Appendix E: Cost Engineering

Port of Nome Modification Feasibility Study Appendix E: Cost Engineering Nome, Alaska



# March 2020



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# 1.0 INTRODUCTION

The United States Army Corps of Engineers (Corps) has partnered with the City of Nome to conduct the Port of Nome Harbor Improvements Feasibility Study.

This feasibility study is a Corps 3x3x3 SMART Planning feasibility study being conducted in response to a request from the City of Nome

This cost engineering report documents the methods and results of the cost estimates completed at various stages of the study. This estimating process is performed to support the economic analysis, and develop a total project cost, for the recommended plan studies conducted as part of the current feasibility report.

# 2.0 PRELIMINARY ALTERNATIVE COST ESTIMATES

This section summarizes the development of planning level cost estimates for the final array of action alternatives.

## 2.1. Purpose

The six alternative estimates were developed in Q3 2019 prices. The cost estimate back-up information, which includes rock pricing information, quantity calculations and abbreviated risk analysis can be found in Attachment 1. The detailed cost estimate tables can be found in Attachment 2.

## 2.2. Quantities

Quantities for the breakwaters, causeways, demolition of existing breakwaters and spur nose, and dredging of the outer and deep water basins were calculated by the Corps Alaska District. The quantities were checked for reasonableness within the provided spreadsheet and have been used in the alternative estimates.

## 2.3. Unit Prices

Unit prices for the alternative estimates were taken from various sources that include vendor quotes, RS Means, previous cost estimates, available bid data, and previous study documents. All unit prices have been adjusted with local multipliers that modify the base unit price to reflect localized, labor, equipment and material prices.

- Mobilization and Demobilization Two separate mob-demobe costs were calculated; one for the breakwater, causeway, dock construction and one for the dredging construction. Both assume a well-equipped contractor from the West Coast of CONUS. The breakwater/dock will winter equipment at Nome, where the large dredging plants will demobe the West Coast of Alaska during winter months.
- 2. Breakwater Demolition Unit cost assumes use of both marine and land based equipment.

- 3. Armor Rock, B-rock, Core Rock and Gravel Unit prices assume all rock will be sources from the Cape Nome Quarry. The material could be loaded onto barges for delivery to to the project site, and hauled via truck (20 cy side or end dump). Current updated quotation were attempted but not received, so recent historical unit prices were used (bid data and similar project estimates). It's possible for the contractor to import rock from other sources during mobe, or other as needed to maintain productivity but this estimate does not factor that scenario. The east breakwater will be demoed. Its assumed that approximately 75% of the A, B and C rock from that breakwater will be able to be hauled to shore, resorted, tested and incorporated into the new project.
- 4. Dredging CEDEP (Corps of Engineers Dredge Estimating Program) was used to estimate a unit cost for dredging.
- 5. Dock Construction All dock construction is assumed to be similar to a modified diaphragm sheet pile wall with gravel backfill. The unit costs for these docks were developed based on historical costs for similar walls/docks constructed at the Port of Nome over the recent 5 years.

## 2.4. Feature Accounts

The cost estimates have been separated by feature account. The features included are as follows:

<u>1 Land and Damages</u> – There are very minimal real estate costs anticipated for this project, but a small amount was included for administration. The final cost used will come from the real estate plan in the final report.

<u>10 Breakwaters and Seawalls</u> – Costs in this account consist of the majority of construction measures. The breakwaters and causeways fall under this account. Mobilization and demobilization required for these features of work are included here. This includes both Federal and Local Sponsor Funded features.

<u>12 Navigation, Ports and Harbors</u> – Costs for this account consist of the dredging, disposal of dredge spoils, and the sheet pile docks. This includes both Federal and Local Sponsor Funded features.

<u>19 Buildings, Grounds and Utilities</u> – Costs for this account consist of any fuel, water, electricity and all other utilities needed to support the new docks. These costs are all Local Sponsor Funded.

<u>30 Planning, Engineering and Design (PED)</u> – Cost for this account have been assumed to a flat \$10M based on discussion with the PDT.

<u>31 Construction Management (CM)</u> – Costs for this account have been assumed to be 4% of total construction costs.

## 2.5. Contingencies

Contingencies represent allowances to cover unknowns, uncertainties and/or unanticipated conditions that are not possible to adequately evaluate from the data on hand at the time the cost estimate is prepared but must be represented by a sufficient cost to cover the identified risks. An abbreviated risk analysis (ARA) has been prepared for the alternative cost estimates to calculate alternative specific contingencies.

## 2.6. OMRR&R

OMRR&R costs have been calculated for each alternative. The main O&M scope for Nome Harbor will consist of maintenance dredging the newly established basins. The unit costs were developed based on many years of historical data maintenance dredging at the Port. Means and methods assumed hydraulic cutter head suction dredging, with disposal on or near shore. The following assumptions were used to estimate OMRR&R costs for the alternative estimates:

Annual minor maintenance and inspections - \$25,000 per year (every alternative) Breakwater/Causeway rock replacement - 2.5% of armor, b-rock and core rock replaced every 25-years

Dredging annually – quantities developed by USACE Hydraulics & Hydrology design section

## 2.7. Alternative Cost Summary

The summary of alternative costs developed is in Table 1 The development of these costs are included in this appendix starting on page 30 of 85.

SI	SUMMARY FOR ALT 3a with DIFFERENT DREDGE DEPTHS													
Different Dredge Depth Scenarios	GNF Drgd	GNF BW	LSF Total	PED 1%	SIOH 4%	Contingency	Total							
Dredge -28 and -32	\$15,548,443	\$148,290,210	\$46,816,800	\$2,106,555	\$8,426,218	\$73,729,408	\$294,918,000							
Dredge -28 and -42	\$36,890,979	\$148,290,210	\$46,816,800	\$2,319,980	\$9,279,920	\$81,199,296	\$324,798,000							
SI	JMMARY FOI	R ALT 3b with	DIFFERENT	DREDGE DEP	THS									
Different Dredge Depth Scenarios	GNF Drgd	GNF BW	LSF Total	PED 1%	SIOH 4%	Contingency	Total							
Dredge -28 and -32	\$11,158,351	\$150,628,410	\$37,042,800	\$1,988,296	\$7,953,182	\$69,590,346	\$278,361,000							
Dredge -28 and -42	\$33,987,979	\$150,628,410	\$37,042,800	\$2,216,592	\$8,866,368	\$77,580,716	\$310,323,000							
SI	JMMARY FOI	R ALT 3c with	DIFFERENT	DREDGE DEP	THS									
Different Dredge Depth Scenarios	GNF Drgd	GNF BW	LSF Total	PED 1%	SIOH 4%	Contingency	Total							
Dredge -28 and -32	\$11,158,351	\$153,301,010	\$24,753,300	\$1,892,127	\$7,568,506	\$66,224,431	\$264,898,000							
Dredge -28 and -42	\$33,987,979	\$153,301,010	\$24,753,300	\$2,120,423	\$8,481,692	\$74,214,801	\$296,860,000							
S	UMMARY FO	R ALT 4 with	DIFFERENT	DREDGE DEPT	THS									
Different Dredge Depth Scenarios	GNF Drgd	GNF BW	LSF Total	PED 1%	SIOH 4%	Contingency	Total							
Dredge at -28 and -32	\$24,651,905	\$170,674,110	\$59,323,200	\$2,546,492	\$10,185,969	\$89,127,225	\$356,509,000							
Dredge at -28 and -42	\$46,359,372	\$170,674,110	\$59,323,200	\$2,763,567	\$11,054,267	\$96,724,839	\$386,900,000							
SI	JMMARY FOR	R ALT 8a with	DIFFERENT	DREDGE DEP	THS									
	-													
Different Dredge Depth Scenarios	GNF Drgd	GNF BW	LSF Total	PED 1%	SIOH 4%	Contingency	Total							
Different Dredge Depth Scenarios Dredge at -28 and -32	GNF Drgd \$55,033,907	<b>GNF BW</b> \$334,903,941	<i>LSF Total</i> \$72,509,600	<b>PED 1%</b> \$4,624,474	<b>SIOH 4%</b> \$18,497,898	Contingency \$161,856,607	<b>Total</b> \$647,427,000							
Different Dredge Depth Scenarios Dredge at -28 and -32 Dredge at -28 and -42	GNF Drgd \$55,033,907 \$67,539,458	GNF BW \$334,903,941 \$334,903,941	LSF Total \$72,509,600 \$72,509,600	PED 1% \$4,624,474 \$4,749,530	<b>SIOH 4%</b> \$18,497,898 \$18,998,120	Contingency \$161,856,607 \$166,233,550	<b>Total</b> \$647,427,000 \$664,935,000							
 Different Dredge Depth Scenarios Dredge at -28 and -32 Dredge at -28 and -42	GNF Drgd \$55,033,907 \$67,539,458 JMMARY FOF	GNF BW \$334,903,941 \$334,903,941 <b>R ALT 8b wit</b>	LSF Total \$72,509,600 \$72,509,600	PED 1% \$4,624,474 \$4,749,530 DREDGE DEP	SIOH 4% \$18,497,898 \$18,998,120 THS	Contingency \$161,856,607 \$166,233,550	<b>Total</b> \$647,427,000 \$664,935,000							
Different Dredge Depth Scenarios Dredge at -28 and -32 Dredge at -28 and -42 St Different Dredge Depth Scenarios	GNF Drgd \$55,033,907 \$67,539,458 JMMARY FOR GNF Drgd	GNF BW \$334,903,941 \$334,903,941 <b>R ALT 8b with</b> GNF BW	LSF Total \$72,509,600 \$72,509,600 DIFFERENT LSF Total	PED 1% \$4,624,474 \$4,749,530 DREDGE DEP PED 1%	SIOH 4% \$18,497,898 \$18,998,120 THS SIOH 4%	Contingency \$161,856,607 \$166,233,550 Contingency	Total \$647,427,000 \$664,935,000 Total							
Different Dredge Depth Scenarios Dredge at -28 and -32 Dredge at -28 and -42 <b>St</b> Different Dredge Depth Scenarios Dredge at -28 and -32	GNF Drgd \$55,033,907 \$67,539,458 JMMARY FOF GNF Drgd \$55,033,907	GNF BW \$334,903,941 \$334,903,941 R ALT 8b with GNF BW \$317,199,210	LSF Total \$72,509,600 \$72,509,600 DIFFERENT LSF Total \$63,964,000	PED 1% \$4,624,474 \$4,749,530 DREDGE DEP PED 1% \$4,361,971	SIOH 4% \$18,497,898 \$18,998,120 THS SIOH 4% \$17,447,885	Contingency \$161,856,607 \$166,233,550 Contingency \$152,668,991	Total \$647,427,000 \$664,935,000 Total \$615,510,000							

#### Table 1 – Alternative Costs

## 3.0 RECOMMENDED PLAN COST ESTIMATE

This section documents the development of recommended plan cost estimate, which was completed using MCACES and included a Cost and Schedule Risk Analysis (CSRA) for contingency development.

Alternative 8B -40' MLLW deep water basin from the final array of alternatives was selected as the recommended plan.

## 3.1. Basis of Estimate

The available design document for this project, in which the cost estimate was based on, is the *Port of Nome Harbor Improvement Feasibility Study* prepared by the Alaska District, USACE.

The cost estimate is based on conceptual level project quantity take-offs that have been calculated based on the assumptions and information documented in the previously referenced report. An estimated quantity of rock and dredging volumes were provided by CEPOA-ECD-H and used in the development of the recommended plan Estimated Construction Cost.

## 3.2. Project Schedule

It is estimated that overall construction duration, from construction notice-to-proceed to completion, would take approximately 4 years to complete. It's assumed the usable months for construction are between mid-May and mid-October. Mob-demobe will be timed so that the equipment and personnel are on site to begin and end outside of this window. For schedule development, construction seasons were used to describe sequencing.

The assumption was project award in March/April, therefore the first construction season would mostly be mobe-demobe of mining equipment, and quarry set-up and rock production. Some demo and reconstruction work of breakwaters could begin in the later part of the first season, but it would depend on the availability of rock to close up and protect work over the winter months.

Its possible that during the first season, the east breakwater could be demoed starting from the shore and work toward the first breach by building an access pad. Due to the shallow beach, marine based equipment would need to start farther off shore. Rock would be hauled to the shore or sorted on a barge for reuse in the new breakwaters (east or west). On the west BW, spur nose would be dismantled from shore and rock hauled to the staging area for sorting. The BW core could be placed via split scow, until built up to allow land based equipment to place rock. One dredge plant would be mobed in the first season. This could perform the over-dredging and placement of spec material to pile tip elevation for the footprint of the sheetpile walls. This is to ensure the sheetpile can be driven without encountering large cobbles. Some basin dredging and/or east breakwater demo could occur as well during this first season with this equipment. Season 2 its assumed 2 dredge plants will be mobed. They will focus on the outer basin, as this is where the majority of material is located. Breakwater work will continue on both sides as its anticipated rock production will have progressed enough to have stockpiles for placement.

Season 3 will also have 2 dredge plants and separate crews working on the east and west features. It's probable the east breakwater will be complete by the end of season 2 or very near complete. Dredging in this season will be finishing up the outer basin and beginning on the deep water basin, as by this time, there will be significant progress on the bw to assist in protection for that work.

Season 4 will be clean up of the deep water basin and any remaining finish work on the docks and breakwaters.

All work schedules for the baseline schedule use 6-12's double shifting during June, July, August and some of September witch is fairly aggressive.

This production rates are most dependent on availability of spec rock for incorporation into the project. Quarry operations and productivity are very hard to predict for rock production. This will require a very specialized contractor because of the large quantity of 22-ton stones needed for the project. For this reason and as discussed in the risk register, a lack of adequate quantity of rock during the first season may push most progress 1 season longer. In other words, the contractor must be able to close up and protect work over the winter seasons, and may choose to not start demo work until enough rock is available to use for that.

## 3.3. Acquisition Plan

The estimate assumes one contract being awarded for the total project. It is assumed that the bidding process would be unrestricted. All contractor and project mark-ups have been adjusted accordingly in the cost estimate. The estimate assumes a Prime Contractor would do the majority of the work, and infact it's likely a Joint Venture (JV) arrangement would be likely. Very few subcontractors were assumed in this estimate.

## 3.4. Project Construction

## 3.4.1. Staging and Site Access

Adequate staging areas are available at or near the Port of Nome. Areas may be designated in the plans and specs, and as has been the case for other projects of this time at Nome, adequate opportunities are available for a contractor to obtain access through private deals with individual land owners if needed.

## 3.4.2. Construction Methodology

The following is a brief discussion of assumptions made for the unit costs used in the MCACES estimates for both alternatives:

 Mobilization and Demobilization – Assumes mobilizing and demobilizing equipment to and from West Coast of CONUS, and possibly from Anchorage. Dredging equipment being marine based cannot winter in Nome and will need to be hauled to either Anchorage or a similar ice free port. The other land based equipment can be wintered at Nome to avoid haul/backhaul expense.

- Excavation use of hydraulic excavators on both the breakwater crest, and on barges.
- Hauling assumes use 20 cy side dumps, end dumps for trucking material from Cape Nome Quarry. Material is delivered to staging areas on/near the beach then reloaded on off-road trucks for hauling and placing on the breakwater/causeways. It's likely some of the core material will be hauled in split scow barges and placed via open water dump methods.
- Armor Rock, B-rock, Core Rock and Gravel assumes rock will be placed via hydraulic excavator with grapple, bucket and thumb. Gravel may be open water placed via split scow barge. Some larger rock will require large cranes with ability to reach and pick large loads for in water placement.

## 3.4.3. Effective Dates for Labor, Equipment and Material Pricing

The labor, equipment, and material pricing were developed using the MCACES 2016 English Unit Cost Library, 2019 Alaska Statewide Labor Library, and the 2016 Equipment Library (Region IV) for the base cost estimates. The index pricing data has been prepared in October 2019 dollars.

The base cost estimates have been updated with current quoted fuel prices of \$3.75/gal for off-road diesel,\$3.38/gal for on-road diesel and \$3.25 /gal for gasoline in the state of Alaska.

## 3.4.4. Estimated Production Rates

Much of the construction cost estimate was developed utilizing user defined crews and production rates.

## 3.4.5. Project Markups

## 3.4.5.1. Escalation

Price levels have been escalated from effective price levels of the construction cost estimate for October 2019 (1Q20) to the mid-points of construction for the project. The appropriate escalation cost factors for each date and for each feature account have been calculated within the Total Project Cost Summary (TPCS).

## 3.4.5.2. Contingency

A Cost and Schedule Risk Analysis (CSRA) was completed in order to develop the contingency for the Recommended Plan. The CSRA report, documenting the development of the risk-based contingency is included.

3.5.

## 3.5.1.1. Overtime

The estimate assumes that crews would be working 6-days per week and 12-hours per day in order to complete construction within the available work windows.

## 3.5.2. MCACES Construction Cost Estimate

The construction cost estimate was developed using MCACES 2nd Generation (MII) estimating software in accordance with guidance contained in ER 1110-2-1302, Civil Works Cost Engineering. See Attachment 10 for the MII output report.

## 3.5.3. Total Project Cost Summary (TPCS)

The TPCS was prepared using the latest TPCS Excel spreadsheet provided by the USACE, Walla Walla District. The TPCS incorporates the construction costs developed in MCACES, the project markups and functional costs referenced previously.

# 4.0 SOURCES

- Engineer Regulation 1110-1-1300, Engineering and Design Cost Engineering Policy and General Requirements; U.S. Army Corps of Engineers; Dated 26 March 1993.
- *Engineer Regulation 1110-2-1150, Engineering and Design for Civil Works Projects*; U.S. Army Corps of Engineers; Dated 31 August 1999.
- *Engineer Regulation 1110-2-1302, Civil Works Cost Engineering*; U.S. Army Corps of Engineers; Dated 15 September 2008.
- Engineer Manual 1110-2-1304; Civil Works Construction Cost Index System (CWCCIS); U.S. Army Corps of Engineers; Dated 30 September 2008.
- Engineering Technical Letter 1110-2-573, Construction Cost Estimating Guide for Civil Works; U.S. Army Corps of Engineers; Dated 31 August 1999.

# WALLA WALLA COST ENGINEERING MANDATORY CENTER OF EXPERTISE

# **COST AGENCY TECHNICAL REVIEW**

# **CERTIFICATION STATEMENT**

Project No. 464170

# POA Port of Nome Navigation Improvement Project

The Port of Nome Navigation Improvement Project, as presented by Alaska District, has undergone a successful Cost Agency Technical Review (Cost ATR), performed by the Walla Walla District Cost Engineering Mandatory Center of Expertise (Cost MCX) team. The Cost ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies. This certification signifies the products meet the quality standards as prescribed in ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of March 23, 2020, the Cost MCX certifies the estimated total project cost of:

## **NED Plan:**

 Total First Costs (FY20):
 \$490,919,000

 Fully Funded Costs:
 \$591,917,000

It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project management controls and implementation procedures including risk management throughout the life of the project.



