US Army Corps of Engineers ® Pacific Ocean Division	**COST ENGINEERING REPORT** **APPENDIX**	Alaska District

NAVIGATIONAL IMPROVEMENTS

CRAIG, ALASKA

Cost Engineering Division
Alaska District
U.S. Army Corps of Engineers

NAVIGATION IMPROVEMENTS

CRAIG, ALASKA

Cost Narrative

Project Description:

The purpose of this project is to evaluate the feasibility of constructing a small boat harbor for the port of Craig. The estimate is based on concept designs that have rubble mound breakwater configurations and a natural harbor. The breakwaters will provide protection from the prevailing southwesterly waves. Dredging of the basin is not required. Alternatives 2, 3 and 4 were rejected are not being estimated as there are technical issues that make these alternatives undesirable. The alternatives being considered are 2a, 2b and 1. Alternatives 2a & 2b share the same basin size at 10.1 acres while alternative 1 has a smaller basin area of 8.5 acres.

Alternative 2a would have two breakwaters. The land-attached breakwater would be placed on the west side and is 956 feet long with a north-south alignment. The second breakwater would be on the north side and is 957 feet long with an east-west alignment.

Alternative 2b will have a small land-attached stub breakwater on the west side which would be 318 feet long with a small fish pass (at least 3' wide available 95% of the time). The larger main breakwater would be a dog leg with a small overlap to prevent swell within the harbor. The breakwater would be 1606 feet long.

Alternative 1 is similar to the breakwaters in alternative 2b with the dog leg breakwater measuring in at only 1462 feet long.

There is approximately 3,000 square feet of old dock and piers, 7,650 VLF of pilings and other miscellaneous debris to be removed from the job site. The assumption for the purposes of the cost estimate is for the debris to be disposed of at the local landfill which is approximately 3 miles from the job site.

Development of Costs and the Estimate:

Design Documents: The designs used for this estimate were provided by POA Hydraulics and Hydrology Section, and summarized in the rest of the report. They were concept level in nature and included a plan and section drawing. H&H provided the quantities for each material type and these were used for the current working estimates. Similar projects within POA were referred to for typical general condition requirements (contractor oversight, permits, plans).

Cost Estimate: All of the alternatives were initially developed using excel using historical pricing from similar projects.

The current working cost estimate for Alt 2b was developed using MCACES 2nd Generation estimating software. All estimates were done in accordance with guidance contained in ER 1110-2-1302, Civil Works Cost Engineering. The Mii estimate was prepared using MII version 4.2, the 2012-b English Cost Library, 2014 Davis Bacon South 63rd wages from General Decision AK140001 AK1 Construction Type Labor Library dated 04/25/2014The equipment library used if the Mii Equipment 2014 Region 09.

Labor and Equipment Productivity: The assumed work schedule would be 6 days a week, 12 hours a day. The estimate assumes overtime hours and has been implemented in the MCACES estimate to account for additional labor and equipment adjustments. The estimate assumes an overall production index of 100% as the location is in a temperate climate zone, the methodology of the construction is well understood by marine contractors, is not extremely complex, and there will be few if any anticipated weather or other types of delays. Vessel traffic thru the site or others using the docks should have little impact on the construction.

The estimate has been updated with the following fuel prices with an average for the area from the *Alaska Fuel Price Report: Current Community Conditions, January 2014*: $4.15/gal for off-road diesel, $4.75/gal for on-road diesel, and $4.25/gal for gasoline. Marine diesel fuel in Ketchikan was $3.70/Gal in July 2014.

Escalation has been estimated to a mid-point construction of July 2017 using EM 1110-2-1304, March 2014.

Contingency: Contingency was developed in the abbreviated risk register. H&H and Geotechnical departments were involved with the impacts discussion. The highest factors in the risk register were based upon the demolition work. The dock and pilings are known factors but other possible debris quantity was noted during the site visit and may have unknown impacts. There may also be archeological impacts that are not known. Eel grass in the area has been studied and the impacts are considered negligible. There is also a slight risk of migratory whales in area but this would be an uncommon occurrence in the area.

