Type "T"	EA	$ 6,000	20%	76	$ 547,200
30	Relief Well - Existing - Hazardous Waste Premium	EA	$ 48,700	20%	6	$ 350,640
31	Relief Well - Existing - Rehabilitate	EA	$ 12,000	20%	78	$ 1,123,200
32	Relief Well - Existing - Special Waste Premium	EA	$ 12,700	20%	24	$ 365,760
33	Relief Well - Lateral Pipe (8-Inch)	LF	$ 40	20%	3,588	$ 172,224
34	Relief Well - Manifold Manhole	EA	$ 3,000	20%	29	$ 104,400
35	Relief Well - Manifold Pipe (12-Inch)	LF	$ 50	20%	3,548	$ 212,880
36	Relief Well - Manifold Pipe (18-Inch)	LF	$ 64	20%	3,591	$ 275,789
37	Relief Well - New - Hazardous Waste Premium	EA	$ 61,950	20%	11	$ 817,740
38	Relief Well - New - Special Waste Premium	EA	$ 16,575	20%	51	$ 1,014,390
39	Relief Well - New Type "D"	EA	$ 32,500	20%	215	$ 8,385,000
40	Relief Well - New Type "T"	EA	$ 40,000	20%	67	$ 3,216,000
41	RipRap Bank Protection	CY	$ 120	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	$ 25,000	20%	12	$ 360,000
45	ROW Acquisition - Industrial	AC	$ 30,000	20%	68	$ 2,448,000
46	ROW Acquisition - Residential	AC	$ 18,000	20%	1	$ 21,600
47	ROW Acquisition - Vacant/Undeveloped	AC	$ 23,000	20%	79	$ 2,180,400
48	Seeding	AC	$ 1,650	20%	180	$ 356,420
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	$ 12	20%	583,346	$ 8,400,183
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%	2,340	$ 339,768
53	Slip-Line - 24-Inch Pipe	LF	$ 132	20%	2,870	$ 454,608
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%	580	$ 139,896
57	Slip-Line - 48-Inch Pipe	LF	$ 220	20%	3,190	$ 842,160
58	Utility Relocation - High Tension Power (Raise)	EA	$ 300,000	20%	5	$ 1,800,000
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%	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	$ 10,000	20%	2	$ 24,000
64	Utility Relocation - Various Buried Facilities	LF	$ 250	20%	3,805	$ 1,141,500
65	Wetland Mitigation	AC	$ 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	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%	4,855	$ 297,126
9	Drainage - Enclosed - 30" Pipe	LF	$ 96	20%	569	$ 65,549
10	Drainage - Inlet Structure	EA	$ 2,200	20%	1	$ 2,640
11	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
20	Pump Station - WR - New - 560+00 LWR	EA	$ 699,500	20%	1	$ 839,400
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	$ 849,500	20%	0	$ -
22	Pump Station - PdP - Improve Existing - PdP West	EA	$ 849,500	20%	0	$ -
23	Pump Station - Various Improvements	EA	$ 600,000	20%	1	$ 720,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	$ 42	20%	1,247	$ 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	$ -
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%	3	$ 223,020
38	Relief Well - New - Special Waste Premium	EA	$ 16,575	20%	10	$ 198,900
39	Relief Well - New Type "D"	EA	$ 32,500	20%	24	$ 936,000
40	Relief Well - New Type "T"	EA	$ 40,000	20%	42	$ 2,016,000
41	RipRap Bank Protection	CY	$ 120	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
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 - 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%		$ -
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%	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%		$ -
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	$ 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%		$ -
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	$ 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 RIVER - RELIEF 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%		$ -
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	Cutoff Wall - Shallow	SF	$ 12	30%		$ -
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%		$ -
8	Dewatering	LF	$ 51	20%		$ -
9	Drainage - Enclosed - 30" Pipe	LF	$ 96	20%	120	$ 13,824
10	Drainage - Inlet Structure	EA	$ 2,200	20%		$ -
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	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	$ 3,437	0%	1	$ 3,437
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%		$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%		$ -
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%	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%	932	$ 44,736
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%	3	$ 223,020
38	Relief Well - New - Special Waste Premium	EA	$ 16,575	20%	10	$ 198,900
39	Relief Well - New Type "D"	EA	$ 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	$ 6,500	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	$ 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	$ 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%	525	$ 31,500
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%	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 RIVER - SEEPAGE 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	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%		$ -
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	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	$ 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%		$ -
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%		$ -
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	Relief Well - New Type "T"	EA	$ 40,000	20%	1	$ 48,000
41	RipRap Bank Protection	CY	$ 120	20%		$ -
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%		$ -
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	$ 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	$ 100	20%		$ -
63	Utility Relocation - Underground Communications Pedestal	EA	$ 10,000	20%		$ -
64	Utility Relocation - Various Buried Facilities	LF	$ 250	20%	2,805	$ 841,500
65	Wetland Mitigation	AC	$ 25,000	20%		$ -
66	Construction Estimate					$ 7,175,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%					$ 7,422,000