DESOMBER.SCOTT.CHRI STOPHER.1454307190 Date: 2020.03.23 08:40:51 -07'00'

FOR: Michael P. Jacobs, PE, CCE Chief, Cost Engineering MCX Walla Walla District

PROJECT: Port of Nome Modification Feasibility Study

PROJECT NO: P2 464170 LOCATION: Nome, Alaska DISTRICT: Alaska District-POA PREPARED: 2/19/2020 POC: CHIEF, COST ENGINEERING, Karl Harvey

This Estimate reflects the scope and schedule in report; December 2019, Draft Integrated Feasibility Report & EA

Civil	Works Work Breakdown Structure		ESTIMAT	ED COST		PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	Pro Ef COST (\$K)	gram Year (I fective Price CNTG (\$K)	Budget EC): Level Date: TOTAL (\$K)	2020 1 OCT 19 Spent Thru: <b>1-Oct-18</b> (\$K)	TOTAL FIRST COST (\$K)	INFLATED (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	В	С	D	E	F	G	н	1	J		ĸ	L	M	N	0
10 12 12 08 19 12	<ul> <li>BREAKWATER &amp; SEAWALLS</li> <li>NAVIGATION PORTS &amp; HARBORS</li> <li>LOCAL SERVICE FACILITIES (Berthing)</li> <li>LOCAL SERVICE FACILITIES (Bridge, Road)</li> <li>LOCAL SERVICE FACILITY (Utilities)</li> <li>ASSOCIATED (ATON)</li> </ul>		\$96,536 \$18,059 \$2,917 \$26,312 \$771 \$24	34.0% 34.0% 34.0% 34.0% 34.0%	\$380,464 \$71,175 \$11,496 \$103,701 \$3,039 \$93	2.3% 3.7% 3.7% 1.9% 0.4% 3.7%	\$290,532 \$55,068 \$8,894 \$78,852 \$2,277 \$72	\$98,781 \$18,723 \$3,024 \$26,810 \$774 \$24	\$389,312 \$73,791 \$11,918 \$105,662 \$3,051 \$96	\$0 \$0 \$0 \$0 \$0 \$0	\$389,312 \$73,791	17.8% 36.8%	\$342,149 \$75,326 excluded froi excluded froi excluded froi excluded froi	\$116,331 \$25,611 m Fully Funded C m Fully Funded C m Fully Funded C m Fully Funded C	\$458,480 \$100,937 Costs Costs Costs Costs
	CONSTRUCTION ESTIMATE TOTALS:	\$425,349	\$144,619		\$569.968	2.4%	\$435.695	\$148,136	\$583.831	\$0	\$463,104		\$417,475	\$141.942	\$559.417
01	LANDS AND DAMAGES	\$16	\$5	34.0%	\$21	1.9%	\$16	\$6	\$22	\$0	\$22		excluded from	m Fully Funded C	Costs
30	PLANNING, ENGINEERING & DESIGN	\$6,742	\$2,292	34.0%	\$9,035	3.4%	\$6,972	\$2,370	\$9,342	\$0	\$9,342	4.9%	\$7,312	\$2,486	\$9,798
31	<b>31</b> CONSTRUCTION MANAGEMENT		\$4,527	34.0%	\$17,843	3.4%	\$13,770	\$4,682	\$18,451	\$0	\$18,451	23.0%	\$16,941	\$5,760	\$22,701
	PROJECT COST TOTALS:	\$445,423	\$151,444	34.0%	\$596,867		\$456,453	\$155,194	\$611,646	\$0	\$490,919		\$441,729	\$150,188	\$591,917

 CHIEF, COST ENGINEERING, Karl Harvey
 PROJECT MANAGER, Jen Cate/Steve Howard
 CHIEF, REAL ESTATE, Vacant
 CHIEF, PLANNING, Cindy Upah
 CHIEF, ENGINEERING, Mark Derocchi
 CHIEF, OPERATIONS, Julie Anderson
 CHIEF, CONSTRUCTION, Mark Derocchi
 CHIEF, CONTRACTING, Chris Tew
 CHIEF, PM-CW, Bruce Sexauer
 CHIEF, DPM, Randy Bowker

<b>\$591,917</b>	ESTIMATED TOTAL PROJECT COST:
\$559,417	GENERAL NAVIGATION FEATURES:
<b>\$490,919</b>	PROJECT FIRST COST:
\$120,631	LOCAL SERVICE FACILITIES COST:
\$96	ASSOCIATED COSTS:
\$22	LERR:

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#### \*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

#### \*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

#### Port of Nome Modification Feasibility Study PROJECT: LOCATION: Nome, Alaska This Estimate reflects the scope and schedule in report; December 2019, Draft Integrated Feasibility Report & EA

DISTRICT: Alaska District-POA POC: CHIEF, COST ENGINEERING, Karl Harvey

PREPARED: 2/19/2020

Civ	ril Works Work Breakdown Structure		ESTIMAT	ED COST			PROJECT (Constant	FIRST COS Dollar Basi	ST s)		TOTAL PRO	JECT COST (FULL	Y FUNDED)	
		Estin Effec	nate Prepare tive Price Lev	d: el:	<b>19-Feb-20</b> 1-Oct-18	Progra Effect	im Year (Bud ive Price Lev	lget EC): /el Date:	2020 1 OCT 19					
WBS <u>NUMBER</u> A 10 12 12 12	Civil Works <u>Feature &amp; Sub-Feature Description</u> <b>B</b> <b>General Navigation Features</b> BW Demo & Construct, mob-demobe Dredging Basins, Mob-demobe Navigation Aids Foundations	COST _(\$K) 	CNTG (\$K) D \$96,536 \$18,059 \$24	RISK BASED CNTG (%) <b>E</b> 34.0% 34.0% 34.0%	TOTAL ( <u>\$K)</u> <i>F</i> \$380,464 \$71,175 \$93	ESC (%) <b>G</b> 2.3% 3.7% 3.7%	COST (\$K) H \$290,532 \$55,068 \$72	CNTG (\$K) / \$98,781 \$18,723 \$24	TOTAL ( <u>\$K)</u> J \$389,312 \$73,791 \$96	Mid-Point Date P 2025Q3 2025Q3 2025Q3	INFLATED  	COST ( <u>\$K)</u> \$342,149 \$64,852 \$84	CNTG (\$K)_ N \$116,331 \$22,050 \$29	FULL _ <u>(\$K)</u> <b>0</b> \$458,48 \$86,90 \$111
01	CONSTRUCTION ESTIMATE TOTALS	\$337,113	\$114,618	34.0%	<b>\$451,732</b> \$0	0.0%	\$345,671 \$0	\$117,528	\$463,200	0	0.0%	\$407,085 \$0	\$138,409 \$0	\$545,49 \$
30	PLANNING, ENGINEERING & DESIGN													
0.	1% Project Management	\$202	\$69	34.0%	\$271	3.4%	\$209	\$71	\$280	2021Q1	3.8%	\$217	\$74	\$29
0.	1% Planning & Environmental Compliance	\$202	\$69	34.0%	\$271	3.4%	\$209	\$71	\$280	2021Q1	3.8%	\$217	\$74	\$29
1.	.0% Engineering & Design	\$3,371	\$1,146	34.0%	\$4,517	3.4%	\$3,486	\$1,185	\$4,671	2021Q1	3.8%	\$3,619	\$1,231	\$4,85
0.	1% Reviews, ATRs, IEPRs, VE	\$202	\$69	34.0%	\$271	3.4%	\$209	\$71	\$280	2021Q1	3.8%	\$217	\$74	\$29
0.	.1% Life Cycle Updates (cost, schedule, risks)	\$202	\$69	34.0%	\$271	3.4%	\$209	\$71	\$280	2021Q1	3.8%	\$217	\$74	\$29
0.	.6% Contracting & Reprographics	\$2,023	\$688	34.0%	\$2,710	3.4%	\$2,092	\$711	\$2,803	2021Q1	3.8%	\$2,172	\$738	\$2,91
0.	.1% Engineering During Construction	\$202	\$69	34.0%	\$271	3.4%	\$209	\$71	\$280	2025Q3	23.0%	\$257	\$87	\$34
0.	.1% Planning During Construction	\$169	\$57	34.0%	\$226	3.4%	\$174	\$59	\$234	2025Q3	23.0%	\$214	\$73	\$28
0.	.0% Adaptive Management & Monitoring	\$0	\$0	34.0%	\$0	0.0%	\$0	\$0	\$0	0	0.0%	\$0	\$0 *C2	\$
0.	1% Project Operations	\$109	\$0 <i>1</i>	34.0%	\$220	3.4%	\$174	<b>\$</b> 28	\$234	202101	3.6%	\$101	\$02	\$2 <del>4</del>
31	CONSTRUCTION MANAGEMENT													
3.	4% Construction Management	\$11,462	\$3,897	34.0%	\$15,359	3.4%	\$11,852	\$4,030	\$15,882	2025Q3	23.0%	\$14,582	\$4,958	\$19,54
0.	5% Project Operation:	\$1,686	\$573	34.0%	\$2,259	3.4%	\$1,743	\$593	\$2,336	2025Q3	23.0%	\$2,144	\$729	\$2,87
0.	1% Project Management	\$169	\$57	34.0%	\$226	3.4%	\$174	\$59	\$234	2025Q3	23.0%	\$214	\$73	\$28
	CONTRACT COST TOTALS:	\$357,171	\$121,438		\$478,610	1	\$366,413	\$124,580	\$490,993			\$431,339	\$146,655	\$577,99

#### \*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

#### \*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

#### Port of Nome Modification Feasibility Study PROJECT: LOCATION: Nome, Alaska This Estimate reflects the scope and schedule in report;

DISTRICT: Alaska District-POA POC: CHIEF, COST ENGINEERING, Karl Harvey

PREPARED: 2/19/2020

December 2019, Draft Integrated Feasibility Report & EA

Civ	il Works Work Breakdown Structure		ESTIMAT	ED COST			PROJECT (Constant I	FIRST COS Dollar Basis	T \$)		TOTAL PR	ROJECT COST (FULL	Y FUNDED)	
		Estin Effect	nate Prepareo ive Price Lev	d: /el:	<b>19-Feb-20</b> 1-Oct-18	Program Effectiv	m Year (Bud ve Price Lev	get EC): el Date:	2020 1 OCT 19					
WBS <u>NUMBER</u> <b>A</b>	Civil Works <u>Feature &amp; Sub-Feature Description</u> <i>B</i> Local Sponsor Funded Items	COST _ <u>(\$K)</u> C	CNTG (\$K) <b>D</b>	CNTG (%) <i>E</i>	TOTAL (\$K) <i>F</i>	ESC (%) <b>G</b>	COST _(\$K)	CNTG _(\$K)/ _/	TOTAL (\$K)	Mid-Point <u>Date</u> <b>P</b>	INFLATED (%) 	COST _(\$K)	CNTG (\$K) <b>N</b>	FULL _(\$K) <i>O</i>
10 12 08 19	<ul> <li>10 BREAKWATER &amp; SEAWALLS</li> <li>12 LSF-Dredge Dock Berthing Areas</li> <li>08 LSF-Docks, Mooring Pts, Bridge, Causeway F</li> <li>19 LSF-Utilities</li> </ul>		\$0 \$2,917 \$26,312 \$771	26.0% 34.0% 34.0% 34.0%	\$0 \$11,496 \$103,701 \$3,039	0.0% 3.7% 1.9% 0.4%	\$0 \$8,894 \$78,852 \$2,277	\$0 \$3,024 \$26,810 \$774	\$0 \$11,918 \$105,662 \$3,051	0 2025Q3 2025Q3 2025Q3	0.0% 17.8% 17.8% 17.8%	\$0 \$10,474 \$92,862 \$2,681	\$0 \$3,561 \$31,573 \$912	\$0 \$14,036 \$124,434 \$3,593
	CONSTRUCTION ESTIMATE TOTALS:	\$88,236	\$30,000	34.0%	\$118,236		\$90,023	\$30,608	\$120,631			\$106,017	\$36,046	\$142,063
01		\$16	\$5	34.0%	\$21	1.9%	\$16	\$6	\$22	2018Q1	-6.1%	\$15	\$5	\$21
	<ul> <li>Project Management</li> <li>Project Management</li> <li>Planning &amp; Environmental Compliance</li> <li>Engineering &amp; Design</li> <li>Reviews, ATRs, IEPRs, VE</li> <li>Life Cycle Updates (cost, schedule, risks)</li> <li>Contracting &amp; Reprographics</li> <li>Engineering During Construction</li> <li>Planning During Construction</li> <li>Planning During Construction</li> <li>Project Operations</li> <li>CONSTRUCTION MANAGEMENT</li> <li>Construction Management</li> <li>Project Operation:</li> <li>Project Management</li> </ul>	\$53 \$53 \$53 \$53 \$529 \$53 \$44 \$0 \$44 \$3,000 \$441 \$44	\$18 \$300 \$18 \$180 \$180 \$15 \$0 \$15 \$15 \$1,020 \$150 \$15	34.0% 34.0% 34.0% 34.0% 34.0% 34.0% 34.0% 34.0% 34.0% 34.0% 34.0%	\$71 \$71 \$1,182 \$71 \$709 \$71 \$59 \$0 \$59 \$0 \$59 \$4,020 \$591 \$59	3.4% 3.4% 3.4% 3.4% 3.4% 3.4% 3.4% 3.4%	\$55 \$912 \$55 \$547 \$55 \$46 \$0 \$46 \$3,102 \$456 \$46	\$19 \$19 \$310 \$19 \$186 \$19 \$16 \$0 \$16 \$16 \$155 \$155 \$16	\$73 \$73 \$1,223 \$73 \$73 \$734 \$73 \$61 \$0 \$61 \$4,157 \$611 \$61	2021Q1 2021Q1 2021Q1 2021Q1 2021Q1 2025Q3 2025Q3 0 2021Q1 2025Q3 2025Q3 2025Q3 2025Q3	3.8% 3.8% 3.8% 3.8% 23.0% 23.0% 0.0% 3.8% 23.0% 23.0% 23.0% 23.0%	\$57 \$947 \$57 \$568 \$67 \$568 \$0 \$47 \$3,817 \$561 \$56	\$19 \$19 \$322 \$19 \$193 \$23 \$19 \$0 \$16 \$1,298 \$191 \$19	\$76 \$76 \$76 \$76 \$90 \$75 \$0 \$5,115 \$752 \$752 \$752 \$752
	CONTRACT COST TOTALS:	\$93,502	\$31,791		\$125,293		\$95,468	\$32,459	\$127,928			\$112,381	\$38,209	\$150,590

#### **Risk Register Development**

	Project	: Nome Navigations Improvements - Feasibility St	udy		TSP Report					
t Dev	elopment Stage/Alternative:	Alternative Formulation Milestone #1 - Modified	CSRA prepared on							changes 1-14-20
	Risk Category	: Moderate Risk: Typical Project or Possible Life S	Safety	Meeting Date:	12/4/2019					revised model di
	Schedule Duration	Apr-23	Oct-26	Schedule Duration:	40.5 Months	49%				revised high varia
				-			-			0
		From (Month/Year)	From (Month/Year)			Schedule Contingency	-			
	<u>CWWBS</u>	Feature of Work	Contract Cost	% Contingency	\$ Contingency	<u>Total</u>				
							costs for TPCS			
	Risk Not included within CSRA Mo	odel							•	
	01 LANDS AND DAMAGES	Real Estate (LSF)	\$ 25,000	<b>20%</b>	\$ 5,000	\$ 30,000	GNF BW	Dredg Basins, Mob demobe	Nav Aids	total
	Risk included within CSRA Model						Demo&Construct	Nave		total
1		General Navigation Facilities estimated construciton cost (ECC)	\$ 337,113,907	34%	\$ 114,618,729	\$ 451,732,636	\$ 380,464,565	\$71,175,426	\$ 92,645	\$ 451,732,637
2	10 BREAKWATERS AND SEAWALLS	Mobilization / Demobilization Breakwaters- GNF	\$ 7,537,434	34%	\$ 2,562,728	\$ 10,100,162	\$ 10,100,162			
3	10 BREAKWATERS AND SEAWALLS	Demo and Build Breakwaters - GNF	\$ 276,391,345	34%	\$ 93,973,058	\$ 370,364,403	\$ 370,364,403			
	12 NAVIGATION, PORTS AND HARBORS	Mobilization / Demobilization Dredging - GNF	\$ 11,484,402	34%	\$ 3,904,697	\$ 15,389,099		<b>\$</b> 15,389,099		
	12 NAVIGATION, PORTS AND HARBORS	Dredge & Dispose Outer and Deep Water Basins-G	\$ 41,631,587	34%	\$ 14,154,740	\$ 55,786,327		<b>\$</b> 55,786,327		
	12 NAVIGATION, PORTS AND HARBORS	Aids to Navigation-GNF	\$ 69,138	34%	\$ 23,507	\$ 92,645			\$ 92,645	
							lsf dredge dock berth	lsf dock, mor pts	Isf utilities	total
		Associated Costs - LSF estimated construction cost (ECC)	\$ 88,236,552	34%	\$ 30,000,428	\$ 118,236,980	\$11,496,153	\$103,701,917	\$3,038,911	\$118,236,981
	08 ROADS, RAILROADS, AND BRIDGES	Causeway Docks, Mooring Dolphins, Breach Bridg	\$ 55,817,576	34%	\$ 18,977,976	\$ 74,795,552		\$ 74,795,552		
	08 ROADS, RAILROADS, AND BRIDGES	West and East Causeway Fill and Surface Material	\$ 21,571,914	34%	\$ 7,334,451	\$ 28,906,365		\$ 28,906,365		
	12 NAVIGATION, PORTS AND HARBORS	Dredging Outer and Deep Water Dock Berthing Are	\$ 8,579,218	34%	\$ 2,916,935	\$ 11,496,153	\$ 11,496,153			
	19 BUILDINGS, GROUNDS, AND UTILITIES	Utilities	\$ 2,267,844	34%	\$ 771,067	\$ 3,038,911			\$ 3,038,911	
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design-ASSUME 2% OF ECC	\$ 8,507,009	34%	\$ 2,892,384	\$ 11,399,393				
14	31 CONSTRUCTION MANAGEMENT	Construction Management-ASSUME 4% OF ECC	\$ 17,014,018	34%	\$ 5,784,767	\$ 22,798,785				
22	All Other	Remaining Construction Items			\$ -	\$-	_			
хх	X FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)				\$-		_			
		Totals					1			
		Real Estate (LSF)	\$ 25,000	20%	\$ 5,000	\$ 30,000.00	4			
		Total Construction Estimate	<u>\$ 450,871,486</u>	34%	<u>\$ 153,296,306</u>	<u>\$ 604,167,792</u>	4			
		Total	\$ 450,871.486	34%	\$ 153,296.306	\$ 604,167.792	1			
							•			

Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analsvis. Must include

gnf \$ 337,113,907 lfs \$ 88,236,552

Contingency on Base Estimate

Baseline Estimate Cost ->OCTOBER 1, 2014 PRICE LEVEL

Baseline Estimate Construction Cost (80% Confidence) → Contingency on Schedule Project Base Schedule Duration ->