The breakwater construction is a moderate/high risk. The assumption is rock is readily available in close proximity of the proposed construction site. However, if there was a need to bring in rock from another source, this would have significant cost impacts. There is a good indication that the quarry at Klawock should be able to meet specs for the project as they have met specs for the local DOT.

Contractor Markups: JOOH and HOOH were assumed at 8% for JOOH, 4% for HOOH and prime profit is based upon the Profit Weighted Guidelines which came up with 8.05% profit.

Assumptions and Factors impacting the Cost Estimates:

Mob/demob is assumed out of Anchorage, AK which is approximately 970 miles from Craig. Equipment may be found locally but may not be readily available during the construction phase of the project.

A site visit was conducted in April 2014. Several quarries were observed in various conditions for potential to provide rock to the project within a 10 mile radius including an island that is approximately 4 miles from the proposed site. See the table below for additional information.

	Viable	Rock Available			Distance	Delivery Method	Active
		Core Rock	B Rock	A Rock			
Shaan Seet Quarries							
Lower 62 Pit	Yes	Yes	Yes	Yes	3 Miles	Barge	Yes
Upper 62 Pit	No	N/A	N/A	N/A	N/A	N/A	N/A
4.5 Mile	Yes	Yes	No	No	4.5 Miles	Land/Barge	Unknown*
5 Mile	Unknown**	N/A	N/A	N/A	N/A	N/A	N/A
Wolf Lake	No	N/A	N/A	N/A	9 Miles	N/A	N/A
St. Johns quarry	Yes	Yes	Yes	Yes	4 Miles	Barge	No
Southeast Road Builders							
Klawock	Yes	Yes	Yes	Yes	7 Miles	Land	Yes
Black Rock quarry	Yes	Yes	Yes	No	8 Miles	Land	Yes

*No equipment on site

**Unable to do a visual inspection

The estimate assumes that Klawock quarry will be used. Klawock's quarry appears to have enough rock and equipment to provide all three types of rock for the rubble-mound breakers. It is an active quarry mining rock providing sand and gravel to the community along with a busy asphalt division. It is located about seven miles from the job site. Rock would be transported by trucks to a staging area at the job site.

The estimate has been updated with historically quoted material prices, production rates and equipment costs.

Construction of the breakwater is assumed to be built from the land out, building a road for the equipment to place the rock for the breakwater similar to the breakwater built in Nome Alaska. There is also an equipment working barge included in the estimate as some work (especially around the toe area) including placing rock might be best accomplished from an in-water platform.

The majority of the preliminary design associated with this project is the rock for the breakwater construction. There is space within 500 hundred feet of the construction site for stockpiling. Rock can be trucked in and placed in the open areas between the existing buildings while construction takes place. Include all costs for handling and re-handling stockpiled/stored materials

Description	Quantity	UOM	ContractCost	Contingency	SIOH	ProjectCost
Project Cost Summary Report			**26,738,637**	**0**	**0**	**26,738,637**
			901,402.21			*901,402.21*
Mobilization-Demobilization	**1.00**	**EA**	**901,402**	**0**	**0**	**901,402**
			21,551.56			*21,551.56*
Shutdown and Closeout Work	**1.00**	**EA**	**21,552**	**0**	**0**	**21,552**
			62,703.83			*62,703.83*
Preliminary and Startup Work	**1.00**	**EA**	**62,704**	**0**	**0**	**62,704**
			1,854.77			*1,854.77*
Personnel Mob/Demob	**10.00**	**EA**	**18,548**	**0**	**0**	**18,548**
			1,711.35			*1,711.35*
Road Mob/Demob	**1.00**	**EA**	**1,711**	**0**	**0**	**1,711**
			796,887.80			*796,887.80*
Barge Mobilization & Demobilization	**1.00**	**EA**	**796,888**	**0**	**0**	**796,888**
			181,020.29			*181,020.29*
Surveys	**1.00**	**EA**	**181,020**	**0**	**0**	**181,020**
			90,510.14			*90,510.14*
Hydrographic surveys	**2.00**	**EA**	**181,020**	**0**	**0**	**181,020**
			302,181.97			*302,181.97*
Demolition	**1.00**	**EA**	**302,182**	**0**	**0**	**302,182**
Demo of existing facilities and drydock	**1.00**	**LS**	**302,182**	**0**	**0**	**302,182**
			18,586,887.66			*18,586,887.66*
Breakwater Construction	**1.00**	**EA**	**18,586,888**	**0**	**0**	**18,586,888**
			9,169.66			*9,169.66*
CONSTRUCT BREAKWATER	**2,025.00**	**LF**	**18,568,572**	**0**	**0**	**18,568,572**
			6,105.37			*6,105.37*
Navigation Markers	**3.00**	**EA**	**18,316**	**0**	**0**	**18,316**
			6,767,144.76			*6,767,144.76*
Inner Harbor Development	**1.00**	**EA**	**6,767,145**	**0**	**0**	**6,767,145**
			2,454,531.90			*2,454,531.90*
Piles, Caps & Anodes	**1.00**	**EA**	**2,454,532**	**0**	**0**	**2,454,532**
			4,312,612.86			*4,312,612.86*
Mooring Floats/Gangways	**1.00**	**EA**	**4,312,613**	**0**	**0**	**4,312,613**