WOOD RIVER - 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	$ 6,000	20%	16	$ 115,200
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	Cutoff Wall - Shallow	SF	$ 12	30%		$ -
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%		$ -
8	Dewatering	LF	$ 51	20%	4,855	$ 297,126
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%	23,763	$ 313,672
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%	23,763	$ 171,094
18	Mobilization	LS	$ 216,566	0%	1	$ 216,566
19	Pump Station - WR - New - 220+00 UWR	EA	$ 605,500	20%	1	$ 726,600
20	Pump Station - WR - New - 560+00 LWR	EA	$ 699,500	20%	1	$ 839,400
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%	1	$ 720,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	$ 42	20%		$ -
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	$ 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%		$ -
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%	5,863	$ 844,272
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 - 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 - 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 - 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%		$ -
65	Wetland Mitigation	AC	$ 25,000	20%	28	$ 840,000
66	Construction Estimate					$ 8,733,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%					$ 9,033,000

APPENDIX C – MESD CONSTRUCTION COST ESTIMATE

MESD - SUMMARY

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	Cutoff Wall - Shallow	SF	$ 12	30%	108,000	$ 1,684,800
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%	172,800	$ 2,280,960
8	Dewatering	LF	$ 51	20%	6,600	$ 403,920
9	Drainage - Enclosed - 30" Pipe	LF	$ 96	20%	0	$ -
10	Drainage - Inlet Structure	EA	$ 2,200	20%	0	$ -
11	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	$ -
20	Pump Station - WR - New - 560+00 LWR	EA	$ 699,500	20%	0	$ -
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%	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	Relief Well - Existing - Abandon	EA	$ 2,000	20%	15	$ 36,000
29	Relief Well - Existing - Convert to Type "T"	EA	$ 6,000	20%	25	$ 180,000
30	Relief Well - Existing - Hazardous Waste Premium	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
34	Relief Well - Manifold Manhole	EA	$ 3,000	20%	0	$ -
35	Relief Well - Manifold Pipe (12-Inch)	LF	$ 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	AC	$ 1,650	20%	100	$ 198,000
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%	0	$ -
51	Slip-Line - 15-Inch Pipe	LF	$ 115	20%	0	$ -
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%	0	$ -
55	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	$ 10,000	20%	0	$ -
64	Utility Relocation - Various Buried Facilities	LF	$ 250	20%	1,000	$ 300,000
65	Wetland Mitigation	AC	$ 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 - CLAY 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	$ 6,000	20%	31	$ 223,200
3	Clear & Grub - Wooded	AC	$ 21,625	20%	13	$ 337,350
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%		$ -
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%	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%		$ -
17	Haul Off of Excess Material	CY	$ 6	20%	60,753	$ 437,422
18	Mobilization	LS	$ 135,934	0%	1	$ 135,934
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%		$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%		$ -
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%		$ -
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%	6	$ 46,800
43	ROW Acquisition - Commercial	AC	$ 30,000	20%		$ -
44	ROW Acquisition - Governmental	AC	$ 25,000	20%		$ -
45	ROW Acquisition - Industrial	AC	$ 30,000	20%	7	$ 252,000
46	ROW Acquisition - Residential	AC	$ 18,000	20%		$ -
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	$ 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	$ 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	$ 250	20%		$ -
65	Wetland Mitigation	AC	$ 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

MESD - CUTOFF WALLS

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%	11	$ 79,200
3	Clear & Grub - Wooded	AC	$ 21,625	20%	5	$ 129,750
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	Cutoff Wall - Shallow	SF	$ 12	30%	108,000	$ 1,684,800
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%	172,800	$ 2,280,960
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%		$ -
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	$ 125,819	0%	1	$ 125,819
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%		$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%	500	$ 30,000
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%		$ -
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%	2	$ 15,600
43	ROW Acquisition - Commercial	AC	$ 30,000	20%		$ -
44	ROW Acquisition - Governmental	AC	$ 25,000	20%		$ -
45	ROW Acquisition - Industrial	AC	$ 30,000	20%	6	$ 216,000
46	ROW Acquisition - Residential	AC	$ 18,000	20%		$ -
47	ROW Acquisition - Vacant/Undeveloped	AC	$ 23,000	20%	8	$ 220,800
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%		$ -
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%	9,790	$ 5,874,000
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%	1,600	$ 192,000
63	Utility Relocation - Underground Communications Pedestal	EA	$ 10,000	20%		$ -
64	Utility Relocation - Various Buried Facilities	LF	$ 250	20%	1,000	$ 300,000
65	Wetland Mitigation	AC	$ 25,000	20%	2	$ 60,000
66	Construction Estimate					$ 26,139,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%					$ 27,038,000

MESD - RELIEF 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	$ 21,625	20%	5	$ 129,750
4	Cutoff Wall - Deep	SF	$ 32	30%		$ -
5	Cutoff Wall - Hazardous Waste Premium	SF	$ 28	20%		$ -
6	Cutoff Wall - Shallow	SF	$ 12	30%		$ -
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%		$ -
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%	4,000	$ 676,800
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	$ 31,134	0%	1	$ 31,134
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%		$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%	500	$ 30,000
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%	25	$ 180,000
30	Relief Well - Existing - Hazardous Waste Premium	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
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%	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%		$ -
42	ROW Acquisition - Agricultural	AC	$ 6,500	20%	4	$ 31,200
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%		$ -
48	Seeding	AC	$ 1,650	20%	18	$ 35,640
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	$ 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	$ 250	20%		$ -
65	Wetland Mitigation	AC	$ 25,000	20%	10	$ 300,000
66	Construction Estimate					$ 7,289,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%					$ 7,540,000