Project Schedule Duration (80% Confidence) ->

Baseline Estimate Cost Contingency Amount ->

Schedule Contingency Duration ->

80% Confidence Project Cost

80% Confidence Project Schedule 40.5 Months

33%

49%

%001

\$450,871,486 \$149,378,198

\$600,249,684

19.8 Months

60.2 Months

- PROJECT	CONTINGENC	OPMENT -
- FROJECT	CONTINUENC	



Nome Navigations Improvements - Feasibility Study Thursday, December 19, 2019

Nome Navigations Improvements - Feasibility Study Thursday, December 19, 2019

#### - SCHEDULE CONTINGENCY (DURATION) DEVELOPMENT -

Base Case Schedule	40.5 Months	
Confidence Level	Value	Contingenc
0%	-9 Months	-23.0%
10%	5 Months	13.0%
20%	8 Months	20.0%
30%	10 Months	25.0%
40%	12 Months	30.0%
50%	14 Months	34.0%
60%	15 Months	39.0%
70%	17 Months	44.0%
80%	20 Months	49.0%
90%	23 Months	58.0%
100%	42 Months	104.0%



					F	Project Cost		Pro	oject Sche	dule
Ref #	Risk Type	Risk/Opportunity Event	Concern (Risk Event Description)	PDT Discussions on Impact and Likelihood	Impact ©	Likelihood	Risk Level ©	Impact (S)	Likelihood (S)	Risk Level (S)
01	02 Scope Variance	Overall Project Scope - Breakwater Construction	Current scope for design and layout of the breakwaters and causeways w/ docks may change during PED. Breakwaters are nubble mound with causeways built in and docks are modified diaphram sheet pile walls with backfill.	The baseline scope for the BW/CW and docks are rubblemound breakwaters, gravel divable road with modified disphram phetepile docks, the concept layout was coordinated and analyzed with multiple variation during alternative discism directores and T87- The design team used ship aim and a lot d current wave data available at Nome to develop the new layout. While if so possible the layout lich-narge during PCD, the current design provides for a vary large ugrade and a very complete and useable facility for the current potta provides for a vary large ugrade and a very complete and useable facility for the current potta provides for a vary large ugrade and a very complete and useable facility for the current potta for so very with historical data. Low risk for ground improvement, benches, or ground construction needed	Marginal	Possible	Low	Moderate	Likely	Moderate
02	02 Scope Variance	Project purpose and objectives are not 100% defined	Potential for redefined Objective of project	At the ADM, it was decided to keep the current recommended scope for vessel depth and size. The models have been run, alternatives compared, and stakeholder inputs/reviews finished.	Moderate	Unlikely	Low	Moderate	Unlikely	Low
03	02 Scope Variance	Overall Project Scope - Dredging	commutity this scope is to decide the new enviroped outer basis to -28 with 1' OD, and the cleap water basis to -40' with 2' OD. The disposal size is near above between -12 and -20' and rung angliel along the shortine sais of the project size. The quantities are based on current hydro surveys. Concern is potential for these basis sizes to change during PED, breakwaters to change ect.	The basin size may charge signly during PED, but because of the work done during FE ship promotion, we want size is instructed to charge much the dones were advocuted at a project, the owner is instructed to charge much the dones were advocuted at a project, the owner is instructed to charge much the dones were advocuted at a project, the owner is instructed to charge much the dones were advocuted at a first of the term of the structure of the structure of the structure of the during the TSP and planning stages. There were multiple depths considered with costs and accomic benilts analyzed to ultimately come to the recommended plan and depths. Design depths and current hydro survey's were used to develop quantities for baseline estimate.	Moderate	Possible	Moderate	Moderate	Possible	Moderate
04	08 Cost and Schedule	Maantai Unit Conto Rock	The current assumption for rock unit price is based on historical costs for sizer and quantities that are similar but not exact for those specified in the concept design for the recommended plan. There is a large anount of rock required to the project. Of the rock required, a large portion of the B bit Prock 22 too store. Historically, the cost for rock quarted from a source is a function of the advance of the provide the source of the provide the project. Of the off and bits gradem to generate the most large rock as possible, anything else generated from a blast will be the rest of the rock specified and needed. Because of that, chaining ago od quarted for the rock needing time and quartity for large projects such as this one are near impossible to obtain at this stage.	The baseline estimate assume that the rock will be sourced from Cape Nome Quarty. This is a proven source the has quality store, but costs to produce specified size and quarity are hard to predict and obtain quotes tor. Rock costs Unit cost of rock is biggest risk in cost variation and are based on quotations provided for a project in Barrow and other historical projects. Previous quarry operators likely have different rate and costs of current quarry operator. Cost will likely be different when the KTR goes to buy it once the project is avanted. Previous work in Nem had contractor produce their own material from quarry with agreement with quarry operator. Rock cost is a sensitive item. A fairly small variance in the cost of rock can impact the overall project cost a great deal.	Gritical	Very Likely	High	Negligible	Unlikely	Low
05	04 Ability to Execute	Can quary source produce (ty needed?	Diffoult to predict the quary production rate. This could impact the length of time the project will take to finish, which will increase job office ordened costs (current) the schedule assumes the quary will be able to produce nock fast enough to keep up with production. The 1st season after contract award is assumed to mainly constal of rock production to stockpile enough to feed placement activities in the following years.	current assumption is the quarry operator will be able to produce enough rock in the first season to build a stockpile for the placement activities to follow in the subsequent season, then continue optication to keep until placement of all priged features. If the rock production can't keep up with placement, it's possible that additional time to complete the project could happen or nock would be improfind from other source. Nateward source in Allassi a Duch Hahor. Imported rock could mean increase in unit price for rock (risk discussed above). If additional time is needed to complete project, JOOH could also increase.	Moderate	Likely	Moderate	Significant	Very Likely	High
06	04 Ability to Execute	availability of enough equipment anticipated for dredging	Current Estimate assumes large number of plants (1 to 2 Clamshells) and tugs and dump scows	Current plan is dependant on fleet availability. Reduced competition due to multiple dredges being required for dredging. There are extremely limited available dredges. The plan utilizes high number of two scows. The impact to cost of limited competition; increase cost due to market conditions, and possible the project could take longer because of lack of available plants	Moderate	Possible	Moderate	Significant	Possible	Moderate
07	07 Construction Activitiy	Adequacy of construction schedule depicting durations, sequencing, phasing, production rates	Season is variable and dependent on temperatures above freezing.	Arctic warming trends would indicate seasonal ice will melt earlier rather than later, and fall freeze-up will occur within a short window. Days of greatest daylight occur early in the season, and contractors will take advantage by completeing as much work as possible possible.	Moderate	Likely	Moderate	Moderate	Likely	Moderate
08	06 Technical Data Variance	Dock	Pile Driving Complications • complications include encountering cobbles and builders, hard material • environmental complications could be encountered if permits limit pile driving activities around certain marine animals. Nome has recent data of shutdowns and sightings - oweall not much impact to previous project.	to mitigate cobble and boulder encounters, current baseline estimate assumes kir will be required to dredge boopring of the pieveal then backfill with epec material before driving and installing pile walts, therefore low likelihood of impacts	Significant	Possible	Moderate	Marginal	Possible	Low
09	08 Cost and Schedule	Deck	Pile and Dock Costs • currently the baseline estimate uses historical in-place costs for similar well built in Nome by Dity. The concern is there is no detailed design for these features of work at this point, so the basis of cost is parametric. While the method of construction (modified distributions arehequie wall) is not highly complex, there is still a chance the wells designed during PED will vary from the walls used to develop costs in the baseline estimate.	The in-place cets per dock received from the City of Nome were validated for reasonableness with an addition to the steel quantity as suggested by the Situ-chural PDT member to account for responsinger leads to the docks in the score or any is to score or any is substantiated on the dock in the score or any is to score or any is substantiated on the dock in the score of the scor	Significant	Likely	High	Marginal	Possible	Low
10	06 Technical Data Variance	Design Efforts	Risk associated with additional Design efforts prior to contract award and during construction	PED is currently stated for a 2 year duration to allow enough time to coordinate all disciplines. This is reasonable for the size of the project. • Potential for cost increases due to unforseen items in PED.	Moderate	Possible	Moderate	Moderate	Unlikely	Low
11	07 Construction Activitiy	Construction Oversight	Risk associated with additional Design efforts prior to contract award and during construction	Assume normal risk for levels for additional labor cost due to scope and schedule issues.	Moderate	Possible	Moderate	Moderate	Unlikely	Low
12	03 Funding issues	Sufficient funding on a yearly basis	Project most likely will require multiple construction seasons. Funding share from the sponsor likely?	Project will not be awarded if not fully funded.     sponsor fully on board for the estimated value at FS	Moderate	Possible	Moderate	Moderate	Possible	Moderate
13	08 Cost and Schedule	mobe, demobe, prepwork	Requires tug/barge hauling of floating plants, temporary facilities and rolling stock from Seattle area.	All such equipment comes from Lower 48 by barge. CWE addresses additional costs of Mobilization hauling and insurance, plus setup/takedown costs.	Negligible	Unlikely	Low	Negligible	Unlikely	Low
14	05 Contract Acquisition	Performance of work by Prime Contractor	<ul> <li>Possibility that the prime contractor will sub contract a large portion of the work due to size of the project</li> <li>Currently the estimate assumes all of the work performed by the Prime contractor.</li> <li>If some of the work is required for small business or is sub contracted out, there will be additional markups resulting in higher costs</li> </ul>	Based on previous projects of this type and size (Nome Nav Improvements) it's anticipated that a Joint Venture is likely. This will allow the dredging specialty and the rock construction specialty work to prime performant.     the likelihood of a subcontract of other features is likely and could increase cost.	Moderate	Likely	Moderate	Negligible	Unlikely	Low
15	05 Contract Acquisition	Contract Type	Final acquiation method has not been identified/May change from base assumptions • discussion about having some material provided for the contractor (ie rock and or quarry spolis)	Assume full and open competitive Bid. Currently estimate assumes all work except for 3rd party survey will be prime performed. Use of owner supplied materials is difficult to administer, potentially higher risk to government but potentially lower coat. Not likely an option at this time, assume contractor supplies rock.	Significant	Possible	Moderate	Negligible	Unlikely	Low

					r r	Project Cost		Pro	niect Scher	alulo
Ref#	Risk Type	Risk/Opportunity Event	Concern (Risk Event Description)	PDT Discussions on Impact and Likelihood	Impact ©	Cikelihood	Risk Level ©	Impact (S)	Likelihood (S)	Risk Level (S)
16	05 Contract Acquisition	Bid Schedule Structure and Contract Documents.	Structure of bid schedule may pass on unintentional risk to contractor. This could result in higher contractor cost. BW payment is based on in-place quantities	Since quantities are known and minor shoaling to occur a bid structure of price per cy will be used. This should result in low risk levels to contractor.	Moderate	Unlikely	Low	Negligible	Unlikely	Low
17	05 Contract Acquisition	Contractor Competition and perceived Risk	Dredging competition is limited throughout the industry.	Limited available dredging contractors in this remote location. Dredging projects across the country have resulted in higher prices due to limited competition. Assume 20% higher dredging costs as High Side	Moderate	Likely	Moderate	Negligible	Unlikely	Low
18	05 Contract Acquisition	Contract structure (LSF & GNF)	For acquisition methods. It is assumed two separate contracts for GNF vs LSF work. Using one contract could result in additional markups.	To be determined during PED	Moderate	Possible	Moderate	Negligible	Unlikely	Low
19	07 Construction Activity	Dredging Effective Time (Time sport active diedging of material)	Dredging Production Rate and Length of Construction Season Changes. All costs and schedule is base on	Production nates calcost from CEDEP using cycle time for depths of hasin, and assumes consolidated top layer, with loose digging under that. Production nates and duration assumes double shifting, 10 hns per shift, due to short hauf distance. Schedule above the cuter basin will need assume the disease of the distance of the distance and the distance and the distance sheatons with one plant. Util intege time will be 35 seasons (essentially 1). Latification of an project to an additional season. How is in production reals being or used more billing when the howns is withersing some increased construction seasons (Assume travel in may, work until and codes/hownset. However, design plants will not want to be traversing the Guil of Alaska past take Codes/hownbet.	Significant	Very Likely	High	Significant	Likely	High
20	07 Construction Activitiy	Material Hauling Time Effective Time (Time spent active hauling of dredged material)	Risk would be if restrictions on placed dredged material disposal methods or moving disposal location.	During the Study process, the disposal site has been vetted and determined to be a visible octant. The current assumption for directly disposal as in a process. The direct assumption is within a site within 1 mile of the project site. If this site os not get approval on IPED, the attentions may require it for farther hard of boxe and a lengthy permit process for a new disposal site or 2) rehanding of material to dispose of a judierd.	Significant	Likely	High	Moderate	Likely	Moderate
21	07 Construction Activitiy	Debris Separation and physical obstructions	There is potential for additional debris within the dredging prism. It is assumed for open water disposal the material will be screened with grizzly for separation.	Based on the Nome Navigation Improvements project in 2003/04, debris in the outer basin area was not encountend; the debris was encountered in the inner harbor which is not included in the recommended plan	Negligible	Possible	Low	Marginal	Possible	Low
22	07 Construction Activitiy	Mob, Demob & Prepwork	Requires tugbarge hauling of floating plants, temporary facilities and rolling stock from Seattle area.	All such equipment comes from Lower 48 by barge. CWE addresses additional costs of Mobilization hauling and insurance, plus setup/takedown costs.	Negligible	Unlikely	Low	Negligible	Unlikely	Low
23	07 Construction Activitiy	Weather Impacts	Storm Impacts to schedule, Potential for foul weather.	Construction contract will identify projected non-work time due to typical weather delays. Construction schedule will include allowance for weather days, and schedule make-up days. Peterialmi nick for additional overhad occi sch ime for floating optin operations. Assume land- based equipment can continue most operations during bad weather.	Negligible	Unlikely	Low	Negligible	Unlikely	Low
24	07 Construction Activitiy	Inadequate housing/utilities to support labor force	Nome is a popular location for summer travelers and outdoor recreation. Housing demand increases during construction season.	<ul> <li>Allowances for housing crews during project are usually included in the job office overhead markup. As of now, the estimate has almost \$18M per year for JOOH.</li> <li>On the of chance of a shortge and result is high for temp housing the estimate has a reasonable allowance for covering increased cost with this markup factor.</li> </ul>	Marginal	Possible	Low	Negligible	Very Likely	Low
25	07 Construction Activitiy	Adequacy of construction schedule depting durations, sequencing, phasing, production rates	<ul> <li>Season is variable and sependent on temperatures above freezing. The season assumed to richebid elvelopement could be baitored due to dranges in weather, or it could be estended if variament than anticipated.</li> <li>These all factor in the contract duration developed in the baseline estimate/schedule and if these baseline assumptions are off, the project schedule could be extended causing increases in cost and time to complete.</li> </ul>	Actics warning tends would notcate seasonal ice will melt earlier rather than Litter, and fall treez-up will occur within a short window. Days of greatest daylight occur anylin the season, and contractors will take adverting by completing as much work as possible as early as uncoment schedules assumes fablic May of Mid-Coators for possible work season. This is farly consistent with recent events. If warm tends come to fruition, the contractor could capitalize on that opportunity. The assumption is failed yous for earlier to a state of the same state of the Production rates of placement and darking using the adverse stamptions season in moughly + schedule assumes for May or your earlier to adverse the state of the Production rates for placement and darking using the adverse stamptions season in moughly + Robust more than the placement and darking using the adverse stamptions season in 2004 2026. + Rhould the project delay or require additional season, costs would include an extra mobidemobe, and JOOH.	Moderate	Possible	Moderate	Moderate	Likely	Moderate
26	07 Construction Activitiy	Limited transportation / haul routes available	Cape Nome Quarry and access road inaccessible in winter.	Cape Nome Quarry can be reached by mad and barge. Assume gravel products trucked to Nome, and rock products barged to Nome. Winter work in Nome is not practicle or safe.	Marginal	Unlikely	Low	Negligible	Unlikely	Low
27	07 Construction Activitiy	Hydro-surveys Costs	In-water surveys for construction required to verify pay quantilies. "Topo survey's required for in-place quantilies for payment of rock placed, as rock a placed, the different types and layers need to be verified. with multiple bars and was raises, withication survey's could be labor intege and there may be lack of qualified surveyors	Estimate assumes 2 different survey crews for the duration of the project - 1 for hydro surveys and 1 for topo curveys. Horsogh previous projects all Nome and other remote areas, there is low risk for not having qualified surveysor, available. Estimate assumes mob-demote for each hydro & totp survey. 1 per month for each season of work. estimate assumes all survey by subcontractor Mikk or daditional modes and surveys 1 seasons extend to 5th year.	Moderate	Possible	Moderate	Negligible	Unlikely	Low
28	08 Cost and Schedule	Estimate dredge quantity changes during project duration	Storm Impacts/Shoaling	Shoaling and storm damage repair will be funded by O&M. Assumes no additional risk to authorized cost based on shoaling	Moderate	Unlikely	Low	Negligible	Unlikely	Low
29	08 Cost and Schedule	CWE reasonableness of crews and productivities	Dredge cycle times and effective work times developed in CEDEP. Engineerec performance Cost Book items used for land-based tasks. Estimator Judgement for Rock work and Dock construction productivity.	District has large historical data and experience. Project includes rock removal. Risk associated with removal of rock and dredge cycle and effective times.	Marginal	Unlikely	Low	Negligible	Unlikely	Low
30	10 Lands & Damages	Status of real estate acquisition	Risk associated with real estate acquisition for project execution.	This project is constructed under Nevigational Servitude. Real estate costs are mostly administration labor. Any new acquisition will take place during PED. No real estate requirement dentified for BW exercision.	Marginal	Unlikely	Low	Negligible	Unlikely	Low
31	01 Management	Implementation of VE Recommendations	VE will be performed on project to develop alternatives.	VE study will have to be done during PED. Likely some items will be identified that may help cost and schedule. Not possible to determine what those could be at this point.	Marginal	Unlikely	Low	Negligible	Unlikely	Low
32	09 Regulatory & Environmental	Environmental and Water quality issues	<ul> <li>Persinel for changes to contract requirements for water quality.</li> <li>Possible delays and extat costs during PED obtaining into permiss that could result in changes to the baseline assumptions for dredging and construction.</li> <li>when driving piles, there may be restrictions on work due to animals in the area</li> </ul>	- Currently the baseline study and estimate is based on ability to reasonably obtain permits ineeded for this project Driving ple will likely require observers and shutdrows if certain conditions happen. This may delay project progress,but based on historical projects similar, very few delays have been realized enderging water quality is fairly established in terms of requirements needed and are incorporated into the estimate and plans Dredge disposal area is low riks of not being approved	Marginal	Unlikely	Low	Negligible	Unlikely	Low
33	09 Regulatory & Environmental	Biological Area Restoration ffor Crabs	Possible that during PED studies will show contract will need to have habitats established outside of the port to off set where the new breakwaters are at.	<ul> <li>To account for this concern, the report and baseline estimate include allowances for constructor to plote noble, targe bookies and other new habits in the water.</li> <li>estimat assumes multiple leads of large rock be disposed of off shore for this requirement and it equates to abort 31M to accouncils this.</li> <li>this was the recommendation from the Environmental PDT member during FS</li> </ul>	Marginal	Unlikely	Low	Negligible	Unlikely	Low
34	06 Technical Data Variance				Marginal	Unlikely	Low	Negligible	Unlikely	Low