****** TOTAL PROJECT COST SUMMARY ******

PROJECT: CRAIG NAVIGATION IMPROVEMENTS Alt 2b, TSP
PROJECT NO: P2 102831
LOCATION: Craig, Alaska

DISTRICT: POA Alaska District PREPARED: 12/5/2014
POC: CHIEF, COST ENGINEERING, K. Harve

This Estimate reflects the scope and schedule in report; Craig Harbor Integrated Feasibility Report and EA

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): 7-Jul-1905									
						Effective Price Level Date: 1 OCT 14									
										Spent Thru:					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	10/1/2013 ($K)	FIRST COST ($K)	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*				*M*	*N*	*O*
10	BREAKWATER & SEAWALLS	$901	$156	17%	$1,057	0.0%	$901	$156	$1,057	$0	$1,057	4.9%	$946	$164	$1,109
10	BREAKWATER & SEAWALLS	$302	$86	28%	$388	0.0%	$302	$86	$388	$0	$388	4.9%	$317	$90	$407
10	BREAKWATER & SEAWALLS	$18,768	$4,604	25%	$23,372	0.0%	$18,768	$4,604	$23,372	$0	$23,372	4.9%	$19,690	$4,830	$24,520
12	NAVIGATION PORTS & HARBORS	$4,313	$481	11%	$4,793	0.0%	$4,313	$481	$4,793	$0	$4,793	4.9%	$4,525	$504	$5,029
12	NAVIGATION PORTS & HARBORS	$2,455	$323	13%	$2,778	0.0%	$2,455	$323	$2,778	$0	$2,778	4.9%	$2,575	$339	$2,914
12	NAVIGATION PORTS & HARBORS	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
12	NAVIGATION PORTS & HARBORS	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
12	NAVIGATION PORTS & HARBORS	$0	$0	-	$0	-	$0	$0	$0	$0	$0	-	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$26,739	$5,649		$32,388	0.0%	$26,739	$5,649	$32,388	$0	$32,388	4.9%	$28,052	$5,927	$33,979
01	LANDS AND DAMAGES	$23	$2	10%	$25	0.0%	$23	$2	$25	$0	$25	1.9%	$23	$2	$26
30	PLANNING, ENGINEERING & DESIGN	$4,008	$256	6%	$4,264	0.0%	$4,008	$256	$4,264	$0	$4,264	4.2%	$4,175	$267	$4,441
31	CONSTRUCTION MANAGEMENT	$2,139	$137	6%	$2,276	0.0%	$2,139	$137	$2,276	$0	$2,276	9.5%	$2,343	$150	$2,493
	PROJECT COST TOTALS:	$32,909	$6,045	18%	$38,954		$32,909	$6,045	**$38,954**	$0	**$38,954**	5.1%	$34,593	$6,346	$40,939