MESD - SEEPAGE 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	Cutoff Wall - Special Waste Premium	SF	$ 11	20%		$ -
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%	2,000	$ 338,400
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	$ 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%		$ -
25	Pvmt - Improved Roadway	LF	$ 122	20%		$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%		$ -
27	Pvmt - Road Repair	LF	$ 44	20%		$ -
28	Relief Well - Existing - Abandon	EA	$ 2,000	20%	15	$ 36,000
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%		$ -
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%	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%		$ -
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	$ 220	20%		$ -
58	Utility Relocation - High Tension Power (Raise)	EA	$ 300,000	20%	3	$ 1,080,000
59	Utility Relocation - Natural Gas Pipeline	LF	$ 500	20%	2,400	$ 1,440,000
60	Utility Relocation - Power Pole / Light Pole	EA	$ 10,000	20%	15	$ 180,000
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%	11	$ 330,000
66	Construction Estimate					$ 6,429,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%					$ 6,650,000

MESD - 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	$ 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	$ 2,200	20%		$ -
11	Drainage - Surface - Shallow Ditch	LF	$ 141	20%		$ -
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	$ 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%		$ -
17	Haul Off of Excess Material	CY	$ 6	20%	76,775	$ 552,780
18	Mobilization	LS	$ 308,481	0%	1	$ 308,481
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%	1	$ 1,019,400
22	Pump Station - PdP - Improve Existing - PdP West	EA	$ 849,500	20%		$ -
23	Pump Station - Various Improvements	EA	$ 600,000	20%	2	$ 1,440,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	$ 42	20%		$ -
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	$ 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%		$ -
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	$ 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	$ 6,000	20%	38	$ 273,600
3	Clear & Grub - Wooded	AC	$ 21,625	20%	12	$ 311,400
4	Cutoff Wall - Deep	SF	$ 32	30%	0	$ -
5	Cutoff Wall - Hazardous Waste Premium	SF	$ 28	20%	0	$ -
6	Cutoff Wall - Shallow	SF	$ 12	30%	0	$ -
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%	0	$ -
8	Dewatering	LF	$ 51	20%	0	$ -
9	Drainage - Enclosed - 30" Pipe	LF	$ 96	20%	0	$ -
10	Drainage - Inlet Structure	EA	$ 2,200	20%	0	$ -
11	Drainage - Surface - Shallow Ditch	LF	$ 141	20%	1,200	$ 203,040
12	Excavation	CY	$ 11	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	$ 6	20%	11,713	$ 84,334
18	Mobilization (% varies)	LS	$ 242,882		1	$ 242,882
19	Pump Station - WR - New - 220+00 UWR	EA	$ 605,500	20%	0	$ -
20	Pump Station - WR - New - 560+00 LWR	EA	$ 699,500	20%	0	$ -
21	Pump Station - MESD - Improve Existing - Phillips Reach	EA	$ 849,500	20%	0	$ -
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%	1	$ 720,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	$ 42	20%	0	$ -
25	Pvmt - Improved Roadway	LF	$ 122	20%	860	$ 125,904
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%	0	$ -
27	Pvmt - Road Repair	LF	$ 44	20%	5,280	$ 278,784
28	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	$ 48,700	20%	0	$ -
31	Relief Well - Existing - Rehabilitate	EA	$ 12,000	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	$ 64	20%	2,255	$ 173,184
37	Relief Well - New - Hazardous Waste Premium	EA	$ 61,950	20%	0	$ -
38	Relief Well - New - Special Waste Premium	EA	$ 16,575	20%	0	$ -
39	Relief Well - New Type "D"	EA	$ 32,500	20%	156	$ 6,084,000
40	Relief Well - New Type "T"	EA	$ 40,000	20%	0	$ -
41	RipRap Bank Protection	CY	$ 120	20%	0	$ -
42	ROW Acquisition - Agricultural	AC	$ 6,500	20%	92	$ 717,600
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%	0	$ -
46	ROW Acquisition - Residential	AC	$ 18,000	20%	0	$ -
47	ROW Acquisition - Vacant/Undeveloped	AC	$ 23,000	20%	0	$ -
48	Seeding	AC	$ 1,650	20%	77	$ 152,460
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	$ 12	20%	284,824	$ 4,101,466
50	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	$ 121	20%	0	$ -
53	Slip-Line - 24-Inch Pipe	LF	$ 132	20%	280	$ 44,352
54	Slip-Line - 27-Inch Pipe	LF	$ 138	20%	0	$ -
55	Slip-Line - 36-Inch Pipe	LF	$ 167	20%	0	$ -
56	Slip-Line - 42-Inch Pipe	LF	$ 201	20%	0	$ -
57	Slip-Line - 48-Inch Pipe	LF	$ 220	20%	0	$ -
58	Utility Relocation - High Tension Power (Raise)	EA	$ 300,000	20%	0	$ -
59	Utility Relocation - Natural Gas Pipeline	LF	$ 500	20%	0	$ -
60	Utility Relocation - Power Pole / Light Pole	EA	$ 10,000	20%	20	$ 240,000
61	Utility Relocation - Shield OE Power	LF	$ 50	20%	0	$ -
62	Utility Relocation - Underground Communication	LF	$ 100	20%	6,000	$ 720,000
63	Utility Relocation - Underground Communications Pedestal	EA	$ 10,000	20%	2	$ 24,000
64	Utility Relocation - Various Buried Facilities	LF	$ 250	20%	0	$ -
65	Wetland Mitigation	AC	$ 25,000	20%	3	$ 90,000
66	Construction Estimate					$ 17,027,000
67	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	$ 12	20%	11,713	$ 168,667
2	Clear & Grub - Light Vegetation	AC	$ 6,000	20%	4	$ 28,800
3	Clear & Grub - Wooded	AC	$ 21,625	20%	1	$ 25,950
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%		$ -
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%	11,713	$ 154,612
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%	11,713	$ 84,334
18	Mobilization	LS	$ 14,227	0%	1	$ 14,227
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%		$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%		$ -
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%		$ -
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%	1	$ 7,800
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%		$ -
48	Seeding	AC	$ 1,650	20%	6	$ 11,880
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	$ 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	$ 250	20%		$ -
65	Wetland Mitigation	AC	$ 25,000	20%		$ -
66	Construction Estimate					$ 496,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%					$ 513,000