					F	Project Cost		Pro	piect Sche	dule
Ref #	Risk Type	Risk/Opportunity Event	Concern (Risk Event Description)	PDT Discussions on Impact and Likelihood	Impact ©	Likelihood	Risk Level ©	Impact (S)	Likelihood (S)	Risk Level (S)
35	06 Technical Data Variance				Marginal	Unlikely	Low	Negligible	Unlikely	Low
36	06 Technical Data Variance	Upland Facilities & Utilities	Scope is Security Gate; plus Electrical, Water, and Fuel extended from existing causeway to new dock. No design, and only rough lengths used for estimate (parametric at best)	current estimate depends on very little design development input. contract estimate do develop concerto envil jerights are used to develop concerto whigh likelhood of changes to estimate assumptions and impact could be significant in on est impact from PED schedule, buc vorail project checkule could see delays as a result of thing to complete utility work during the same time as the breakwater work is being done.	Significant	Likely	High	Moderate	Likely	Moderate
37	06 Technical Data Variance				Marginal	Unlikely	Low	Negligible	Unlikely	Low
38	06 Technical Data Variance	Steel Sheetpile Dock	Could see scope growth due to required length of vessels.	At the ADM, it was decided to keep the current recommended scope for vessel depth and size.	Marginal	Unlikely	Low	Negligible	Unlikely	Low
39	06 Technical Data Variance	Sea Level Rise	Base estimate incorporate cost of sea level rise.	Risk Identified within the Breakwater design. Current design based on historical rates.	Marginal	Unlikely	Low	Negligible	Unlikely	Low
40	06 Technical Data Variance	Hazardous waste concerns	Soil sampling completed. No hazardous material located within project footprint.	No risk identified in deep water construction. The identified contamination was only found in the inner Small Boat Harbor.	Marginal	Unlikely	Low	Negligible	Unlikely	Low
41	06 Technical Data Variance				Marginal	Unlikely	Low	Negligible	Unlikely	Low
42	05 Contract Acquisition	Small Business Acquisition strategy	The contracting plan has not been firmly established. Small Business contracts could result in a restricted competitive market and higher overheads.	Current assumption is competitive bids, full and open competition for the rubblemound and dredging work which is the major portion of the cost. Smaller sub-contracts wi small business expected for the utilities and initial areas improvements. This work is ortical subblemound and earthwork. Potential tor competitive joint verture bids from small businesses. Small business coid have an impact on project of the disposal area work.	Negligible	Unlikely	Low	Negligible	Unlikely	Low
43	05 Contract Acquisition	Modifications and Claims During Construction	Project is primarily a large breakwater construction and dredging project with rock removal.	Good soll borings on project, however, there is risk for additional hard material. The District built a similar breakwater externation ten years ago which is now being extended further. Day's most likely are tocked in.	Marginal	Possible	Low	Negligible	Unlikely	Low
44	08 Cost and Schedule	Fuel Cost	Fuel is typically a key cost driver for dredging projects where large equipment usage is dependent on fuel.	There is always concern for increases in fuel price over typical escalation increases. Currently the drodge fuel costs are set at \$3.15 and lared based equipment set at \$3.50 (average for gas,dr and on-coad diseal). Since the project is equipment intensive, variations in fuel costs will impact overall costs	Significant	Likely	High	Negligible	Unlikely	Low
45	08 Cost and Schedule	Prevailing Wages	Use of Alaska version Davis Bacon wages are used.	Wages tend to esculate along normal inflation rates. It's possible the remote project alle will require a labor bonus to attract skilled workforce and the market will require labor bonus for skilled labor. Assume travel in May, work until beginning of November. Nome witnessed rock production in	Moderate	Very Likely	High	Negligible	Unlikely	Low
46	08 Cost and Schedule	Dredge Window Restrictions	Shortening of allowed dredging months.	June. Land-Based: May start-up - 30 Oct shutdown(Lost light) Water Based: 15MAY Showtme - 15OCT shutdown, DEMOB by 15 Oct Environmental Windows: Black-out windows are unknown at this time (ESA species shutdown windows), Know during PED Concern: O&M Dredging - Out of Inner harbor by 1JUL (Out of Snake River - Shutdown) for migrating fash	Moderate	Possible	Moderate	Moderate	Possible	Moderate
47	08 Cost and Schedule	Dredge Production Turbidly Requirements	The assumed contract requirements would not allow for water overflow.	No reason to think the assumptions will change	Marginal	Possible	Low	Negligible	Unlikely	Low
48	08 Cost and Schedule	Perm. Navigation Aids	Navigation Aids will be installed on the project. USACE may install the aids, but the Coast Guard pays 100% of the installation cost.	happens for all nav improvements proejcts	Negligible	Unlikely	Low	Negligible	Unlikely	Low
49	08 Cost and Schedule	Mobilization / Demobilization	Assumptions regarding crew, productivity, overtime?     Level of Estimate?	Haseline estimate assumes separate Mob for Bock and Dredge efforts. Hand based equipment includes initial mobe of project sile, winter over of equipment, demobe all end of project -Dredge mobe demobe assumes travel from vest coast Conus to Nome in spring, demobe from Nome to West Coast CONUS in fail. Can not winter over dredge plants at Nome. *number of trips follows the baseline schedule. There could be a possibility of an extra mobe if schedule duration increases past the baseline.	Significant	Possible	Moderate	Significant	Unlikely	Moderate
50	08 Cost and Schedule	Shoaling	Shoaling increases material to be dredged to reach dredge prism.	Assumption is likely not to change	Moderate	Unlikely	Low	Negligible	Unlikely	Low
51	08 Cost and Schedule	Soil Material	soil material type and dredge means are difficult to predict due to lack of geotechnical data. Soil type and density impact dredge production and equipment used.	+POT advises that the assumptions for diredge means methods and production will be similar to the hatocical rates seen during the 2003/04 Nome Nav (Improvements project: During this project, a damhed was used, the top form feel of material was consolidated then the remaining layers were looser, will suided for mech ridedging. -urrant assumptions use those means methods so chances of conditions varying are low. -cobbies and boulders will be encountered, but with mech dredging, this is doable.	Marginal	Possible	Low	Marginal	Possible	Low
52	07 Construction Activity	Weather related Impacts	Risk of storm event which requires demobilization and then mobilization back into job site of plant and crew.	In general, the land based work will be insulated from most shuldown delays during the construction seasor. There will be storms and short weather delays throughout the seasor that is actured in the workshold days at this short days the storm of the workshold days at the short days throughout the seasor that are short to be s	Moderate	Possible	Moderate	Moderate	Possible	Moderate

						Project Cost		Pr	oiect Scher	dule
Ref #	Risk Type	Risk/Opportunity Event	Concern (Risk Event Description)	PDT Discussions on Impact and Likelihood	Impact ©	Likelihood	Risk Level ©	Impact (S)	Likelihood (S)	Risk Level (S)
53	8 Construction Activitiy	Rock Reuse	Assumption of 75% Reuse of Existing East Revetment Rock Wrong	Project scope includes demo of east breakwater. This was built in 2004 with rock from Cape Nome which is very good rock. The A- and B-rock in that BW is likely to be very useable after memory. The P10 <sup>-</sup> recursted at length, the risk of useable on core demoved and finally decided at the scope of the roce rock is possible and maple likely. Ifkevise there's a chance once momoved, it will break and be useable built will meet spece a scorehing dher than what it was originally. The estimate assumes 75% and accounts for costs to remove, handle to a stockpile for sorting, Lening and their net-rocoporation into the project. The estimate assumes 75% and accounts for costs to remove, handle to a stockpile for sorting, Lening and their resincoporation into the project. The vertice assumes 75% and accounts for costs to remove, handle to a stockpile for sorting, testing and their resincoporation into the project. The science assumes 75% and accounts for costs to remove, handle to a stockpile for sorting, testing and their resince and the resince of the science for the size of the science and the resince of the science for the size of the science for the size of the science and the overall total project cost science for the science house the lens.	Moderate	Likely	Moderate	Marginal	Possible	Low
54	10 Construction Activitiy	Construction Sequencing	Construction Sequencing differs from baseline assumptions	Must maintain operational port. Can live without a breakwater, not ideal, but can work. Simultaneous demo of east breakwater and construction of new east causeway/BW is feasible. Doobly setup 3-cantuction sequence also, 4 as not likely, and 5 as high end. Breakwater gets built before dredging. 3 seasons for dredging as baseline assumption Controlled supects of construction sequence are optomized as part of baseline estimate and are to likely to change. Uncontrollate aspects of constructions equence kinety concequipment shortfats, weather delays, nock production limits, are already captured under other modeled takes, recommend do not model unless risk structure is altered.	Moderate	Possible	Moderate	Moderate	Possible	Moderate
55	14 Construction Activitiy	Archaelogical Monitoring	Archaeological Monitoring Duration During Construction	Focused on on-land portion of breakwater only. During grading and any removal of existing breakwater and installation of new causeway/BW on land. Assume 20 days of monitoring by USACE.	Negligible	Possible	Low	Negligible	Unlikely	Low
56	08 Cost and Schedule	Work Day Length	Work Day Varies from Initial Assumptions	Possibly 24 hr operation for dradging and rock placement. Extra disylight during summe season. Double shifts will happen at a minimum, adjustments we be made as light changes. Beseline estimate assumes 6/12 double shift during June July and Aug More aggressive shift work leads to risk from production digiridation, safety issues ect.	Marginal	Possible	Low	Moderate	Possible	Moderate
57	16 Construction Activitiy	Real Estate	Insufficient Available Staging Areas/Staging Areas Not Identified	Currently have no staging area identified. City owns land so during PED its likely an area will be identified. Plan on entire sand pit area and beach west of the channel. Contractor traders option to make arrangement with city of Nome, however, USACE requires a real estate plan and part of the environmental assessment. Contract has to include a staging area (NEPA), but could add carveat to allow contractor to make arrangement with other entities for additional areas. Historic carnetary near west beach. Biggest issue is if private land is impacted, easy to work with city-owned land.	Marginal	Possible	Low	Marginal	Possible	Low
58	17 Construction Activitiy	Archaelogical Discovery	Unearthing Cultural Sites During Construction	Cultural sites could potentially be found during work, causing delays. This can be mitigated by the requirement for an arch monitor during any work in the area of potential sites being discovered. The likelihood of finding something is possible, but impact is low if monitored and mitigated correctly by contract specifications	Marginal	Possible	Low	Marginal	Possible	Low
59										
60										
61			1		1	1	1	1	1	1

Title Page

Nome Port Modification Study - Plan 8B -40'MLLW UPDATE JAN 2020 Nome Port Modification Study 2019 – Alt #8B/-40FT MLLW

All cost libraries were updated on 07 AUG 201

Y:\P\CW\02 W\Nome\\_18 Nome Port Modification Study 2018\

Added Capstone A1 Rock quantitie per PGM Comments

Estimated by CENPOA-ECD-C Designed by CENPOA-ECD-H Prepared by Harvey

Preparation Date 3/9/2020 Effective Date of Pricing 8/21/2019 Estimated Construction Time 1,800 Days

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Labor ID: AK160001 EQ ID: EP16R09

Print Date Mon 9 March 2020 Eff. Date 8/21/2019

### U.S. Army Corps of Engineers Project : Nome Port Modification Study - Plan 8B -40'MLLW UPDATE JAN 2020

Description	UOM	Quantity	ContractCost	SIOH	Contingency	ProjectCost
Total Project Cost - Summary			425,350,458	0	0	425,350,458
Federal Funded Items (GNF)	LS	1	337,113,940	0	0	337,113,940
Mobilization and Demobilization - Land Based Equipment	YR	4	7,537,442	0	0	7,537,442
Barge Mobilization	MI	23,200	6,725,615	0	0	6,725,615
Equipment Standby	HR	1,216	227,579	0	0	227,579
Equipment Road Transport	EA	8	125,113	0	0	125,113
Mob Construction Facilities & Supplies	EA	4	283,717	0	0	283,717
Mob Personnel	PN	120	175,419	0	0	175,419
Demo and Build Breakwaters	LS	1	276,391,345	0	0	276,391,345
Demo West Spur BW Nose	EA	1	1,656,932	0	0	1,656,932
"A1" 22 Ton ROCK Removal	LCY	15,194	706,106	0	0	706,106
"B2" 2 Ton Rock Rock removal	BCY	12,178	325,389	0	0	325,389
Core & Quarry Spall removal	LCY	28,839	625,425	0	0	625,425
Boulder Relocation for Crab Habitat	CY	5,000	1,301,074	0	0	1,301,074
New 2 Ton Rock Rock placement	BCY	5,000	1,301,074	0	0	1,301,074
WEST - Build New Causeway Extension	LF	3,484	180,884,839	0	0	180,884,839
Dredge for Causeway BW Armor toe	BCY	51,424	929,562	0	0	929,562
A1 22T Rock	CY	270,162	113,650,682	0	0	113,650,682
A1 22T Rock - Capstone	CY	7,260	3,332,560	0	0	3,332,560
A5 Rock	CY	52,375	1,430,331	0	0	1,430,331
B2 Rock	CY	155,746	38,228,299	0	0	38,228,299
B3 Rock	CY	24,744	4,678,634	0	0	4,678,634
C1 Rock	CY	47,310	7,172,030	0	0	7,172,030
C2 Rock	CY	15,884	2,027,651	0	0	2,027,651
D Fill	CY	87,191	3,545,144	0	0	3,545,144
Relocate Rock for Re-use - all land based salvagable rock (A Rock & B Rock)	CY	109,156	1,343,484	0	0	1,343,484

Time 15:37:05

Description	UOM	Quantity	ContractCost	SIOH	Contingency	ProjectCost
West Causeway - E- and F-Fill	LS	1	4,546,460	0	0	4,546,460
Demo East Breakwater	LS	1	3,677,187	0	0	3,677,187
A1 Rock Removal	LCY	17,379	606,270	0	0	606,270
A5 Rock Removal	СҮ	63,646	1,594,073	0	0	1,594,073
B2 Rock removal	ВСҮ	13,762	208,246	0	0	208,246
B3 Rock Removal	CY	15,144	216,892	0	0	216,892
C2 Rock Removal	СҮ	38,649	553,531	0	0	553,531
C1 RockRemoval	CY	1,966	16,985	0	0	16,985
Core & Quarry Spall removal	LCY	47,646	481,190	0	0	481,190
EAST - Build New BW	LF	3,900	86,625,841	0	0	86,625,841
Dredge East BW Toe	ВСҮ	3,093	55,910	0	0	55,910
A1 Rock	СҮ	26,932	12,286,541	0	0	12,286,541
A1 Rock - Capstone	СҮ	4,900	2,235,410	0	0	2,235,410
A5 Rock	CY	113,901	43,151,217	0	0	43,151,217
B2 Rock	CY	20,174	5,432,425	0	0	5,432,425
B3 Rock	СҮ	54,330	13,730,716	0	0	13,730,716
C1 Rock	CY	3,250	483,962	0	0	483,962
C2 Rock	CY	35,575	4,910,988	0	0	4,910,988
Filter Rock	СҮ	34,363	1,223,405	0	0	1,223,405
D Fill	CY	32,046	1,337,751	0	0	1,337,751
East BW Causeway - E- and F-Fill	EA	1	1,777,516	0	0	1,777,516
Survey Verification-Breakwaters	YR	4	2,245,472	0	0	2,245,472
Field Work	DAY	288	2,111,100	0	0	2,111,100
Mobe-demobe-lodging	EA	24	134,372	0	0	134,372
Mobe-Demobe - Dredging Equipment	YR	4	11,484,447	0	0	11,484,447
Mob-Demobe Dredges	YR	4	11,484,447	0	0	11,484,447

Description	UOM	Quantity	ContractCost	SIOH	Contingency	ProjectCost
Dredging Outer Basin and Deep Water Basin - gnf	LS	1	41,631,567	0	0	41,631,567
Outer Basin - gnf	BCY	1,827,600	31,459,932	0	0	31,459,932
Deep Water Basin - gnf	BCY	422,100	8,108,292	0	0	8,108,292
Dredge Pre- and Post- Hydrosurveys	EA	16	2,063,342	0	0	2,063,342
Field Work	EA	16	1,910,153	0	0	1,910,153
Travel-Perdiem-MobDemob	EA	1	153,189	0	0	153,189
Aids to Navigation	EA	1	69,138	0	0	69,138
Non-Federal Funded Items (LSF)	EA	1	88,236,518	0	0	88,236,518
Causeway Docks, Mooring Dolphins, Breach Bridge - good	EA	1	55,817,549	0	0	55,817,549
Bridge at Breach	EA	1	2,253,115	0	0	2,253,115
Security Gates	EA	1	22,259	0	0	22,259
Mooring Dolphins	EA	10	6,999,274	0	0	6,999,274
Vert Piles	EA	10	1,036,336	0	0	1,036,336
Batter Piles	EA	40	4,145,344	0	0	4,145,344
Anodes	EA	50	56,048	0	0	56,048
Gussets	EA	80	232,005	0	0	232,005
Decks	EA	10	107,574	0	0	107,574
Catwalks #	LF	1,000	1,421,968	0	0	1,421,968
1 ea 400 LF Existing West Causeway	EA	1	11,008,065	0	0	11,008,065
Demo for New Dock	EA	1	303,761	0	0	303,761
New Dock and Fill	EA	1	6,179,971	0	0	6,179,971
E Fill	BCY	92,238	1,529,020	0	0	1,529,020
F Fill	BCY	23,975	1,537,189	0	0	1,537,189
Surface (D1) Course	CY	1,393	177,518	0	0	177,518
Dredge for 400 LF Dock at Existing Causeway	BCY	70,844	1,280,606	0	0	1,280,606
2 each 450 LF Dock on New West CW Extension	EA	2	17,381,170	0	0	17,381,170

Description	UOM	Quantity	ContractCost	SIOH	Contingency	ProjectCost
Mod Diaphram Sheetpile Dock	LF	900	17,381,170	0	0	17,381,170
1 ea 600 LF Dock on New West CW Extension	EA	1	11,973,695	0	0	11,973,695
Mod Diaphram Sheetpile Dock	LF	600	11,973,695	0	0	11,973,695
1 ea 400 LF Dock on New East CW	EA	1	6,179,971	0	0	6,179,971
Mod Diaphram Sheetpile Dock	LF	400	6,179,971	0	0	6,179,971
West and East Causeway Fill and Surface Material - good	EA	1	21,571,903	0	0	21,571,903
West Causeway - Roadway Material	LS	1	16,100,063	0	0	16,100,063
E Fill	BCY	902,043	11,452,340	0	0	11,452,340
F Fill	BCY	103,609	3,715,929	0	0	3,715,929
Surface (D1) Course	CY	6,684	931,794	0	0	931,794
East BW Causeway - Roadway Material	EA	1	5,471,840	0	0	5,471,840
E Fill	BCY	107,116	1,496,443	0	0	1,496,443
F Fill	BCY	66,963	2,456,406	0	0	2,456,406
Surface (D1) Course	CY	3,190	525,675	0	0	525,675
Dredge for Dock Footprint	BCY	52,952	993,315	0	0	993,315
Dredging Outer, Deep Water Basins and for Sheetpile Docks	EA	1	8,579,213	0	0	8,579,213
Outer Basin - lsf	BCY	188,200	3,239,636	0	0	3,239,636
Deep Water Basin - lsf	BCY	95,500	1,834,499	0	0	1,834,499
Dredging for West Docks	BCY	141,228	2,549,260	0	0	2,549,260
Dredging for East CW Dock	BCY	52,952	955,819	0	0	955,819
Utilities	EA	1	2,267,853	0	0	2,267,853
Utilities	LF	3,534	2,267,853	0	0	2,267,853
Water	LF	3,534	360,935	0	0	360,935
Electric	LF	3,534	1,112,977	0	0	1,112,977
Fuel	LF	3,534	793,940	0	0	793,940