	CHIEF, COST ENGINEERING, K. Harvey	ESTIMATED FEDERAL COST:	**80%** **$32,751**
	PROJECT MANAGER, L. Cordova	ESTIMATED NON-FEDERAL COST:	**20%** **$8,188**
	CHIEF, REAL ESTATE, M. Coy	**ESTIMATED TOTAL PROJECT COST:**	**$40,939**
	CHIEF, PLANNING,B. Sexauer		
	CHIEF, ENGINEERING, D. Frenier		
	CHIEF, OPERATIONS, A. Churchill		
	CHIEF, CONSTRUCTION, P. Coullahan		
	CHIEF, CONTRACTING, C. Tew		
	CHIEF, PM-PB, K. Farmer		
	CHIEF, DPM, M. Coburn		

****** TOTAL PROJECT COST SUMMARY ******

****** CONTRACT COST SUMMARY ******

PROJECT: CRAIG NAVIGATION IMPROVEMENTS Alt 2b, TSP
LOCATION: Craig, Alaska
This Estimate reflects the scope and schedule in report; Craig Harbor Integrated Feasibility Report and EA

DISTRICT: POA Alaska District
POC: CHIEF, COST ENGINEERING, K. Harvey

PREPARED: 12/5/2014

Estimate Prepared: **15-Mar-14**
Effective Price Level: 01-Oct-14

Program Year (Budget EC): 2015
Effective Price Level Date: 1 OCT 14

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
				RISK BASED										
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	Contract 1													
10	BREAKWATER & SEAWALLS	$901	$156	17%	$1,057	0.0%	$901	$156	$1,057	2017Q3	4.9%	$946	$164	$1,109
10	BREAKWATER & SEAWALLS	$302	$86	28%	$388	0.0%	$302	$86	$388	2017Q3	4.9%	$317	$90	$407
10	BREAKWATER & SEAWALLS	$18,768	$4,604	25%	$23,372	0.0%	$18,768	$4,604	$23,372	2017Q3	4.9%	$19,690	$4,830	$24,520
12	NAVIGATION PORTS & HARBORS	$4,313	$481	11%	$4,793	0.0%	$4,313	$481	$4,793	2017Q3	4.9%	$4,525	$504	$5,029
12	NAVIGATION PORTS & HARBORS	$2,455	$323	13%	$2,778	0.0%	$2,455	$323	$2,778	2017Q3	4.9%	$2,575	$339	$2,914
12	NAVIGATION PORTS & HARBORS	$0	$0	0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
12	NAVIGATION PORTS & HARBORS	$0	$0	0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
12	NAVIGATION PORTS & HARBORS	$0	$0	0%	$0	0.0%	$0	$0	$0	0	0.0%	$0	$0	$0
	CONSTRUCTION ESTIMATE TOTALS:	$26,739	$5,649	21%	**$32,388**		$26,739	$5,649	$32,388			$28,052	$5,927	$33,979
01	LANDS AND DAMAGES	$23	$2	10%	$25	0.0%	$23	$2	$25	2016Q1	1.9%	$23	$2	$26
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	$668	$43	6%	$711	0.0%	$668	$43	$711	2015Q3	1.5%	$678	$43	$721
1.0%	Planning & Environmental Compliance	$267	$17	6%	$284	0.0%	$267	$17	$284	2015Q3	1.5%	$271	$17	$288
2.5%	Engineering & Design	$668	$43	6%	$711	0.0%	$668	$43	$711	2015Q3	1.5%	$678	$43	$721
1.0%	Reviews, ATRs, IEPRs, VE	$267	$17	6%	$284	0.0%	$267	$17	$284	2015Q3	1.5%	$271	$17	$288
1.0%	Life Cycle Updates (cost, schedule, risks)	$267	$17	6%	$284	0.0%	$267	$17	$284	2015Q3	1.5%	$271	$17	$288
1.0%	Contracting & Reprographics	$267	$17	6%	$284	0.0%	$267	$17	$284	2015Q3	1.5%	$271	$17	$288
3.0%	Engineering During Construction	$802	$51	6%	$853	0.0%	$802	$51	$853	2017Q3	9.5%	$878	$56	$935
2.0%	Planning During Construction	$535	$34	6%	$569	0.0%	$535	$34	$569	2017Q3	9.5%	$586	$37	$623
1.0%	Project Operations	$267	$17	6%	$284	0.0%	$267	$17	$284	2015Q3	1.5%	$271	$17	$288
31	CONSTRUCTION MANAGEMENT													
3.5%	Construction Management	$936	$60	6%	$996	0.0%	$936	$60	$996	2017Q3	9.5%	$1,025	$66	$1,091
2.0%	Project Operation:	$535	$34	6%	$569	0.0%	$535	$34	$569	2017Q3	9.5%	$586	$37	$623
2.5%	Project Management	$668	$43	6%	$711	0.0%	$668	$43	$711	2017Q3	9.5%	$732	$47	$778
	CONTRACT COST TOTALS:	$32,909	$6,045		$38,954		$32,909	$6,045	$38,954			$34,593	$6,346	$40,939