PdP & FISH LAKE - RELIEF 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%		$ -
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	Cutoff Wall - Shallow	SF	$ 12	30%		$ -
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%		$ -
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%	1,200	$ 203,040
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	$ 19,833	0%	1	$ 19,833
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%		$ -
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%		$ -
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%	38	$ 273,600
30	Relief Well - Existing - Hazardous Waste Premium	EA	$ 48,700	20%		$ -
31	Relief Well - Existing - Rehabilitate	EA	$ 12,000	20%	33	$ 475,200
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%	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	$ 64	20%	2,255	$ 173,184
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%	156	$ 6,084,000
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%	33	$ 257,400
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%		$ -
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	$ 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	$ 250	20%		$ -
65	Wetland Mitigation	AC	$ 25,000	20%		$ -
66	Construction Estimate					$ 7,771,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%					$ 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	$ 12	20%		$ -
2	Clear & Grub - Light Vegetation	AC	$ 6,000	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	Cutoff Wall - Shallow	SF	$ 12	30%		$ -
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%		$ -
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%		$ -
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	$ 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	$ 122	20%	860	$ 125,904
26	Pvmt - Roads & Trails - Remove & Replace	SY	$ 50	20%		$ -
27	Pvmt - Road Repair	LF	$ 44	20%		$ -
28	Relief Well - Existing - Abandon	EA	$ 2,000	20%	27	$ 64,800
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%		$ -
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%	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%		$ -
48	Seeding	AC	$ 1,650	20%	71	$ 140,580
49	Seepage Berm Material - Haul On and Placement (Hauled)	CY	$ 12	20%	284,824	$ 4,101,466
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	$ 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%	20	$ 240,000
61	Utility Relocation - Shield OE Power	LF	$ 50	20%		$ -
62	Utility Relocation - Underground Communication	LF	$ 100	20%	6,000	$ 720,000
63	Utility Relocation - Underground Communications Pedestal	EA	$ 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	$ 6,000	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	Cutoff Wall - Shallow	SF	$ 12	30%		$ -
7	Cutoff Wall - Special Waste Premium	SF	$ 11	20%		$ -
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%		$ -
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%		$ -
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%	1	$ 1,019,400
23	Pump Station - Various Improvements	EA	$ 600,000	20%	1	$ 720,000
24	Pvmt - Curb & Gutter - Remove & Replace	LF	$ 42	20%		$ -
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	$ 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%		$ -
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%		$ -
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%	280	$ 44,352
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	LF	$ 250	20%		$ -
65	Wetland Mitigation	AC	$ 25,000	20%		$ -
66	Construction Estimate					$ 2,124,000
67	Construction Estimate Escalated to Mid-Point of 4 Yrs @ 3.44%					$ 2,197,000

APPENDIX E – UNIT COST DEVELOPMENT

Cost Item #01 - Clay Cap/Clay Blanket Material - Haul On & Placement				
Description	**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

Includes:
- clay fill material
- haul on
- placement & compaction
-
-
-
-
-
-
-

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	**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	$1,950.00
Total	**$/AC**			**$6,075.00**
Unit Cost value used in Cost Estimate	**$/AC**			**$6,000.00**

Champion: Safford

Includes:
- clearing
- grubbing
- removal & disposal of material
-
-
-
-
-
-
-

Excludes:
- contingency
- mobilization
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-
-
-
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-
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Basis / Assumptions:
- based on RSMeans cost data
- validated by comparison to IDOT bid tabs
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Cost Item #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: Safford

Includes:
- clearing
- grubbing
- removal & disposal of material
-
-
-
-
-
-
-

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 Item #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**

Champion: Sawitzki

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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Cost Item #05 - Cutoff Wall - Hazardous Waste Premium				
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
-
-
-
-
-
-
-