ID	Task Name	Duration	Start	Finish	Predecessors
0	Nome Harbor Improvements	2251 days	s Fri 2/2/18	Thu 9/17/26	
1	Feasibility	671 days?	Fri 2/2/18	Fri 8/28/20	
2	TSP	286 days	Fri 2/2/18	Fri 3/8/19	
3	ADM	36 days	Mon 10/7/19	Mon 11/25/19	
4	Submit FR/EA to HQ	1 day?	Fri 4/24/20	Fri 4/24/20	
5	Director Report Signed	1 day	Fri 8/28/20	Fri 8/28/20	
6	PED	523 days	Wed 9/30/20	Fri 9/30/22	
7	Procurement	120 days	Mon 10/3/22	Fri 3/17/23	6
8	Advertise	60 days	Mon 10/3/22	Fri 12/23/22	
9	Award	60 days	Mon 12/26/22	Fri 3/17/23	8
10	Construction	915 days	Mon 3/20/23	Thu 9/17/26	9
11	Pre Construction Plans and Mob	60 days	Mon 3/20/23	Fri 6/9/23	
12	Pre-Construction Plans	60 days	Mon 3/20/23	Fri 6/9/23	9
13	Mobilize Project, Mining Ops and BW Equipment	60 days	Mon 3/20/23	Fri 6/9/23	9
14	Quarry Production	851 days	Mon 6/12/23	Fri 9/11/26	
15	2023 Rock Production	100 days	Mon 6/12/23	Fri 10/27/23	13
16	2024 Rock Production	125 days	Mon 4/29/24	Fri 10/18/24	
17	2025 Rock Production	125 days	Mon 4/28/25	Fri 10/17/25	
18	2026 Rock Production and Quarry Close Out	100 days	Mon 4/27/26	Fri 9/11/26	
19	West Breakwater/Causeway and Docks	623 days	Wed 5/1/24	Thu 9/17/26	
20	2024 Season	135 days	Wed 5/1/24	Tue 11/5/24	
21	2024 Mob-Startup	15 days	Wed 5/1/24	Tue 5/21/24	
22	Dredge Dock Foundations/Place New Fill	10 days	Wed 5/29/24	Tue 6/11/24	21
23	Demo Spur	15 days	Wed 6/12/24	Tue 7/2/24	22
24	Construct BW/CW	75 days	Wed 7/3/24	Tue 10/15/24	23
25	450 Dock No 1 and Mooring Points	45 days	Wed 8/14/24	Tue 10/15/24	24SS+30 days
26	2024 Shutdown and Protect Work	15 days	Wed 10/16/24	Tue 11/5/24	24,25
27	2025 Season	125 days	Thu 5/1/25	Wed 10/22/25	
28	2025 Mob-Restart	10 days	Thu 5/1/25	Wed 5/14/25	
29	Breakwater/Causeway Rock Placement Sta 9+00 to	100 days	Thu 5/15/25	Wed 10/1/25	28
30	450 Dock No 2 and Mooring Points	45 days	Thu 6/26/25	Wed 8/27/25	29SS+30 days
31	2025 Shutdown and Protect Work	15 days	Thu 10/2/25	Wed 10/22/25	29
32	2026 Season	100 days	Fri 5/1/26	Thu 9/17/26	

)	Task Name	Duration	Start	Finish	Predecessors
33	2026 Mob-Restart	10 days	Fri 5/1/26	Thu 5/14/26	
34	Breakwater/Causeway Rock Placement Sta 23+00 to	70 days	Fri 5/15/26	Thu 8/20/26	33
35	600 LF Dock No 3 and Mooring Points	60 days	Fri 6/26/26	Thu 9/17/26	34SS+30 days
36	West Breakwater and Causeway Utilities	85 days	Fri 5/1/26	Thu 8/27/26	
37	East Breakwater/Causeway and Dock	415 days	Mon 3/20/23	Fri 10/18/24	
38	2023 Season	115 days	Mon 6/12/23	Fri 11/17/23	
39	Dredge Dock Foundations/Place New Fill	10 days	Mon 6/12/23	Fri 6/23/23	13
40	Demo BW Beach to Breach (land based)	30 days	Mon 6/12/23	Fri 7/21/23	13
41	Construction BW / CW (land based)	80 days	Mon 6/19/23	Fri 10/6/23	
42	Demo BW from Breach and proceed to End (marine	70 days	Mon 7/24/23	Fri 10/27/23	40
43	2023 Shutdown and Protect Work	15 days	Mon 10/30/23	Fri 11/17/23	42
44	2024 Season	415 days?	Mon 3/20/23	Fri 10/18/24	
45	2024 Mob-Restart	10 days?	Mon 5/6/24	Fri 5/17/24	
46	Construction BW / CW (land based)	100 days	Mon 5/20/24	Fri 10/4/24	45
47	Demo BW from Breach and proceed to End (marine	95 days?	Mon 5/20/24	Fri 9/27/24	45
48	400LF Dock and Mooring Points	60 days	Mon 5/20/24	Fri 8/9/24	45
49	East BW Breach Bridge	1 day?	Mon 3/20/23	Mon 3/20/23	
50	East Breakwater/Causeway Utilities	1 day?	Mon 3/20/23	Mon 3/20/23	
51	2024 Shutdown and Protect Work	15 days	Mon 9/30/24	Fri 10/18/24	47
52	Dredge and Disposal	902 days	Mon 3/20/23	Mon 8/31/26	
53	2023	165 days	Mon 3/20/23	Fri 11/3/23	
54	2023 - Mobe 1 Dredge	60 days	Mon 3/20/23	Fri 6/9/23	9
55	Dredge Dock Foundations/Place New Fill	15 days	Mon 6/12/23	Fri 6/30/23	54
56	Dredge Outer Basin	60 days	Mon 7/3/23	Fri 9/22/23	55
57	2023 Demobe	30 days	Mon 9/25/23	Fri 11/3/23	56
58	2024	150 days	Mon 4/22/24	Fri 11/15/24	
59	2024 - Mobe 2 Plants	25 days	Mon 4/22/24	Fri 5/24/24	
60	Dredge Dock Foundations/Place New Fill	10 days	Mon 5/27/24	Fri 6/7/24	59
61	Dredge Outer Basin	95 days	Mon 5/27/24	Fri 10/4/24	59
62	2024 Demobe	30 days	Mon 10/7/24	Fri 11/15/24	61
63	2025	150 days	Mon 4/21/25	Fri 11/14/25	
64	2025 Mobe 2 Plants	25 days	Mon 4/21/25	Fri 5/23/25	
65	Dredge Dock Foundations/Place New Fill	5 days	Mon 5/26/25	Fri 5/30/25	64

ID	Task Name	Duration	Start	Finish	Predecessors
66	Dredge Outer Basin - Plant 1	95 days	Mon 5/26/25	Fri 10/3/25	64
67	Dredge Outer Basin - Plant 2	15 days	Mon 5/26/25	Fri 6/13/25	
68	Dredge Deep Water Basin - Plant 2	80 days	Mon 6/16/25	Fri 10/3/25	67
69	2025 Demobe	30 days	Mon 10/6/25	Fri 11/14/25	68
70	2026	95 days	Tue 4/21/26	Mon 8/31/26	
71	2026 Mobe 1 Plant	30 days	Tue 4/21/26	Mon 6/1/26	
72	Dredge Dock Foundations/Place New Fill	5 days	Tue 6/2/26	Mon 6/8/26	71
73	Dredge Deep Water Basin - Plant 1	30 days	Tue 6/9/26	Mon 7/20/26	72
74	2026 Demobe	30 days	Tue 7/21/26	Mon 8/31/26	73

Port of Nome Modification Feasibility Study

Nome, Alaska

**Appendix E: Cost Engineering - Alternative Cost Estimate Development and Documentation** 

Original Date of Document April 2019 Updated April 2020 for inclusion into the final report



# NOME PORT MODIFICATION STUDY - CIVIL WORKS PROGRAM; FEASIBILITY INVESTIGATION PROJECT MAJOR COST ESTIMATE ASSUMPTIONS AND BASIS FOR ALTERTATIVE LEVEL CONCEPT DESIGNS Date: April 29, 2019

#### FEDERAL FUNDED ITEMS

- MOB/DEMOB: Land-based and marine based mob/demob for 3 years, 3 round trips complete. Assumes some equipment may winter-over in Nome to maximize construction time. Assume Cape Nome Quarry is 15 miles from Nome; assume Seattle is 2,345 miles from Nome. Equipment included but not limited to: Floating crane, large rock trucks, Excavator, Tug & Barge Mob/ Demob included but not limited to: Equipment standby time, road transportation time, cargo load/offload and time associated with transportation.
- 2. DEMOLISH THE EXISTING CAUSEWAY SPUR & EAST BREAKWATER: The estimate assumes the contractor will salvage and reuse existing A22 and B22 (as "A1", "A5", and "B2", "B3" stone). This estimate has assumed that 75% of the "A" and "B" salvaged materials are reused in the new breakwaters. The reusable rock will be trucked within one mile of the port (one way) and sorted/ stored on city property. All core/filler rock will be abandoned as deemed appropriate.
- EXTEND WEST CAUSEWAY/BREAKWATER/REALIGN EXISTING EAST BREAKWATER: Construction will include both barge and land-based equipment. Rock is assumed coming from Cape Nome. The quote for the quarry prices used is dated July 2018. Truck or barge prices have been included.
- DREDGING: All unit costs were developed using Corps of Engineers Dredge Estimating Program (CEDEP) a proprietary cost estimating software program. These unit costs were then input into MCACES (Mii) to include the appropriate markups. Assumed input variables are as follows;
  - a. Inner Basin Deepening to the -12 MPL, within the small boat harbor is going to be separated into another contract and is no longer considered part of the Nome Harbor Port Modification Project.
  - b. Outer Basin Expansion to -28 MPL, mechanical dredging with a barge mounted clamshell bucket is assumed. Spoils are loaded onto a split scow barge and deposited close to the beach near the project site. Mob/demob costs are dependent on the depth chosen.
  - c. Deep Basin Deepening between -30 to -40 MPL, same as above.

### ASSUMED NON-FEDERAL FUNDED ITEMS (LSF)

5. CAUSEWAY – ACCESS ROAD: the "E" and "F" fill directly under the access road and surface courses are all considered LSF for this estimate.

- 6. NAVIGATION FEATURES: The new causeway dock, mooring dolphins, security gates and caisson docks are LSF items.
  - a. Caisson Docks: Pre-cast concrete caisson docks are assumed for the docks in the West Causeway Extension feature of work. Dredging, bedding and fill for these docks are included in the cost - basically everything needed to be installed and prepped from the top of the dock to the bottom of the seabed is included in this cost. The cost for the docks is based on a quotation from a pre-cast concrete manufacturer on the West Coast (Seattle-Tacoma area), mobilized to Nome via tug and tow. The quote was obtained from Concrete Tech Corporation in 2010 during a previous study for deep draft navigation improvements at Nome and escalated for this initial Cost Estimate. An updated quotation is being pursued and will be updated as appropriate in future submittals.
  - b. Sheetpile Docks: Docks noted as such in the drawings are assumed to be sheetpile docks. Historical costs were used for pricing in the estimate.
  - c. Mooring Dolphins two each 75LF x 36" diameter steel pipe piles for each new dock built.
- 7. UTILITIES: Some support between land facilities and docked ships is presumed to be required for regular and safe operations in the port. Costs of utility lines carrying water, fuel, electricity and communications will be developed more fully as the design details are developed. The current working estimates for utilities were created using major assumptions and RS Means cost book items.

ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names	1st Half	2nd Half	1st Half	2nd Ha
0	Nome Harbor Improvements Alternate 8B -	TS2801 davs	Fri 2/2/18	Fri 10/27/28						r Q3
1	Feasibility	537 davs	Fri 2/2/18	Mon 2/24/20			_			
2	Start Study Scoping Tasks	1 day	Fri 2/2/18	Fri 2/2/18				♦ 2/2		
3	TSP	1 day	Fri 3/8/19	Fri 3/8/19				♦ 3	3/8	
4	ADM	1 day	Fri 8/23/19	Fri 8/23/19					♦ 8/23	
5	POA submits Final Report to MSC	1 day	Mon 2/24/20	Mon 2/24/20					♦ 2/24	
6	PED	565 days	Mon 8/2/21	Fri 9/29/23						
7	Field Data Collection, Design and Spec Develo	pm 565 days	Mon 8/2/21	Fri 9/29/23						
8	Procurement	76 days	Mon 10/2/23	Mon 1/15/24						
9	Advertise	60 days	Mon 10/2/23	Fri 12/22/23						
10	Award	1 day	Mon 1/15/24	Mon 1/15/24	9FS+15 days					
11	Construction	1234 days	Tue 2/6/24	Fri 10/27/28						
12	Pre-Contract Award	60 days	Tue 2/6/24	Mon 4/29/24						
13	NTP	1 day	Tue 2/6/24	Tue 2/6/24	10FS+15 day					
14	Pre-Construction Plans	60 days	Tue 2/6/24	Mon 4/29/24	10FS+15 day					
15	Season Number 1	963 days	Mon 4/1/24	Wed 12/8/27						
16	Mobilize	45 days	Mon 4/1/24	Fri 5/31/24						
17	Rock Production	100 days	Tue 4/30/24	Mon 9/16/24	14					
18	Construct New East Causeway from Beach	Sea90 days	Thu 6/24/27	Wed 10/27/27	17SS+30 day					
19	Demobe Season 1	30 days	Thu 10/28/27	Wed 12/8/27	18					
20	Mob Season 2	169 days	Tue 4/1/25	Fri 11/21/25						
21	Mobilize	30 days	Tue 4/1/25	Mon 5/12/25						
22	Rock Production	100 days	Tue 5/13/25	Mon 9/29/25	21					
23	Finialize East Causeway	45 days	Tue 5/13/25	Mon 7/14/25	21					
24	400LF Dock at East Causeway	45 days	Tue 6/10/25	Mon 8/11/25	23SS+20 day					
25	Demo Existing East Breakwater	60 days	Tue 6/10/25	Mon 9/1/25	21FS+20 day					
26	Demo Stub Nose of West Breakwater	20 days	Tue 6/10/25	Mon 7/7/25	21FS+20 day					
27	Start New West Causeway Extension	69 days	Tue 7/8/25	Fri 10/10/25	26					
28	Demobe Season 2	30 days	Mon 10/13/25	Fri 11/21/25	27					
29	Mob Season 3	165 days	Wed 4/1/26	Tue 11/17/26	i					
30	Mobilize	30 days	Wed 4/1/26	Tue 5/12/26						
31	Rock Production	100 days	Wed 5/13/26	Tue 9/29/26	30					
32	Continue New West Causeway Extension	90 days	Wed 5/13/26	Tue 9/15/26	30					
33	450 LF Docks on West C/W	45 days	Wed 7/15/26	Tue 9/15/26	32SS+45 day					
34	Dredge Outer Basin -25' to -27'	100 days	Wed 5/13/26	Tue 9/29/26	30					
35	Protect C/W Nose for Winter	15 days	Wed 9/16/26	Tue 10/6/26	32					
36	Demobe Season 3	30 days	Wed 10/7/26	Tue 11/17/26	35					
37	Mobe Season 4	150 days	Thu 4/1/27	Wed 10/27/27	7					
38	Mobilize	30 days	Thu 4/1/27	Wed 5/12/27						
	Task	Exter	nal Tasks		Manual Task	1	1	Finish-only		3
	Split		nal Milestone	•	Duration-only	-	-	Deadline		Ŷ
Project	t: Nome Harbor Improveme Men 5 (6/10	Inact	ive Task	•	Manual Summ	arv Rollup		Critical		
Date: I	Summary	Inact	ive Milestone	•	Manual Summ	ary l	1	Critical Split		
	Project Summary	l Inact	ive Summary	1	Start-only	E		Progress		
					Page 1					



ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names	1st Ha	alf	2nd H	alf	1st Ha	alf	2nd H
							Q1	Q4	Q3	Q2	Q1	Q4	Q3
39	Rock Production	100 days	Thu 5/13/27	Wed 9/29/27	38								
40	Finalize West C/W Extension and 600 LF Dock	100 days	Mon 5/17/27	Fri 10/1/27	38								
41	Dredge Deep Water Basin -30' to -40'	90 days	Thu 5/13/27	Wed 9/15/27	38								
42	Demobe Season 4	30 days	Thu 9/16/27	Wed 10/27/27	41								
43	Mobe Season 5	150 days	Mon 4/3/28	Fri 10/27/28									
44	Mobilize	30 days	Mon 4/3/28	Fri 5/12/28									
45	Finalize Dredging All Areas and Closeout Proje	60 days	Mon 5/15/28	Fri 8/4/28	44								
46	Demobe from Nome	60 days	Mon 8/7/28	Fri 10/27/28	45								

	Task		External Tasks		Manual Task		Finish-only	Э
Dreiget: Nome Harber Improveme	Split		External Milestone	$\diamond$	Duration-only		Deadline	$\mathbf{r}$
Date: Mon 5/6/19	Milestone	•	Inactive Task		Manual Summary Rollup	)	Critical	
	Summary	<b></b> 1	Inactive Milestone	$\diamond$	Manual Summary	·1	Critical Split	
	Project Summary	1	Inactive Summary	1	Start-only	C	Progress	
					Page 2			