Abbreviated Risk Analysis

Project Name & Location: **Craig SBH, Alaska**
Project Development Stage/Alternative: **Feasibility (Alternatives)**
Risk Category: **Moderate Risk: Typical Project Construction Type**

District: **Alaska District**
Alternative: **Alt 2b, TSP**
Meeting Date: **8/15/2014**

Total Estimated Construction Contract Cost = **$26,738,702**

	CWWBS	Feature of Work	Contract Cost		% Contingency	$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate	$ 23,000		20.00%	$ 4,600	$ 27,600
1	10 BREAKWATERS AND SEAWALLS	Mob/Demob	$901,400		17.30%	$ 155,968	$ 1,057,368
2	10 BREAKWATERS AND SEAWALLS	Demolition	$302,170		28.47%	$ 86,036	$ 388,206
3	10 BREAKWATERS AND SEAWALLS	Breakwater	$18,767,927		24.53%	$ 4,603,510	$ 23,371,437
4	12 02 HARBORS	Mooring Floats & Gangways	$4,312,920		11.15%	$ 480,717	$ 4,793,637
5	12 02 HARBORS	Piles, Caps & Anodes	$2,454,285		13.17%	$ 323,131	$ 2,777,416
6					0.00%	$ -	$ -
7					0.00%	$ -	$ -
8			$ -		0.00%	$ -	$ -
9			$ -		0.00%	$ -	$ -
10			$ -		0.00%	$ -	$ -
11			$ -		0.00%	$ -	$ -
12	All Other (less than 10% of construction costs)	Remaining Construction Items	$ -	*0.0%*	0.00%	$ -	$ -
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	$ 4,008,000		6.40%	$ 256,327	$ 4,264,327
14	31 CONSTRUCTION MANAGEMENT	Construction Management	$ 2,139,000		6.40%	$ 136,797	$ 2,275,797
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)					$ -	

Totals				
Real Estate	$ 23,000	20.00%	$ 4,600	$ 27,600.00
Total Construction Estimate	$ 26,738,702	21.13%	$ 5,649,363	$ 32,388,065
Total Planning, Engineering & Design	$ 4,008,000	6.40%	$ 256,327	$ 4,264,327
Total Construction Management	$ 2,139,000	6.40%	$ 136,797	$ 2,275,797
Total	**$ 32,908,702**	**18%**	**$ 6,047,087**	**$ 38,955,789**

	Base	**50%**	**80%**
Range Estimate ($000's)	$32,909k	$36,537k	$38,956k

* 50% based on base is at 50% CL.

Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analsyis. Must include justification. Does not allocate to Real Estate.)