Basis / Assumptions:
- based on various costs data provided by Contractor (HBI) and past job experience
- soil must be taken to a hazardous waste disposal facility (Peoria, IL) - $23/SF
- cost est. for daily sampling, worker PPE and Equipment costs - $0.50/SF
- cost to stage waste on site, double handle and production slowdown - $4.50/SF
- assumes that within reaches identified to be "environmental areas", 50% of the wall will be in impacted soil
- assumes that 20% of impacted soil will be Hazardous Waste
- assumes that 80% of impacted soil will be Special Waste
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Cost Item #06 - Cutoff Wall - Shallow				
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 Item #07 - Cutoff Wall - Special Waste Premium				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Cutoff Wall - Special Waste Premium	SF	$11.00	1.00	$11.00
Total	**$/SF**			**$11.00**
Unit Cost value used in Cost Estimate	**$/SF**			**$11.00**

Champion: Sawitzki

Includes:
- mobilization
- waste characterization
- transport & disposal of soil
- contractor extra handling and production decrease
-
-
-
-
-
-

Excludes:
- contingency
- cutoff wall construction
- hazardous waste disposal
-
-
-
-
-
-
-

Basis / Assumptions:
- based on various cost data provided by HBI and past job experience
- soil must be taken to a local special waste disposal facility - $6/SF
- cost est. for daily sampling, worker PPE and Equipment costs - $0.50/SF
- cost to stage waste on site, double handle and production slowdown - $4.50/SF
- assumes that within reaches identified to be "environmental areas", 50% of the wall will be in impacted soil
- assumes that 20% of impacted soil will be Hazardous Waste
- assumes that 80% of impacted soil will be Special Waste
-
-
-
-
-
-
-

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

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

Excludes:
- contingency
- mobilization
-
-
-
-
-
-
-

Basis / Assumptions:
- 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: Hasty

Includes:
- pipe
- bedding
- installation
- excavation
- backfill
- shoring / bracing
-
-
-
-

Excludes:
- contingency
- mobilization
- sodding
- restoration
-
-
-
-
-
-

Basis / Assumptions:
- 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
-
-
-
-
-
-
-
-
-

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**

Champion: Hasty

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

Excludes:
- contingency
- mobilization
- sodding
- restoration
-
-
-
-
-
-

Basis / Assumptions:
- 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
-
-
-
-
-
-
-

Basis / Assumptions:
- 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
-
-
-

Cost Item #12 - Excavation				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Excavation	CY	$11.00	1.00	$11.00
				$0.00
Total	**$/CY**			**$11.00**
Unit Cost value used in Cost Estimate	**$/CY**			**$11.00**

Champion: Coronel

Includes:
- excavation of trenches, benching into levee face, etc.
- stockpiling of excavated material
- loading of excavated material
-
-
-
-
-
-
-

Excludes:
- contingency
- mobilization
- mass grading
- transporting of excavated material
-
-
-
-
-
-

Basis / Assumptions:
- applicable for linear type excavation such as trenching or benching into face of levee
- excavation cost based on IDOT bid tabs
-
-
-
-
-
-
-
-
-
-
-

Cost Item #13 - Gravel Filter - D50=#4 Material - Haul On & Placement				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Gravel material (D50=#4)	CY	$10.53	1.00	$10.53
Haul on	CY	$11.34	1.00	$11.34
Placement of gravel material	CY	$1.99	1.00	$1.99
Total	**$/CY**			**$23.86**
Unit Cost value used in Cost Estimate	**$/CY**			**$24.00**

Champion: Coronel

Includes:
- gravel material
- haul on
- placement
-
-
-
-
-
-
-

Excludes:
- contingency
- mobilization
-
-
-
-
-
-
-

Basis / Assumptions:
- 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
-
-
-
-
-
-
-

Cost Item #14 - Gravel Filter - D50=2" Material - Haul On & Placement				
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**

Champion: Coronel

Includes:
- gravel material
- haul on
- placement
-
-
-
-
-
-
-

Excludes:
- contingency
- mobilization
-
-
-
-
-
-
-

Basis / Assumptions:
- 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,
-
-
-
-
-
-
-

Cost Item #15 - Gravel Filter - Geotextile - Material & Installation				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Gravel Filter - Geotextile - Material & Installation	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
-
-
-
-
-
-
-
-

Excludes:

- contingency
- mobilization
-
-
-
-
-
-
-
-

Basis / Assumptions:

- based on IDOT bid tabs
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-

Cost Item #16 - Gravel Filter - Sand Material - Haul On & Placement				
Description	**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

Includes:
- material
- haul on
- placement
-
-
-
-
-
-
-

Excludes:
- contingency
- mobilization
-
-
-
-
-
-
-
-

Basis / Assumptions:
- based on prices from local contractors (Baxmeyer Excavating, Luhr Brothers, etal)
- other potential sources of fill material include Bussen Quarries, Walker Aggregates, Inc., Columbia Quarry Company
-
-
-
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Cost Item #17 - Haul Off of Excess Material				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Haul Off of Excess Material	CY	$5.20	1.00	$5.20
Total	**$/CY**			**$5.20**
Unit Cost value used in Cost Estimate	**$/CY**			**$6.00**