#### NOME PORT MODIFICATION COST ESTIMATE ALTERNATIVE 8b

		-			Date:		27-Feb-19			_	
WBS No.	. FEATURE ACCOUNT / ITEM DESCRIPTION	UOM	QUANTITY	ι	UNIT COST	<u> </u>	TOTAL COST				
						⊢		-			
	General Navigation Funded Work Items					⊢					
10	BREAKWATER AND SEAWALL					<u> </u>					
						<u> </u>					
	Mob, Demob. and Site Preparation	EA	6	Ş	805,185	Ş	4,831,110				
		014			13.00			-			
	Demo Spur BW/400 FT of Existing BW	CY	232,387	>	17.22	Ş	4,002,000	-			
	A1 - ROCK Removal	CY	32,573	Ş	32.39	ç	1,056,000	-			
	RD 21 Deels Deers and	CT	03,040	ç	23.34	ç	1,499,000	1			
	B2 - KOCK Removal	CY	25,940	Ş	14.28	ç	371,000				
	Core and Quarry Spall Removal	CY	13,144	э ć	0.15	ç	203,000				
	core and duarry span terrioval	CI	55,004	2	5.15	, ,	871,000				
	Extend West Causeway BW	LE	3.484	Ś	67.486.25	Ś	235,122,100				
	Dredge for Causeway BW Armor toe	CY	29,197	Ś	18.41	Ś	537,500				
	A1 Bock (A22)	CY	285.321	Ś	514.43	Ś	146,777,800				
	A5 Bock	CY	59.049	Ś	364.99	Ś	21,552,300				
	B2 Bock	CY	158,234	Ś	207.10	Ś	32,770,300				
	B3 Rock (B22 Rock)	CY	19,760	Ś	184.91	Ś	3,653,800				
	C1 Rock (C8 Rock)	CY	54,436	\$	158.79	\$	8,643,900				
	C2 Rock	CY	19,954	\$	128.15	\$	2,557,100				
	D Fill	CY	106,194	\$	146.35	\$	15,541,500				
	Reuse A1 Rock	CY	24,430	\$	32.39	\$	791,300				
	Reuse A5 Rock	CY	47,735	\$	23.54	\$	1,123,700				
	Reuse B2 Rock	CY	19,455	\$	14.28	\$	277,800				
	Reuse B3 Rock	CY	11,358	\$	13.51	\$	153,400				
	Relocate Rock for Re-use (A Rock & B Rock)	CY	102,977	\$	7.20	\$	741,700				
	East Breakwater/Causeway	LF	3,900	\$	4,211.62	\$	16,425,300				
	Dredge for Causeway BW Armor toe	CY	56,651	\$	18.41	\$	1,042,900				
	A1 Rock (A22)	CY	15,840	\$	514.43	\$	8,148,600				
	A5 Rock	CY	6,807	\$	364.99	\$	2,484,500				
	B2 Rock	CY	12,738	\$	207.10	\$	2,638,000				
	B3 Rock (B22 Rock)	CY	2,234	\$	184.91	\$	413,100				
	C1 Rock (C8 Rock)	CY	1,762	\$	158.79	\$	279,800				
	C2 Rock	CY	2,159	\$	128.15	\$	276,700				
	Filter Rock (D8)	CY	3,704	\$	121.15	\$	448,700	-			
	D Fill	CY	4,735	\$	146.35	\$	693,000	-			
					10 100 55	-	E 050	+			
	West Causeway 400 FL Dock Rock	LF	400	Ş	13,133.75	Ş	5,253,500	4			
	E FIII	CY	104,521	Ş	33.19	Ş	3,469,100	+			
	F FIII	CY CY	29,468	Ş	53.30	\$	1,570,600	4			
	D1 Surface Course	CY	1,985	>	107.69	\$	213,800				
		5	ub-Total (GNF Br	eakw	ater Work 1.	Ś	265.634.010	1			
		5				-	100,004,010	t			
12	NAVIGATION PORTS & HARBORS					<u> </u>					
				1							1
	Dredge Plant Mobilization (Cost Per Season)	EA	3	\$ 3	3,448,593.00	\$	10,345,779	Duration in Months	Depths	Total Quantity	Duratio
	Outer Basin Expand and Deepening Area			1		<u> </u>					month
	Dredge to -26' Max Pay Line (126Kcy/month)	CY	214,000	\$	17.80	\$	3,809,200	1.70	-26/-32	328,000	
	Dredge to -28' Max Pay Line (126Kcy/month)	CY	298,000	\$	17.81	\$	5,307,400	2.37	-26/-37	608,000	
									-26/-42	1,211,000	1
	Deep Water Basin area										
	Dredge to -32' Max Pay Line (123K cy/month)	CY	114,000	\$	18.13	\$	2,066,800	0.93	-28/-32	412,000	
	Dredge to -37' Max Pay Line (121K cy/month)	CY	394,000	\$	18.38	\$	7,241,700	3.26	-28/-37	692,000	

	Inner Channel Modification		1							
ļ	Dredge to -13' Max Pay Line (115K cy/month)	CY	52,000	\$	19.25	\$	1,001,000			
	Local Sponsor Facility (LSF) Funded Items									
10	Breakwater and Seawall									
	Causeway Access Road on West Extension	LS	1			\$	24,744,500			
	E Fill	CY	542,968	\$	33.19	\$	18,021,100			
	F Fill	CY	113,674	\$	53.30	\$	6,058,800			
	D1 Surface Course	CY	6,171	\$	107.69	\$	664,600			
12	Navigation Ports and Harbors									
	New Causeway Docks	LS	1			\$	50,736,400			
	Mooring Dolphins	EA	4	\$	603,530.16	\$	2,414,100			
	Security Gate	EA	1	\$	19,158.85	\$	19,200			
	East Caisson Dock	LF	600	\$	32,268.45	\$	19,361,100			
	West Caisson Dock	LF	450	\$	32,315.57	\$	14,542,000			
	Sheetpile Dock (2 ea)	LF	800	\$	18,000.00	\$	14,400,000			
	Bridge at Breach	LF	125	\$	16,000.00	\$	2,000,000			
19	Building Grounds and Utilities	LS	1			\$	2,257,300			
	8" Steel Water and Fire	LF	2,400	\$	180.00	\$	432,000			
	Electric	LF	2,200	\$	529.70	\$	1,165,300			
	Fuel	LF	2,200	\$	300.00	\$	660,000			
			Sub	-Toti	al (LSF Items )	\$	77,738,200			
	SUMMARY FOR ALT 8b with DIFFERENT DREDGE DEP									
	Different Dredge Depth Scenarios		GNF Drgd		GNF BW		LSF Total	PED 1%		
	2 Each Mobe Demobes + Dredge -26 and -32		\$ 9,894,797	\$	265,634,010	\$	77,738,200	\$3,532,6		
	3 Each Mobe Demobes + Dredge -26 and -37		\$ 17,747,379	\$	265,634,010	\$	77,738,200	\$3,611,1		
	6 Each Mobe Demobes + Dredge -26 and -40		\$ 33,490,779	\$	265,634,010	\$	77,738,200	\$3,768,6		
	2 Each Mobe Demobes + Dredge -28 and -32		\$ 12,159,351	Ś	265.634.010	Ś	77.738.200	\$3,555,3		

SUMMARY FOR ALT 8b with DIFFERENT DREDGE DEPTHS										
Different Dredge Depth Scenarios GNF Drgd		GNF BW	LSF Total	PED 1%	SIOH 4%	Contingency	Total	PED Value		
2 Each Mobe Demobes + Dredge -26 and -32 \$ 9,89	1,797	\$ 265,634,010	\$ 77,738,200	\$3,532,670	\$14,130,680	\$123,643,452	\$494,573,810	1%		
3 Each Mobe Demobes + Dredge -26 and -37 \$ 17,74	7,379	\$ 265,634,010	\$ 77,738,200	\$3,611,196	\$14,444,784	\$126,391,856	\$505,567,425	SIOH Value		
6 Each Mobe Demobes + Dredge -26 and -40 \$ 33,49	),779	\$ 265,634,010	\$ 77,738,200	\$3,768,630	\$15,074,520	\$131,902,046	\$527,608,185	4%		
2 Each Mobe Demobes + Dredge -28 and -32 \$ 12,15	9,351	\$ 265,634,010	\$ 77,738,200	\$3,555,316	\$14,221,262	\$124,436,046	\$497,744,185	ARA Conting		
3 Each Mobe Demobes + Dredge -28 and -37 \$ 20,01	1,933	\$ 265,634,010	\$ 77,738,200	\$3,633,841	\$14,535,366	\$127,184,450	\$508,737,800	35%		
6 Each Mobe Demobes + Dredge -28 and -40 \$ 34,98	3,979	\$ 265,634,010	\$ 77,738,200	\$3,783,612	\$15,134,448	\$132,426,416	\$529,705,665			
OPTION 8b - ANNUAL 0&M COSTS										

ITEM NO.	DESCRIPTION	UOM	QUANTITY	UNIT COST	TOTAL COST			
	OUTER BASIN EXPANSION AND DEEPENING (w/sediment trap)							
	-26MAXPAY	CY	38,000	\$ 32.60	\$ 1,238,800			
	-28MAXPAY	CY	38,000	\$ 32.60	\$ 1,238,800			
	DEEPWATER BASIN DREDGING							
	-32MAXPAY	CY	50,000	\$ 26.33	\$ 1,316,500			
	-37MAXPAY	CY	69,000	\$ 29.96	\$ 2,067,240			
	-40MAXPAY	CY	98,000	\$ 33.16	\$ 3,249,680			
	INNERCHANNEL MODIFICATION							
	-13MAXPAY	CY	9,000	\$ 25.00	\$ 225,000			

7.5% 7.5% 7.5%

1 plant drdg for 3 months=> no of

nob/demobe 1 2 3
Nome Har	rbor Modification														
Concept C	Quantity Computations														
M. Peters	on 2018-11-8	_			_									_	
ALT 8b		A1 rock	B2 rock	C1 rock	A5 rock	B3 rock	C2 rock	D fill	E fill	F fill	Filter	D1 Surface	Rock Demo	Dredge	Dredge
	DEMO SPUR BW	15,194	12,178	1,695	-	-	-	5,128	-	-	-	-	34,195		
	DEMO EXIST BW	17,379	13,762	1,966	63,646	15,144	38,649	5,885	-	-	41,761	-	198,192		
	DEMO 400 LF WEST CAUSEWAY FOR DOCK	-	-	-	9,575	4,464	3,127	3,374	25,469	3,649	-	150	49,808		
	WEST CAUSEWAY 400 LF DOCK	-	-	-	-	-	-	-	104,521	29,468	-	1,985	-		
	WEST CAUSEWAY EXTENSION	309,751	177,689	54,436	65,856	31,118	19,954	106,194	566,230	115,989	21,818	7,021	-	29,197	
	EAST BW/CAUSEWAY	18,500	13,979	2,216	120,796	65,782	37,573	38,306	139,323	75,239	20,647	3,607	-	56,651	
	OUTER BASIN EXPANSION AND DEEPENING														
		-26MAXPAY												1,219,000	88.3
		-28MAXPAY												1,504,000	88.3
	DEEPWATER BASIN DREDGING														
		-32MAXPAY												26,000	10.8
		-37MAXPAY												136,000	21.0
		-40MAXPAY												475,000	45.3
	INNER BASIN DEEPENING														
		-13MAXPAY												33200	9.1
	INNER CHANNEL MODIFICATION														
		-13MAXPAY												52000	6.4



#### NOME PORT MODIFICATION COST ESTIMATE ALTERNATIVE 3a

			-		Date:		13-Nov-19	1				
WBS No.	FEATURE ACCOUNT / ITEM DESCRIPTION	UOM	QUANTITY	ι	JNIT COST		TOTAL COST					
02	Relocations											
02.4				~	200.000.00	~		-				
02.1	Structure Raise and/or Relocation General Navigation Funded Work Items	EA	-	\$	200,000.00	Ş	-	-				
10	BREAKWATER AND SEAWALL											
								_				
	Mob, Demob. and Site Preparation	EA	6	\$	805,185	\$	4,831,110	-				
	CRAB HABITAT MITIGATION	LS	1	\$	1,000,000	\$	1,000,000	-				
	DEMO SPUR/BREAKWATER/400 FT OF EXISTING BW	CY	134,066	\$	17.48	\$	2,344,000	-				
	"A1"- Rock Removal	CY	31,755	Ş ¢	32.39	\$ ¢	1,029,000	-				
	"B2"- Rock Removal	CY	25 252	ې د	25.54 14.28	ې د	360,000	-				
	"B3" - Rock Removal	CY	6,439	\$	13.51	\$	87,000	-				
	Core and Quarry Spall Removal	CY	55,337	\$	9.15	\$	507,000					
	WEST CAUSEWAY EXTENSION	LF	2,340	\$	53,263.63	\$	124,636,900	-				
	Dredge for Causeway BW Armor toe		81,412	ې د	18.41	ې د	1,498,800	-				
	Reuse A1 Rock*	СҮ	23.817	Ś	32.39	Ś	771.400	-				
	A5 Rock NEW ROCK	CY	15,265	\$	364.99	\$	5,571,400	-				
	Reuse A5 Rock*	CY	11,462	\$	23.54	\$	269,800					
	B2 Rock NEW ROCK	CY	79,552	\$	207.10	\$	16,475,200					
	Reuse B2 Rock*	CY	18,939	\$	14.28	\$	270,400					
	B3 Rock (B22 Rock) NEW ROCK	CY	7,692	\$	184.91	\$	1,422,300	-				
	Reuse B3 Rock*		4,829	ې د	13.51 158 70	ې د	65,200	-				
	C2 Rock	CY	8 496	د ج	128 15	ې د	1 088 800	-				
	D Fill	CY	52,258	\$	146.35	\$	7,648,000	-				
	E Fill	CY	542,968	\$	10.19	\$	5,532,800					
	F Fill	CY	113,674	\$	53.30	\$	6,058,800					
	D1 Surface Course	CY	6,171	\$	107.69	\$	664,600					
	Relocate Rock for Re-use (A Rock & B Rock)	CY	59,046	Ş	7.20	Ş	425,300	-				
	EAST BW/CAUSEWAY	LF	450	Ś	34.396.00	Ś	15.478.200					
	Dredge for Causeway BW Armor toe	CY	5,211	\$	18.41	\$	95,900	-				
	A1 Rock (A22)	CY	15,840	\$	514.43	\$	8,148,500	]				
	A5 Rock	CY	6,807	\$	364.99	\$	2,484,600					
	B2 Rock	CY	12,738	\$	207.10	\$	2,638,000	-				
	B3 Rock (B22 Rock)	CY	2,234	Ş	184.91	Ş	413,100	-				
	C2 Rock	CY	2,159	Ş Ş	138.79	ې د	279,800	-				
	Filter Rock (D8)	CY	3,704	\$	121.15	\$	448,700	-				
	D Fill	CY	4,735	\$	146.35	\$	693,000					
								-				
	WEST CAUSEWAY 400 LF DOCK	LF	400	Ş	7,124.00	Ş	2,849,600	-				
	E Fill	CY	29 468	\$	53 30	ې د	1,003,100	-				
	D1 Surface Course	CY	1,985	\$	107.69	\$	213,800	-				
			Sub-Total (GNF	Break	water Work ):	\$	151,139,810	-				
12				-				-	Calculate how m	any mob-demob	es needed for	combined
12	NAVIGATION FORTS & HARBORS								volume at given		issuining 1 sea.	Total numbe
	Dredge Plant Mobilization (Cost Per Season)	EA	1	\$	3,448,593.00	\$	3,448,593	Duration :	Combined Depth	Total Quantity	Duration (mn	of mob-
	Outer Basin Expand and Deepening Area		Total Vol to Drg	g Unit	cost (TPC)	Tota	Il Proj Cost	volume/prod		for both depths	for both dept	demobe for
	Dredge to -26' Max Pay Line (126Kcy/month)	CY	364,000	\$	17.80	\$	6,479,200	2.89	-26/-32	478,000	4	1
	Dredge to -28' Max Pay Line (126Kcy/month)	CY	461,000	\$	17.81	\$	8,210,400	3.66	-26/-37	364,000	3	1
	Doop Water Basin area								-26/-42	1,361,000	11	3
	Deep water Basin area	CY	114 000	Ś	18 13	¢	2 066 800	0.93	-28/-32	575.000	5	2
	Dredge to -42' Max Pay Line (125K cy/month)	CY	997,000	\$	18.39	\$	18,334,800	8.24	-28/-42	1.458.000	12	3
	Inner Basin Deepening							1				
10	Proplayator							-				
10	Causeway Access Road on West Extension	15	1			Ś	12 256 200					
	E Fill	CY	542,968	\$	10.19	\$	5,532,800	-				
	F Fill	CY	113,674	\$	53.30	\$	6,058,800	]				
	D1 Surface Course	CY	6,171	\$	107.69	\$	664,600	-				
	Novigation Dayte and Harbarr							-				
12	New Causeway Docks	10	1			¢	20 152 200	-				
	Mooring Dolphins	EA	6	Ś	603.530.16	\$	3.621.200	Need 2 for eac	h dock			
	Security Gate	EA	1	\$	19,158.85	, \$	19,200					
	1-400' OB WE (Sheetpile Dock @ 28')	LF	400	\$	14,293.16	\$	5,717,300					
	1-450' DB WT (Sheetpile Dock @ 42')	LF	450	\$	18,742.70	\$	8,434,200					
	1-600' DB WT (Sheetpile Dock @ 42')	LF	600	\$	19,436.25	\$	11,661,800	-				
10	Building Grounds and Utilities	IC	1			¢	2 252 200	-				
19	8" Steel Water and Fire	LF	2.400	Ś	180.00	ې \$	432.000					
	Electric	LF	2,200	\$	529.70	\$	1,165,300					
				-				1				

	 =/==-	- 7	,	τ	,				
		Sub	-Total (LSF Items )	\$	43,967,200				
SU	THS								
Different Dredge Depth Scenarios	GNF Drgd		GNF BW		LSF Total	PED 1%	SIOH 4%	Contingency 35	Total
Dredge -26 and -32 (requires 1 dredging season)	\$ 12,932,286	6 \$	\$ 151,139,810	\$	43,967,200	\$2,080,393	\$8,321,572	\$72,813,754	\$291,255,01
3 Each Mobe Demobes + Dredge -28 and -42	\$ 12,416,224	4 \$	\$ 151,139,810	\$	43,967,200	\$2,075,232	\$8,300,929	\$72,633,132	\$290,532,52

2 200 \$

300.00 \$

660 000

OPTION 3a - ANNUAL O&M COSTS											
ITEM NO.	DESCRIPTION		UOM	QUANTITY		UNIT COST	T	OTAL COST			
	OUTER BASIN EXPANSION AND DEEPENING (w/sediment trap)										
	-26MAXPAY		CY	52,000	\$	32.60	\$	1,695,200			
	-28MAXPAY		CY	38,000	\$	32.60	\$	1,238,800			
	DEEPWATER BASIN DREDGING										
	-32MAXPAY		CY	11,000	\$	26.33	\$	289,630			
	-42MAXPAY		CY	26,000	\$	33.16	\$	862,160			

LE

Fuel

Nome Harbor Modification Concept Quantity Computations M. Peterson 2018-11-8

		DESIGN VOL	UMES (CY)												AREAS (acre)
		A1 rock	B2 rock	C1 rock	A5 rock	B3 rock	C2 rock	D fill	E fill	F fill	Filter	D1 Surface F	Rock Demo	Dredge	Dredge
ALI 5d	DEMO SPUR BW	15,194	12,178	1,695	-	-	-	5,128	-	-	-	-	34,195		
	DEMO 400FT OF EXIST BW	16,561	13,074	1,886	5,707	1,976	2,467	5,416	-	-	2,978	-	50,065		
			_	-	0 5 7 5	1 161	2 1 7 7	2 27/	25 460	2 6 4 0	_	150	10 202		
	DEINO 400 EI WEST CAUSE WATTON DOCK	-	-	-	5,575	4,404	5,127	3,374	23,409	3,049	-	150	49,808		
	WEST CAUSEWAY 400 LF DOCK	-	-	-	-	-	-	-	104,521	29,468	-	1,985	-		
	WEST CAUSEWAY EXTENSION	164,642	98,491	27,894	26,726	12,521	8,496	52,258	542,968	113,674	-	6,171	-	81,412	
	EAST BW REALIGNMENT	15,840	12,738	1,762	6,807	2,234	2,159	4,735	-	-	3,704	-	-	5,211	
	OUTER BASIN EXPANSION AND DEEPENING													264 000	25.0
		-201014744												461 000	35.8
		2010/1/11												401,000	55.0
	DEEPWATER BASIN DREDGING														
		-32MAXPAY												114,000	35.4
		-37MAXPAY												394,000	54.2
		-40MAXPAY												997,000	88.3
	INNER BASIN DEEPENING														
		-13MAXPAY												33200	9.1
	INNER CHANNEL MODIFICATION														
		-13MAXPAY												52000	6.4