TASK DESCRIPTION	Alternative One						
	UNIT PRICE	UNIT MEAS.	NO. OF UNITS	EXTENDED COST		GNF	LS
MOB/DEMOB	$901,400.00	LS	1	$901,400		$901,400	
Hydro/Topo Surveys	$162,175.24	LS	1	$162,175		$162,175	
Demolition	$302,180.00	LS	1	$302,180		$302,180	
LOCAL SERVICE FACILITIES							
Upland Fill	$20.00	CY	6,782	$135,640			$135,640
Upland Slope Protection	$20.00	CY	1,600	$32,000			$32,000
Aggregate Base Course	$25.00	CY	600	$15,000			$15,000
NORTH/WEST BREAKWATER							
A ROCK	$149.94	CY	31,400	$4,708,116		$4,708,116	
B ROCK	$67.59	CY	37,600	$2,541,384		$2,541,384	
C ROCK	$53.68	CY	181,000	$9,716,080		$9,716,080	
NAVIGATION AIDS							
MARKER SIGNS	$6,105.00	EA	3	$18,315		$18,315	
HARBOR							
PEDESTRIAN GANGWAY	$19,875.00	EA	1	$19,875			$19,875
MOORING FLOATS	$120.00	SF	35,776	$4,293,120			$4,293,120
PILES	$308.33	VLF	7,490	$2,309,392			$2,309,392
PILE CAPS	$95.00	EA	107	$10,165			$10,165
ANODE COUNT							
PILES	$645.80	EA	204	$131,743			$131,743
Current Contract Cost				**$25,296,585**		**$18,349,650**	**$6,946,935**
Contingency-Risk based	21.13%			$5,344,672		$3,876,921	$1,467,751
SIOH				$2,153,211		$1,561,897	$591,314
PED				$4,034,627		$2,926,640	$1,107,987
Real Estate				$27,600	0	$9,600	$18,000
Current Project Cost				$36,856,695		$26,724,708	$10,131,987
Escalation - assume FY17	4.91%			$1,810,944		$1,313,111	$497,832
TOTAL PROJECT COST				**$38,667,639**		**$28,037,820**	**$10,629,819**
						72.5%	27.5%
							$38,668,000.00

TASK DESCRIPTION	Alternative Alt 2a						
	UNIT PRICE	UNIT MEAS.	NO. OF UNITS	EXTENDED COST		GNF	LS
MOB/DEMOB	$901,400.00	LS	1	$901,400		$901,400	
Hydro/Topo Surveys	$195,972.56	LS	1	$195,973		$195,973	
Demolition	$302,180.00	LS	1	$302,180		$302,180	
LOCAL SERVICE FACILITIES							
Upland Fill	$20.00	CY	6,782	$135,640			$135,640
Upland Slope Protection	$20.00	CY	1,600	$32,000			$32,000
Aggregate Base Course	$25.00	CY	600	$15,000			$15,000
WEST BREAKWATER							
A ROCK	$149.94	CY	14,000	$2,099,160		$2,099,160	
B ROCK	$67.59	CY	11,800	$797,562		$797,562	
C ROCK	$53.68	CY	44,000	$2,361,920		$2,361,920	
NORTH BREAKWATER							
A ROCK	$149.94	CY	21,000	$3,148,740		$3,148,740	
B ROCK	$67.59	CY	35,300	$2,385,927		$2,385,927	
C ROCK	$53.68	CY	176,000	$9,447,680		$9,447,680	
NAVIGATION AIDS							
MARKER SIGNS	$6,105.00	EA	3	$18,315		$18,315	
HARBOR							
PEDESTRIAN GANGWAY	$19,875.00	EA	1	$19,875			$19,875
MOORING FLOATS	$120.00	SF	61,524	$7,382,880			$7,382,880
PILES	$308.33	VLF	7,490	$2,309,392			$2,309,392
PILE CAPS	$95.00	EA	107	$10,165			$10,165
ANODE COUNT							
PILES	$645.80	EA	204	$131,743			$131,743
Current Contract Cost				**$31,695,551**		**$21,658,857**	**$10,036,695**
Contingency-Risk based	21.13%			$6,696,648		$4,576,091	$2,120,557
SIOH				$2,697,882		$1,843,572	$854,310
PED				$5,055,217		$3,454,435	$1,600,782
Real Estate				$27,600	0	$9,600	$18,000
Current Project Cost				$46,172,899		$31,542,555	$14,630,343
Escalation - assume FY17	4.91%			$2,268,693		$1,549,835	$718,858
TOTAL PROJECT COST				**$48,441,592**		**$33,092,390**	**$15,349,201**
						68.3%	31.7%
							$48,442,000.00