Champion: Hasty

Includes:
- haul off
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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				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Total				
Unit Cost value used in Cost Estimate	**LS**			**varies**

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 cost
- 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, 62, 63, 64 & 65
- ROW acquisition cost items 42, 43, 44, 45, 46 & 47 have no mobilization
- mobilization for cost items 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 33, 34, 35, 36, 41, 48, 49, 50, 51, 52, 53, 54, 55, 56 & 57 is based on 3% of estimated construction cost
- mobilization for cost items 4 & 6 is based on proration of the quoted mobilization cost to the estimated construction 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**

Champion: Hasty

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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Basis / Assumptions:
- 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**

Champion: Hasty

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

Champion: Hasty

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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Basis / Assumptions:
- 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**

Champion: Hasty

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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Basis / Assumptions:
- Design Capacity = 47 cfs
- TDH = 35'
- based on RSMeans cost data
- validated by comparison to historical cost data from similar projects
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Cost Item #23 - Pump Station - Various Improvements				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
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 pump station
- upgrades include new pumps with higher capacity and upgrades to electric 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 Item #24 - Pvmt - Curb & Gutter - Remove & Replace				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Pvmt - Curb & Gutter - Remove & Replace	LF	$42.00	1.00	$42.00
Total	**$/LF**			**$42.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$42.00**

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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Cost Item #25 - Pvmt - Improved Roadway				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Pvmt - Improved Roadway	SY	$50.00	2.44	$122.00
Total	**$/LF**			**$122.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$122.00**

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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Excludes:
- contingency
- mobilization
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Basis / Assumptions:
- applicable for areas where seepage berms, fill or other improvements occur over an existing paved roadway
- based on 22' wide road
- based on IDOT bid tabs
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Cost Item #26 - Pvmt - Roads & Trails - Remove & Replace				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Pvmt - Roads & Trails - Remove & Replace	SY	$50.00	1.00	$50.00
Total	**$/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:
- applicable for paved trails & roads on the levee crest that will be disturbed during construction
- applicable for paved trails & roads in areas that will be disturbed during construction
- based on IDOT bid tabs
- assumes that pavement will go back on original horizontal & vertical alignment
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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**

Champion: Coronel

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
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Excludes:
- contingency
- mobilization
- grading
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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
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Cost Item #28 - Relief Well - Existing - Abandon				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Relief Well - Existing - Abandon	EA	$2,000.00	1.00	$2,000.00
Total	**$/EA**			**$2,000.00**
Unit Cost value used in Cost Estimate	**$/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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Basis / Assumptions:
- based on prices from local contractors (Contract Dewatering Services, Inc., Geotechnical Construction Inc. and Pensoneau Construction Inc.)
- validated by comparison to historical cost data from similar projects
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Cost Item #29 - Relief Well - Existing - Convert to Type "T"				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Relief Well - Existing - Convert to Type "T"	EA	$6,000.00	1.00	$6,000.00
Total	**$/EA**			**$6,000.00**
Unit Cost value used in Cost Estimate	**$/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 (Contract Dewatering Services, Inc., Geotechnical Construction Inc. and Pensoneau Construction Inc.)
- validated by comparison to historical cost data from similar projects
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Cost Item #30 - Relief Well - Existing - Hazardous 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	$45,000.00	1.00	$45,000.00
Labor	EA	$2,500.00	1.00	$2,500.00
Total	**$/EA**			**$48,700.00**
Unit Cost value used in Cost Estimate	**$/EA**			**$48,700.00**

Champion: Hladick

Includes:
- mobilization
- waste characterization
- 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 - Rehabilitate				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Relief Well - Existing - Rehabilitate	EA	$12,000.00	1.00	$12,000.00
Total	**$/EA**			**$12,000.00**
Unit Cost value used in Cost Estimate	**$/EA**			**$12,000.00**

Champion: Hladick

Includes:
- mobilization
- air lifting and/or chemical cleaning to achieve desired performance
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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 (Contract Dewatering Services, Inc., Geotechnical Construction Inc. and Pensoneau Construction Inc.)
- validated by comparison to historical cost data from similar projects
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Cost Item #32 - 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**

Champion: Hladick

Includes:
- mobilization
- waste characterization
- transportation & disposal of water
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Excludes:
- contingency
- contaminated soil media
- well rehabilitation
- hazardous waste disposal
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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
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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

Includes:
- pipe
- bedding
- installation
- backfill
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Excludes:
- 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**

Champion: Hladick

Includes:
- pipe
- bedding
- installation
- backfill
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Excludes:
- 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**

Champion: Hladick

Includes:
- pipe
- bedding
- installation
- backfill
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Excludes:
- 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: Hladick

Includes:
- mobilization
- waste characterization
- transportation & disposal of water
- transportation & disposal of soil
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Excludes:
- contingency
- well installation & development
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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
- soil must be taken to a hazardous waste disposal facility
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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