# NOME PORT MODIFICATION COST ESTIMATE ALTERNATIVE 3b

No.         Local Dial (Local) (Name Dial Dial Dial Dial Dial Dial Dial Dial			OLIANTITY		Date:	13-Nov-19	1				
diama         loc         loc         loc         loc           0         Second by sequences (we hand mathematication of the sequence (we hand mathematication of the sequence) (we hand m	BS NO. FEATURE ACCOUNT / TIEM DES		QUANTITY	UNIT	CUSI	TOTAL COST					
Quest of Expansion Marcel Number of Marcel Number o	02 Relocations										
1)         1)         1)         1)         1)         1 <td>02.4 Christian Daile and fan Dala antian</td> <td></td> <td></td> <td>ć 20</td> <td>0.000.00</td> <td><u>~</u></td> <td>_</td> <td></td> <td></td> <td></td> <td></td>	02.4 Christian Daile and fan Dala antian			ć 20	0.000.00	<u>~</u>	_				
10         Interval         10         Interval         10         10           1000         Non-Norman         64         6         5         Book 100         1         5         1         1         5         1         1         5         1         1         5         1 <td< td=""><td>02.1 Structure Raise and/or Relocation</td><td>EA EA</td><td>-</td><td>\$ 20</td><td>10,000.00</td><td>\$ -</td><td>-</td><td></td><td></td><td></td><td></td></td<>	02.1 Structure Raise and/or Relocation	EA EA	-	\$ 20	10,000.00	\$ -	-				
Mill, lenux and star Properties         1.1.         1.2.         5         1.0000           Control work and star Mill Caliform         1.5.         1.2.         5         1.0000           Start and	10 BREAKWATER AND SEAWALL	113									
MathematicalAAAAAAAAAACAMABETY MINESCRY15AAA<											
Oute Match Numearization         I.S.         I.S. <thi.s.< th="">         I.S.         I.</thi.s.<>	Mob, Demob. and Site Preparation	EA	6	\$	805,185	\$ 4,831,110					
Deck Addition for Control         1         5         1,2000         5         1,2000           Perma gate robustion of clustering With Control         C         9,200         9							-				
Best Synt MOD011 of Congung Mar.         C         MAX         M	CRAB HABITAT MITIGATION	LS	1	\$ 1	,000,000	\$ 1,000,000					
0         000000000000000000000000000000000000	Domo Spur BW//400 ET of Existing BW/	CV	84.260	ć	20 56	¢ 1 722 000	-				
Non-test hemod Pro-test hemo	"A1"- Rock Removal		31 755	Ş Ç	20.50	\$ 1,732,000 \$ 1,029,000					
mit         mit <thmit< th=""> <thmit< th=""> <thmit< th=""></thmit<></thmit<></thmit<>	"A5"- Rock Removal	CY	5.707	Ś	23.54	\$ 135.000					
Image: space learning in the space learning	"B2"- Rock Removal	CY	25,252	\$	14.28	\$ 361,000	-				
Image of the set of t	"B3" - Rock Removal	CY	1,976	\$	13.51	\$ 27,000					
NET_COUPLE STIPSOP         IF         3.2.8         5         5.6.1.4.0         6         1.2.5.8.1.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3.3	Core and Quarry Spall Removal	CY	19,570	\$	9.15	\$ 180,000	_				
The Data is a function of the Data is a set of th			2.240	ć -	4 5 3 4 4 9	ć 407 507 400	-				
Lines:         Lines: <thlins:< th=""> <thlins:< th="">         Lines:</thlins:<></thlins:<>	WEST CAUSEWAY EXTENSION	LF	2,340	\$ 5 ¢	4,524.40	\$ 127,587,100	_				
New A1 Box <sup>1</sup> O'         22.82 / 5         22.28 / 5         272.40 / 5           A 8 doc MW ROCK         O'         22.42 / 5         100.80 / 5         100.80 / 5           B 2ee A1 Mod <sup>1</sup> O'         42.24 / 5         100.80 / 5         100.80 / 5           B 2ee A1 Mod <sup>1</sup> O'         42.82 / 5         20.14 / 5         100.80 / 5           B 2ee A1 Mod <sup>1</sup> O'         11.20 / 5         184.81 / 5         2.251.40 / 5           B 2ee A1 Mod <sup>1</sup> O'         11.42 / 5         184.81 / 5         2.251.40 / 5           C 1986 (12.8964)         O'         11.40 / 5         184.81 / 5         1.429.80 / 5           C 1986 (12.8964)         O'         11.40 / 5         11.83 / 5         2.252.80 / 5           O' Suffor Course         O'         11.20 / 5         11.83 / 5         2.264.80 / 5           O' Suffor Course         O'         11.20 / 5         11.83 / 5         2.264.80 / 5           O' Suffor Course         O'         12.22 / 5         5         11.83 / 5         2.264.80 / 5           O' Suffor Course         O'         12.22 / 5         5         14.80 / 5         5         14.90 / 5           A 18 ok / 022 / 0.01 / 0         O'         1.22 / 5         14.80 /	A1 Bock (A22) NEW BOCK		1/0 825	Ş ¢	18.41	\$ 1,498,800 \$ 72,444,800	-				
As faces have works         Or         2.2446 (7)         3         3.24.06 (7)         3.24.	Reuse A1 Rock*	СҮ	23.817	Ś	32.39	\$ 771.400					
Image: Proceeding of the second of	A5 Rock NEW ROCK	СҮ	22,446	\$	364.99	\$ 8,192,500					
Example methods         Example me	Reuse A5 Rock*	СҮ	4,280	\$	23.54	\$ 100,800					
House B Roaf         CY         19,000 5         19,00 5         20,000 5 <t< td=""><td>B2 Rock NEW ROCK</td><td>СҮ</td><td>79,552</td><td>\$</td><td>207.10</td><td>\$ 16,475,200</td><td></td><td></td><td></td><td></td><td></td></t<>	B2 Rock NEW ROCK	СҮ	79,552	\$	207.10	\$ 16,475,200					
Bit Stack IR2 Rod JR2 MO2(K         CY         11.000         13.481         5         2.001,000           Resca IR2 Rod JR2 MO2(K         CY         12.42         5         13.81         5         2.001,000           C1         Deck (SB Noc)         CY         2.23,81         5         13.81         5         4.023,300           C1         Deck (SB Noc)         CY         4.32,735         5         4.055,000           F1#I         CY         4.32,745         5         3.056,000           D Surface Course         CY         4.32,745         5         3.056,000           Metocat Rok In Resca (A Rock & B. Rock)         CY         4.32,755         5         3.056,000           Metocat Rok In Resca (A Rock & B. Rock)         CY         4.32,155         5         4.46,000           A Rock (A22)         CY         5.32,000         5         3.04,000         5         3.04,000           E Rock         CY         4.32,000         5         3.04,000         5         4.45,000           E Rock         CY         4.32,000         5         3.04,000         5         4.02,000           E Rock         CY         4.32,000         5         1.04,05,700         5	Reuse B2 Rock*	СҮ	18,939	\$	14.28	\$ 270,400	-				
mutue al doch         Gr         3.442         5         3.133         5         2.40,00           G Ciao (2004)         Gr         3.22,258         5         1.442,30         5         5.744,00           G Tim         Gr         3.22,258         5         1.442,30         5         5.744,00           Finit         Gr         3.22,258         5         1.454,35         5         5.744,00           D Surface Course         Gr         1.52,258         5         5.744,00         5         5.754,00           D Surface Course         Gr         1.51,75         5         6.64,60         5         3.455,00           PASI MONOSTOM         Gr         5.13,75         5         5.258,00         5         3.458,00           A Stock (12/2)         Gr         5.13,84         5         5.458,00         5         3.434,00           G C Stock (12/2)         Gr         7.278,5         5         2.258,00         5         3.434,00           G C Stock (12/2)         Gr         7.278,5         5         2.268,00         5         3.434,00           G C Stock (12/2)         Gr         7.278,5         5         2.458,00         5         3.434,00	B3 Rock (B22 Rock) NEW ROCK	СҮ	11,040	\$	184.91	\$ 2,041,400	-				
1. Cl Bool, La Bool, 1. Cl Bool, 1	Reuse B3 Rock*	CY	1,482	Ş	13.51	\$ 20,000	-				
Orea         Or         5.25.8         5         5.464.00           F Fill         Or         5.25.280         5         5.552.80           F Fill         Or         5.17.5         5         5.604.80           D 1 Sufface Course         Or         46.17.5         5         5.604.80           B State Course         Or         46.17.5         5         5.405.80           Restore Root for during Tradimentation tradie         Or         45.81         5         5.508.00           A Stock (1/22)         Or         5.134         5         5.464.00         5         5.464.00           A Stock (1/22)         Or         5.134         5         5.464.00         5         4.568.00           S Rock (1/22)         Or         7.127.28         5         2.258.00         5         4.35.00           S Rock (1/22)         Or         2.127.28         5         2.258.00         5         0.30.00           G Rock (1/22)         Or         2.237.18         5         2.258.00         5         0.30.00           G Rock (1/22)         Or         2.237.18         5         2.268.00         5         0.00.00           O Rock (1/20)         Or         2.237.266.00	C1 ROCK (L8 ROCK)		27,894	Ş ¢	158.79	\$ 4,429,300 \$ 1,099,900					
Frii         Or         5436/4         5         10.39         5         552,880           Fill         Or         15,36/4         5         10.39         5         552,880           D Surface Course         Or         6,171         5         107,90         5         666,500           Relocate Rock of Rescale	D Fill	CY CY	52 258	ş Ş	146 35	\$ 7,648,000 \$ 7,648,000					
Fini         CY         113,074         5         30,05         5         0.05,005           DeDerfe Course         CY         45,074         5         349,500           Relocate Rock Orne-are (Anock & Binck)         CY         45,075         5         349,500           DeTredge for Caseway WArmorice         CY         45,015         5         55,026,000           All Rock (A22)         CY         15,078,000         5         15,078,000           Oneode for Caseway WArmorice         CY         15,086,000         5         15,078,000           Oneode for Caseway WArmorice         CY         15,086,000         5         15,078,000           Oneode for Caseway WArmorice         CY         15,087,000         5         273,800           Stock (S2 routh)         CY         17,074,15         120,155         448,370           Other (S2 Routh)         CY         17,074,15         120,155         448,370           Outer Hoin Expond Marmorice         CY         17,074,15         120,045,775         150,028,110           Outer Hoin Expond Marmorice         CY         27,000         5         130,045,775         100,045,773         100,045,775           Outer Hoin Expond Marea         CY         200,00 <td< td=""><td>E Fill</td><td>СҮ</td><td>542.968</td><td>Ś</td><td>10.19</td><td>\$ 5.532.800</td><td>-</td><td></td><td></td><td></td><td></td></td<>	E Fill	СҮ	542.968	Ś	10.19	\$ 5.532.800	-				
D.Surface Course         CY         6.17.1         S         207.49         S         664.600           Relaces Rock of Fereue (Anock & Binck)         CY         453.18         5         349.500           Last SWCAUSEWAY         IF         450.18         5         349.500           Derdge for Cassewy BW Amorice         CY         3.211         5         349.500           Anotal Sector (Sector (	F Fill	СҮ	113,674	\$	53.30	\$ 6,058,800	-				
Refrace back for Busice (Rack & Back)(Y4.5.1857.7.257.4.3.5.0EAST BAY/CAUSEWAY16163.8.455.9.5.00Order for Causevay BVArmoreCY3.2.1153.4.4.8.50A flock (A22)CY12.5.8453.4.4.8.50A flock (A22)CY12.5.8453.4.4.8.50A flock (A22)CY12.5.8452.4.5.8.00A flock (A22)CY12.5.8452.4.5.8.00A flock (A22)CY12.5.852.728.500C Flock (Rack)CY7.724513.8.7.5A flock (A22)CY12.1.552.728.500C Flock (Rack)CY7.724513.8.7.5A flock (A22)CY12.1.552.728.500C Flock (Rack)CY7.724513.8.7.5D FillCY7.724513.8.7.5D FillCY7.724513.0.355.77D FillCY12.1.552.738.50D FillCY12.1.553.0.395.77D FillCY12.1.5513.8.15D FillCY12.1.553.0.395.77D FillCY12.1.555.307.400D FillCY13.4.653.1.3.55D FillCY13.4.655.307.400D FillCY13.4.653.1.3.55D FillCY13.4.653.1.3.55 <td>D1 Surface Course</td> <td>СҮ</td> <td>6,171</td> <td>\$</td> <td>107.69</td> <td>\$ 664,600</td> <td></td> <td></td> <td></td> <td></td> <td></td>	D1 Surface Course	СҮ	6,171	\$	107.69	\$ 664,600					
Last BW/CAUSEWAY         ILE         Stand 72 Watemand role thread         ILE         Stand 72 Watemand role thread         ILE           LSS BW/CAUSEWAY         CY         5.21         \$ 5.84.84         \$ 0.55.00           All Rock (A2/2)         CY         5.28         \$ 8.34.85.00         \$ 2.48.400           All Rock (A2/2)         CY         6.26         \$ 3.84.96         \$ 2.48.400           All Rock (A2/2)         CY         1.27.87         \$ 2.84.87.00         \$ 2.48.400           All Rock (A2/2)         CY         1.27.87         \$ 1.83.78         \$ 2.75.800           C1 Rock (C8 Roch)         CY         1.27.87         \$ 1.82.85         \$ 6.993.000           All Rock (B8 Roch)         CY         1.27.87         \$ 1.80.62.81.00           Dredge Plant Mobilization (Cot Pr Season)         CA         S         \$ 3.48.993.00         \$ 1.03.45.77           Dredge Plant Mobilization (L05 Rer Season)         CA         S         \$ 3.48.993.00         \$ 1.03.45.77           Dredge Plant Mobilization (L05 Rer Season)         CA         S         \$ 3.48.993.00         \$ 1.03.45.77           Dredge Plant Mobilization (L05 Rer Season)         CA         S         \$ 3.48.993.00         \$ 1.03.45.77           Dredge Plant Mobilization (L05 Rer Season)	Relocate Rock for Re-use (A Rock & B	Rock) CY	48,518	\$	7.20	\$ 349,500					
EASP EW/CAUSEWAY         LF         4.50         5         3.43,000         5         15.74,200           Dordige for Causeway Multimoritee         CY         5.214         5         18.84         5         95,500           At Nock (M22)         CY         12.840         5         34.435         5         3.448,500           Ab Nock (M22)         CY         12.840         5         34.43         5         3.434,500           Ab Nock (M22)         CY         12.278         5         2.010,10         5         2.434,500           C Rock (BAok)         CY         12.278         5         102.35         5         2.030,00           C Hook (BAok)         CY         4.725         5         160.35         5         6         5         1.033,000           Dridge Piant Mobilization (Cot Presson)         EA         -3         \$         3.446,590         5         1.034,779         0 <td>* Assumed 75</td> <td>i% of demoed rock for reuse</td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td>	* Assumed 75	i% of demoed rock for reuse					-				
Deckge for Causewy BW Amor toe     CY     5,211     5     18.41     5     59.00       Al Rock     CY     6,407     5     39.418     5     2,844.000       AB Rock     CY     6,407     5     39.418     5     2,244.000       BB Rock (E28 Rock)     CY     11,242     5     120,513     5     2,244.000       C4 Rock (C810,0)     CY     1,722     5     138.715     5     2,728.000       C4 Rock (C8)     CY     4,737     5     120,525     5     695.000       DFHIE Rock (C8)     CY     4,737     5     120,528,410       DFHI     CY     4,737     5     150,528,410       Dredge Plant Mobilization (cost Per Season)     EA     5     1,741     5     5,307,400       Outret Bioin Expand and Deceming Area     CY     12,000     5     11,813     2,206,500       Dredge Plant Mobilization (cost Per Season)     EA     S     1,843     5     3,248,593,000     5     10,343,770       Outration in Months     Deptitis     Total (Cast Cymonth)     CY     12,020     5     11,313     5     2,206,737     0     0       Dredge Inst Mobilization (Cost Ver Month)     CY     12,000     5     11,315     2	EAST BW/CAUSEWAY	LF	450	\$ 3	4,396.00	\$ 15,478,200	-				
Al Mot (AL2)     U     G 2000     3 4 5 3 4 5 3 5 3 4 5 3 5 2 4 3 6 3 0 5 0 3 0 5 3 2 4 3 6 3 0 5 3 2 4 3 6 3 0 5 2 4 3 6 3 0 5 2 4 3 6 3 0 5 0 5 2 4 3 6 3 0 0 5 2 4 3 6 3 0 0 5 1 2 4 3 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Dredge for Causeway BW Armor toe	СҮ	5,211	Ş	18.41	\$ 95,900 \$ 148,500					
In 2 Pock       CY       1 2,78       5       500,70       5       2,838,000         BB Pock (182 Pack)       CY       1 2,78       5       900,70       5       2,838,000         C 1 Pock (18 Pack)       CY       2,78       5       12,88,000       2,78,800         C 2 Pock       CY       2,72       5       12,85       2,78,800         D Fill       CY       4,725       5       124,35       5       456,700         D Fill       CY       4,725       5       124,35       5       648,700         2       Avrigation Ports & Han806S       C       C       2       100,425,729       Duration in Months       Depath       Total Quant       1 afric         0       Cuter fash Expand and Deepening Area       C       2       2,03,45,729       Duration in Months       Depath       Total Quant       1 afric         0       Dredge 10-32! Max Pay Line (128 (cy/month)       CY       95,000       1 37,81       5       5,03,7400       2,337       0       0       0         0       Dredge 10-32! Max Pay Line (128 (cy/month)       CY       95,000       1 3,83       5       2,255,200       0.33       2,824/32       1,250,00       1 afrit	AI ROCK (A22)		15,840	\$ ¢	264.00	\$ 8,148,500					
B8 Bock (82 Rok)         CY         2.234         5         194.01         5         413,00           C1 Rock (18 Rok)         CY         1.762         5         138,300         5         276,600           Filte Rok (18)         CY         4.735         5         128,15         5         276,600           D Fill         CY         4.735         5         146,35         5         693,000           J         DFill         CY         4,735         5         146,35         5         693,000           Outer Ball Stappd and Despening Area         CY         4,735         5         146,35         5         010,45,779           Outer Ball Stappd and Despening Area         CY         298,000         5         17.81         5         5,907,400           Deredge to - 28 <sup>t</sup> Man Phy Line (126Kor/month)         CY         298,000         5         17.81         5         2,067,000         8         -           Deredge to - 28 <sup>t</sup> Man Phy Line (126Kor/month)         CY         298,000         5         17.81         5         2,067,000         8         -           Deredge to - 28 <sup>t</sup> Man Phy Line (126Kor/month)         CY         298,000         5         18.39         5         16,83,800	B2 Bock	CY CY	12 738	\$ \$	207 10	\$ 2,484,000 \$ 2,638,000	-				
CI. Pock (S. Rev.)         CY         1/72         5         158,79         5         279,600           C2. Pock         CY         3,704         5         112,15         5         248,000           Piller Rock (DB)         CY         3,704         5         146,335         5         693,000           D Fill         CY         4,735         5         146,335         5         693,000           12         MAVIGATION PORTS & HARBORS         C         5         3,446,593,00         5         10,345,779           Ordge Plant Mobilization (Cost Per Season)         EA         3         5         3,446,593,00         5         10,345,779           Ordge Plant Mobilization (Cost Per Season)         EA         3         5         3,446,593,00         5         10,345,779           Ordge Plant Mobilization (Cost Per Season)         EA         3         5         3,446,593,00         5         10,345,779           Deeg Water Bash area         C         28,000         5         11,813         5         2,66,420         997,000         8         2           Deeg Water Bash area         C         C         C         2         2         2,6/42         1,225,000         1         1     <	B3 Bock (B22 Bock)	СҮ	2.234	Ś	184.91	\$ 2,038,000					
C2 Roci.         CY         2,159         8         128,15         2 26,600           Filt         CY         3,704         5         146,355         5         683,000           D Fili         CY         4,705         5         146,355         5         693,000           Sub-Total (GNF Personner Sub-Total (GNF Person (GNF Personer Sub-Total (GNF Personer Sub-Total (GNF Person (	C1 Rock (C8 Rock)	СҮ	1,762	\$	158.79	\$ 279,800					
Filter Rock (D8)         CY         3,704         5         121.15         5         448,700           D Fill         CY         4,775         5         146.35         5         693,000           10         DFill         C         C         693,000         693,000         693,000           12         Nickattor PortS & HARBORS         C         S         150,623,000         5         150,623,000         C         1967           12         Nickattor PortS & HARBORS         C         C         C         C         1967           0ucler Basin Expand and Deepening Area         C         C         C         266,377         0         0         1         0           0         Derdge to 32 Mar Ay line (128K cy/month)         CY         114,000         5         18.31         5         2,066,800         0.93         2,28/-32         12,000         1         0           0         Dredge to 32 Mar Ay line (123K cy/month)         CY         114,000         5         18.33         5         16,334,600         8         0.93         2,28/-32         12,29,000         1         1           0         Breakvater and Seavali         CY         14,400         5         18,33	C2 Rock	СҮ	2,159	\$	128.15	\$ 276,600					
DFill         CY         4,735         5         146.35         5         693,000           Sub-Total (GK Per Season)         Sub-Total Quantity         Duration in Months         Depths         Total Quantity         Duration in Months         Quantity	Filter Rock (D8)	CY	3,704	\$	121.15	\$ 448,700					
sub-Total (SM)         Sub-Total (SM)         Received re Wark.):         S         150,628,100           12         NAVIGATION PORTS & HARBORS         Image: State St	D Fill	CY	4,735	\$	146.35	\$ 693,000	-				
Juriation ports & HABBORS         Juriation (cost Per Season)         EA         3         \$         3,448,593.00         \$         10.345,779         Duration in Months         Depths         Total Quantity         Duration         3         months           Deregge Plant Mobilization (Cost Per Season)         EA         3         \$         3,448,593.00         \$         10.345,779         Duration in Months         Depths         Total Quantity         Duration         3 months           Outer Basin area			Sub Total (CNI	- Proglauget	r Work )	¢ 150.639.410	_				
12         NAVIGATION PORTS & HARBORS         Image: margin margi			Sub-Total (GNI	- Breakwate	er work j:	\$ 150,628,410	-				
Decker Plant Mobilization (Coxt Per Season)         EA         3         \$         3,448,593.00         \$         10,345,779           Outer Basin Expand and Deepening Area         0 <td>12 NAVIGATION PORTS &amp; HARBORS</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td>	12 NAVIGATION PORTS & HARBORS						-				
Dredge Plant Mobilization (Cost Per Season)         EA         A         S         3,448,593.00         S         10,485,779         Duration in Months         Depths         Total Quantity         Duration is moth           0rter Basin Expand and Depening Area											1 plant
Outer Basin Expand and Deepening Area         Image: Control of the second	Dredge Plant Mobilization (Cost Per Seasor	I) EA	3	\$ 3,44	8,593.00	\$ 10,345,779	Duration in Months	Depths	Total Quantity	Duration	3 mon
Dredge to -28' Max Pay Line (126kcy/month)         CY         298,000         5         17.81         5         5,307,400         2.37         26/-37         0         0           Deep Water Basin area	Outer Basin Expand and Deepening Area					-				months	mob/d
Deep Water Basin area	Dredge to -28' Max Pay Line (126Kcy	/month) CY	298,000	Ş	17.81	\$ 5,307,400	2.37	-26/-37	0	0	-
Deck model         CY         114,000         \$         18.13         \$         2,066,800         0.93         -28/-32         412,000         3           Dredge to -42' Max Pay Line (123K cy/month)         CY         997,000         \$         18.39         \$         18,334,800         8.24         -28/-42         1,295,000         11           Local Sponsor Facility (LSF) Funded Items	Deen Water Pasin area							-26/-42	997,000	8	-
Dredge to 42 Max Pay Line (121K cy/month)         CY         12 Jone         5         12 Jone         12 Jone         12 Jone         12 Jone         12 Jone         12 Jone         Jone <thjone< th="">         Jone         Jone</thjone<>	Dredge to -32' Max Pay Line (123K cv	/month) CY	114 000	Ś	18.13	\$ 2,066,800	0 93	-28/-32	412.000	3	+
Local Sponsor Facility (LSF) Funded Items	Dredge to -42' Max Pay Line (121K cy	/month) CY	997,000	\$	18.39	\$ 18,334,800	8.24	-28/-42	1,295,000	11	1
Local Sponsor Facility (LSF) Funded Items         Image: Comparison of Comparison							-			•	•
10       Breakwater and Seawall       Image: Conservation of the seawall of t	Local Sponsor Facility (LSF) Funded I	tems					-				
10       Breakwater and Seawail       I.S.       I.S. <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td></td<>							-				
Causeway Access Road of West Extension       LS       I       S       12,250,200         Image: Fill       CY       542,958       \$       10.19       \$       5,532,800         Image: Fill       CY       113,674       \$       53.30       \$       6,688,800         Image: Distrace Course       CY       6,171       \$       107,69       \$       664,600         Image: Distrace Course       CY       6,171       \$       107,69       \$       664,600         Image: Distrace Course       CY       6,171       \$       107,69       \$       664,600         Image: Distrace Course       CY       6,171       \$       107,69       \$       664,600         Image: Distrace Course       LS       1       S       22,529,300       \$       24,14,100         Image: Distribution Cost and Harbors       EA       1       \$       19,158.85       \$       19,200       \$       11,661,800       \$       118,742.70       \$       8,434,200       \$       8       32,257,300       \$       8,434,200       \$       11,65,300       \$       432,000       \$       432,000       \$       660,000       \$       11,85,300       \$       660,000       \$	10 Breakwater and Seawall	ncion				¢ 13.350.300	-				
Fill       CY       113,674       \$ 3,032,000         D1 Surface Course       CY       113,674       \$ 53,300       \$ 6,058,800         D1 Surface Course       CY       6,171       \$ 10,769       \$ 6,605,800         12       Navigation Ports and Harbors       -       -       -         Mooring Dolphins       EA       1       \$ 22,529,300         Security Gate       EA       1       \$ 19,158.85       \$ 19,200         1-600' D8 WD (Sheetpile Dock @ 42')       LF       600       \$ 19,436.25       \$ 11,661,800         1       1-450' D8 WT (Sheetpile Dock @ 42')       LF       4500       \$ 43,742,700       \$ 8,434,200	E Fill		5/2 069	Ś	10 10	> 12,256,200 \$ 5,522,000	-				
D1 Surface Course       CY       6,171       \$       5050       \$       5050,000         12       Navigation Ports and Harbors	F Fill		113 674	\$	53.30	\$ 6.058 800	-				
12       Navigation Ports and Harbors       Image: Constraint of the second sec	D1 Surface Course	СҮ	6,171	\$	107.69	\$ 664,600	1				
12       Navigation Ports and Harbors       I       I       I         New Causeway Docks       LS       1       \$ 22,529,300         Mooring Dolphins       EA       4       \$ 603,530.16       \$ 2,414,100         Security Gate       EA       1       \$ 19,158.85       \$ 19,200         1-600' DB WD (Sheetpile Dock @ 42')       LF       6000       \$ 19,436.25       \$ 11,661,800         1-450' DB WT (Sheetpile Dock @ 42')       LF       450       \$ 18,742.70       \$ 8,34,200         9       Building Grounds and Utilities       LS       1       \$ 2,257,300         8" Steel Water and Fire       LF       2,200       \$ 432,000         Electric       LF       2,200       \$ 660,000         Fuel       LF       2,200       \$ 660,000											
New Causeway Docks       LS       1       \$ 22,529,300         Mooring Dolphins       EA       4       \$ 603,530.16       \$ 2,414,100         Security Gate       EA       1       \$ 19,158.85       \$ 19,200         1-600' DB WD (Sheetpile Dock @ 42')       LF       600       \$ 19,436.25       \$ 11,661,800         1-450' DB WT (Sheetpile Dock @ 42')       LF       450       \$ 18,742.70       \$ 8,434,200         9       Building Grounds and Utilities       LS       1	12 Navigation Ports and Harbors										
Mooring Dolphins       EA       4       \$ 603,530.16       \$ 2,414,100         Security Gate       EA       1       \$ 19,158.85       \$ 19,200         1-600' DB WD (Sheetpile Dock @ 42')       LF       600       \$ 19,436.25       \$ 11,661,800         1-450' DB WT (Sheetpile Dock @ 42')       LF       450       \$ 8,742.70       \$ 8,434,200         9       Building Grounds and Utilities       LS       1	New Causeway Docks	LS	1			\$ 22,529,300	-				
Security Gate       EA       1       \$       19,158.85       \$       19,200         1-600' DB WD (Sheetpile Dock @ 42')       LF       600       \$       19,436.25       \$       11,661,800         1-450' DB WT (Sheetpile Dock @ 42')       LF       450       \$       18,742.70       \$       8,434,200         9       Building Grounds and Utilities       LS       1	Mooring Dolphins	EA	4	\$ 60	3,530.16	\$ 2,414,100					
I-bourds with (Sheetpile Dock @ 42 )       LF       600       \$ 19,456.25       \$ 11,661,800         1-450' DB WT (Sheetpile Dock @ 42')       LF       450       \$ 18,742.70       \$ 8,434,200         19       Building Grounds and Utilities       LF       200       \$ 2,257,300         8" Steel Water and Fire       LF       2,400       \$ 432,000         Electric       LF       2,200       \$ 529.70       \$ 1,165,300         Fuel       LF       2,200       \$ 300.00       \$ 660,000		EA	1	\$ 1	9,158.85	\$ 19,200	-				
1900 bot W1 (sheetyne bock @ 42 )       Li       430 \$ 16,742.70 \$ 6,834,200         19       Building Grounds and Utilities       LS       1       5         8" Steel Water and Fire       LF       2,400 \$ 180.00 \$ 432,000       5         Electric       LF       2,200 \$ 529.70 \$ 1,165,300       5         Fuel       LF       2,200 \$ 300.00 \$ 660,000       5	Security Gate		600	\$ 1	9,436.25	\$ 11,661,800 \$ 8,434,300	-				
19       Building Grounds and Utilities       LS       1       \$ 2,257,300         8" Steel Water and Fire       LF       2,400       \$ 432,000         Electric       LF       2,200       \$ 529.70       \$ 1,165,300         Fuel       LF       2,200       \$ 300.00       \$ 660,000	Security Gate 1-600' DB WD (Sheetpile Dock @ 4	12') LF	450	¢ 1	× /// / ····	. 0414700	-				
8" Steel Water and Fire       LF       2,400       \$ 180.00       \$ 432,000         Electric       LF       2,200       \$ 529.70       \$ 1,165,300         Fuel       LF       2,200       \$ 300.00       \$ 660,000	Security Gate 1-600' DB WD (Sheetpile Dock @ 4 1-450' DB WT (Sheetpile Dock @ 4	12') LF 2') LF	450	\$ 1	.8,742.70	¢ 0) 10 1)200					
Electric         LF         2,200         \$ 529.70         \$ 1,165,300           Fuel         LF         2,200         \$ 300.00         \$ 660,000	Security Gate 1-600' DB WD (Sheetpile Dock @ 4 1-450' DB WT (Sheetpile Dock @ 4 Building Grounds and Utilities	12') LF 2') LF	450	\$ 1	.8,742.70	\$ 2,257.300	_				
Fuel         LF         2,200         \$ 300.00         \$ 660,000           Image: Comparison of the state of the st	Security Gate 1-600' DB WD (Sheetpile Dock @ 4 1-450' DB WT (Sheetpile Dock @ 4 19 Building Grounds and Utilities 8" Steel Water and Fire	12') LF 2') LF 	450 1 2,400	\$ 1 \$	180.00	\$ 2,257,300 \$ 432,000	-				
	Security Gate 1-600' DB WD (Sheetpile Dock @ 4 1-450' DB WT (Sheetpile Dock @ 4 19 Building Grounds and Utilities 8" Steel Water and Fire Electric	2') LF 2') LF LS LS LF LF	450 1 2,400 2,200	\$ 1 \$ \$ \$	180.00 529.70	\$ 2,257,300 \$ 432,000 \$ 1,165,300					
	Security Gate 1-600' DB WD (Sheetpile Dock @ 4 1-450' DB WT (Sheetpile Dock @ 4 19 Building Grounds and Utilities 8" Steel Water and Fire Electric Fuel	2') LF 2') LF LS LS LF LF LF	450 1 2,400 2,200 2,200	\$ 1 \$ \$ \$ \$	180.00 529.70 300.00	\$ 2,257,300 \$ 432,000 \$ 1,165,300 \$ 660,000	-				
	Security Gate 1-600' DB WD (Sheetpile Dock @ 4 1-450' DB WT (Sheetpile Dock @ 4 Building Grounds and Utilities 8" Steel Water and Fire Electric Fuel	12') LF 2') LF LS LS LF LF LF	450 1 2,400 2,200 2,200	\$ 1 \$ \$ \$ \$	180.00 529.70 300.00	\$ 2,257,300 \$ 432,000 \$ 1,165,300 \$ 660,000					