Includes:
- mobilization
- waste characterization
- transportation & disposal
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Excludes:
- contingency
- contaminated soil media
- hazardous waste disposal
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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 prior to disposal
- soil must be taken to a special waste disposal facility
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Cost Item #39 - Relief Well - New Type "D"				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Relief Well - New Type "D"	EA	$32,500.00	1.00	$32,500.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
Total	**$/EA**			**$32,500.00**
Unit Cost value used in Cost Estimate	**$/EA**			**$32,500.00**

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:
- based on prices from local contractors (Contract Dewatering Services, Inc., Geotechnical Construction Inc. and Pensoneau Construction Inc.)
- validated by comparison to historical cost data from similar projects
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Cost Item #40 - Relief Well - New Type "T"				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Relief Well - New Type "T"	EA	$40,000.00	1.00	$40,000.00
Total	**$/EA**			**$40,000.00**
Unit Cost value used in Cost Estimate	**$/EA**			**$40,000.00**

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 (Contract Dewatering Services, Inc., Geotechnical Construction Inc. and Pensoneau Construction Inc.)
- validated by comparison to historical cost data from similar projects
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Cost Item #41 - RipRap Bank Protection				
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**			**$120.00**
Unit Cost value used in Cost Estimate	**$/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
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Cost Item #42 - ROW Acquisition - 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**			**$6,500.00**
Unit Cost value used in Cost Estimate	**$/AC**			**$6,500.00**

Champion: Schneider

Includes:

- land costs associated with fee simple right-of-way acquisition for construction of levee improvements
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Excludes:

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
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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
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Cost Item #43 - ROW Acquisition - Commercial				
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**			**$30,000.00**
Unit Cost value used in Cost Estimate	**$/AC**			**$30,000.00**

Champion: Schneider

Includes:

- land costs associated with fee simple right-of-way acquisition for construction of levee improvements
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Excludes:

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
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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
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Cost Item #44 - ROW Acquisition - Governmental				
Description	**Unit**	**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

Includes:

- land costs associated with fee simple right-of-way acquisition for construction of levee improvements
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Excludes:

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
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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
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Cost Item #45 - ROW Acquisition - Industrial				
Description	**Unit**	**Cost**	**Quantity / Unit**	**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**

Champion: Schneider

Includes:

- land costs associated with fee simple right-of-way acquisition for construction of levee improvements
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Excludes:

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
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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
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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	$18,000.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
Total	**$/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 improvements
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Excludes:

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
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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
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Cost Item #47 - ROW Acquisition - Vacant/Undeveloped				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
ROW 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
				$0.00
Total	**$/AC**			**$23,000.00**
Unit Cost value used in Cost Estimate	**$/AC**			**$23,000.00**

Champion: Schneider

Includes:

- land costs associated with fee simple right-of-way acquisition for construction of levee improvements
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Excludes:

- contingency
- appraisal / valuation services
- acquisition / negotiation services
- legal / condemnation costs
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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
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Cost Item #48 - Seeding				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Seeding	AC	$1,650.00	1.00	$1,650.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
Total	**$/AC**			**$1,650.00**
Unit Cost value used in Cost Estimate	**$/AC**			**$1,650.00**

Champion: Coronel

Includes:
- surface preparation
- seed
- mulch
- fertilizer
- truck irrigation
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Excludes:
- contingency
- mobilization
- finish grading
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Basis / Assumptions:
- based on standard MoDOT historical unit cost
- adjust based on IDOT bid tabs
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Cost Item #49 - Seepage Berm Material - Haul On and Placement (Hauled)				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Seepage berm fill material	CY	$12.00	1.00	$12.00
Total	**$/CY**			**$12.00**
Unit Cost value used in Cost Estimate	**$/CY**			**$12.00**

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 from similar projects
- potential sources of fill material include dredged material from suppliers such as Bangert with excess capacity on their existing permits
- dredged material could be delivered via a temporary barge/conveyor system
- other potential sources of fill material include Bussen Quarries, Walker Aggregates, Inc., Columbia Quarry Company
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Cost Item #50 - Slip-Line - 12-Inch Pipe				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Slip-Line - 12-Inch Pipe	LF	$110.00	1.00	$110.00
Total	**$/LF**			**$110.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$110.00**

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
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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
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Cost Item #51 - Slip-Line - 15-Inch 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 construction 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
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Cost Item #52 - Slip-Line - 18-Inch Pipe				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Slip-Line - 18-Inch Pipe	LF	$121.00	1.00	$121.00
Total	**$/LF**			**$121.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$121.00**

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
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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
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Cost Item #53 - Slip-Line - 24-Inch Pipe				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Slip-Line - 24-Inch Pipe	LF	$132.00	1.00	$132.00
Total	**$/LF**			**$132.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$132.00**

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
- 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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Cost Item #54 - Slip-Line - 27-Inch Pipe				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Slip-Line - 27-Inch Pipe	LF	$138.00	1.00	$138.00
Total	**$/LF**			**$138.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$138.00**

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
-
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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
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Cost Item #55 - Slip-Line - 36-Inch Pipe				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Slip-Line - 36-Inch Pipe	LF	$167.00	1.00	$167.00
Total	**$/LF**			**$167.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$167.00**

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
- 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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Cost Item #56 - Slip-Line - 42-Inch Pipe				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Slip-Line - 42-Inch Pipe	LF	$201.00	1.00	$201.00
Total	**$/LF**			**$201.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$201.00**

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
-
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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
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Cost Item #57 - Slip-Line - 48-Inch Pipe				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Slip-Line - 48-Inch Pipe	LF	$220.00	1.00	$220.00
Total	**$/LF**			**$220.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$220.00**

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
-
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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
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Cost Item #58 - Utility Relocation - High Tension 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**			**$300,000.00**
Unit Cost value used in Cost Estimate	**$/EA**			**$300,000.00**

Champion: Loomis

Includes:

- mobilization
- raise one double circuit transmission lattice structure tower to provide required ground clearance in areas of fill
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Excludes:

- contingency
- alignment change
- right of way acquisition
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Basis / Assumptions:

- based on cost data provided by Terry Grass of Ameren
- validated by comparison to historical cost data from nearby Mississippi River bridge project
- all work executed by utility company
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Cost Item #59 - Utility Relocation - Natural Gas Pipeline				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Utility Relocation - Natural Gas Pipeline	LF	$500.00	1.00	$500.00
Total	**$/LF**			**$500.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$500.00**

Champion: Loomis

Includes:

- mobilization
- relocation of a gas pipeline to a new alignment to avoid conflict with cutoff wall construction
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Excludes:

- contingency
- right of way acquisition
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Basis / Assumptions:

- based on conceptual cost data provided by Phil Davidson of ConocoPhillips
- all work executed by utility company
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Cost Item #60 - Utility Relocation - Power Pole / Light Pole				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Utility Relocation - Power Pole / Light Pole	EA	$10,000.00	1.00	$10,000.00
Total	**$/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 alignment to avoid conflict with levee 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
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Cost Item #61 - Utility Relocation - Shield OE Power				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Utility Relocation - Shield OE Power	LF	$50.00	1.00	$50.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
Total	**$/LF**			**$50.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$50.00**

Champion: Safford

Includes:
- mobilization
- installation of shielding on OE transmission lines as required for construction in close proximity to live lines
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Excludes:
- contingency
- de-energizing lines
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Basis / Assumptions:
- 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 Item #62 - Utility Relocation - Underground Communication				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Utility Relocation - Underground Communication	LF	$100.00	1.00	$100.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
Total	**$/LF**			**$100.00**
Unit Cost value used in Cost Estimate	**$/LF**			**$100.00**

Champion: Loomis

Includes:
- mobilization
- relocation of buried communication lines to a new alignment to avoid conflict with levee repair construction
-
-
-
-
-
-
-
-

Excludes:
- contingency
- right of way acquisition
-
-
-
-
-
-
-
-

Basis / Assumptions:
- based on cost data provided by Cory Birk from Charter Communication
- all work executed by utility company
-
-
-
-
-
-
-
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-
-

Cost Item #63 - Utility Relocation - Underground Communications Pedestal				
Description	**Unit**	**Cost**	**Quantity / Unit**	**Total**
Utility Relocation - Underground Communications Pedestal	EA	$10,000.00	1.00	$10,000.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
				$0.00
Total	**$/EA**			**$10,000.00**
Unit Cost value used in Cost Estimate	**$/EA**			**$10,000.00**

Champion: Loomis

Includes:

- mobilization
- relocation of a communication pedestal to a new alignment to avoid conflict with levee repair construction
-
-
-
-
-
-
-
-

Excludes:

- contingency
- right of way acquisition
-
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-
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-
-

Basis / Assumptions:

- based on cost data provided by Cory Birk from Charter Communication
- all work executed by utility company
-
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-
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-

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**

Champion: Loomis

Includes:
- 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
-
-
-
-

Excludes:
- contingency
- right of way acquisition
-
-
-
-
-
-
-

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**

Champion: Fikri

Includes:
- mobilization
- initial grading to bring site to design grade
- initial planting of mitigation site
- maintenance and monitoring for 6 years following construction
-
-
-
-
-
-

Excludes:
- contingency
- design costs
- legal documentation of conservation easements/deed restrictions
-
-
-
-
-
-
-

Basis / Assumptions:
- 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
-
-
-
-
-
-
-

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	x	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

Compound Escalation =		1.03440889	or	3.44%

Reference:

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

APPENDIX G – HAYWARD BAKER CONCEPTUAL CONSTRUCTION COST ESTIMATE

Conceptual Estimated Costs - SW Illinois Levee Project

22-Apr-11

Technology		Price per Sq Ft Shallow Wall	Deep Wall		Pros	Cons
	Mobilization	< 50'	> 50'< 90'	> 90'		
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	NA	NA	Predictable performance	no tolerance for obstructions, depth limit, splitting sheets will reduce effectiveness
Jet Grout Wall					Ideal for work around utilties and other crossings, can be used beneath structures, can drill through obstructions, ability to treat at depth only, vs back to grade, with small equipment, can work on a limited bench	Single panel wall lacks redundancy, concern with vertical alignment of tools resulting in windows
Single Panel Wall	$80,000	$24-26	$24-26	$24-26		
Double Panel Wall	$80,000	$30 - 35	$32 - 35	$35 - 38		
Full Column Wall	$80,000	$50 - 60	$60 - 80	$60 - 80		
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

HAYWARD BAKER
Geotechnical Construction
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