SUMIMARI FOR ALI SU WILL DIFFERENT DREDGE DEFINS												
Different Dredge Depth Scenarios	GNF Drgd	GNF BW	LSF Total	PED 1%	SIOH 4%	Contingency	Total	PED Value				
2 Each Mobe Demobes + Dredge -28 and -32	\$ 11,158,351	\$ 150,628,410	\$ 37,042,800	\$1,988,296	\$7,953,182	\$69,590,346	\$278,361,385	ARA Conting				
6 Each Mobe Demobes + Dredge -28 and -42	\$ 33,987,979	\$ 150,628,410	\$ 37,042,800	\$2,216,592	\$8,866,368	\$77,580,716	\$310,322,865					

	OPTION 3b - ANNUAL 0&M COSTS												
ITEM NO.	ITEM NO. DESCRIPTION UOM QUANTITY UNIT COST												
	OUTER BASIN EXPANSION AND DEEPENING (w/sediment trap)												
	-26MAXPAY		CY	45,000	\$	32.60	\$	1,467,000					
	-28MAXPAY		CY	45,000	\$	32.60	\$	1,467,000					
	DEEPWATER BASIN DREDGING												

7.5% 7.5%

-32MAXPAY	CY	11,000	\$ 26.33	\$ 289,630
-42MAXPAY	CY	26,000	\$ 33.16	\$ 862,160

	A1 rock	B2 rock	C1 rock	A5 rock	B3 rock	C2 rock	D fill	E fill	F fill	Filter	D1 Surface F	Rock Demo	Dredge	Dredge
DEMO SPUR BW	15,194	12,178	1,695	-	-	-	5,128	-	-	-	-	34,195		
DEMO EXIST BW	16,563	. 13,074	1,886	5,707	1,976	2,467	5,416	-	-	2,978	-	50,065		
WEST CAUSEWAY EXTENSION	164,642	98,491	27,894	26,726	12,521	8,496	52,258	542,968	113,674	-	6,171	-	81,412	
EAST BW REALIGNMENT	15,840	) 12,738	1,762	6,807	2,234	2,159	4,735	-	-	3,704	-	-	5,211	
OUTER BASIN EXPANSION AND DEEPENING														
	-26MAXPAY												214,000	25.8
	-28MAXPAY												298,000	25.8
DEEPWATER BASIN DREDGING														
	-32MAXPAY												114,000	35.4
	-37MAXPAY												394,000	54.2
	-40MAXPAY												997,000	88.3
INNER BASIN DEEPENING														
	-13MAXPAY												33200	9.1
INNER CHANNEL WODIFICATION														



#### NOME PORT MODIFICATION COST ESTIMATE ALTERNATIVE 3c

2 I 02.1		11014	OLIANTITY		Date:	13-Nov-19	7				
02.1	FEATORE ACCOUNT / THEM DESCRIPTION	00141	QUANTIT			TOTAL COST					
02.1	Relocations										
02.1											
	Structure Raise and/or Relocation	EA	-	\$	200,000.00	\$ -	-				
10											
10 1	BREARWATER AND SEAWALL										
,	Mob, Demob. and Site Preparation	EA	6	\$	805,185	\$ 4,831,110					
				-							
	CRAB HABITAT MITIGATION	LS	1	\$	1,000,000	\$ 1,000,000					
	DEMO SPUR/BREAKWATER/400 FT OF EXISTING BW	CY	84,260	\$	20.56	\$ 1,732,000					
	"A1"- Rock Removal	CY	31,755	\$	32.39	\$ 1,029,000	-				
	"A5"- Rock Removal	CY	5,707	\$	23.54	\$ 135,000	-				
	"B2"- Rock Removal	CY	25,252	Ş	14.28	\$ 361,000	-				
	"B3" - Rock Removal	CY	1,9/6	Ş ¢	13.51	\$ 27,000 \$ 180,000	-				
	core and Quarry span kemoval	CI	19,570	Ş	5.15	\$ 180,000	-				
,	WEST CAUSEWAY EXTENSION	LF	2.340	Ś	55.666.54	\$ 130,259,700	-				
	Dredge for Causeway BW Armor toe	CY	52,041	\$	18.41	\$ 958,100					
	A1 Rock (A22) NEW ROCK	CY	140,825	\$	514.43	\$ 72,444,800					
	Reuse A1 Rock*	CY	23,817	\$	32.39	\$ 771,400					
	A5 Rock NEW ROCK	CY	33,217	\$	364.99	\$ 12,124,000					
	Reuse A5 Rock*	CY	4,280	\$	23.54	\$ 100,800	-				
	B2 Rock NEW ROCK	CY	79,552	Ş	207.10	\$ 16,475,200	-				
	RedSe B2 KOCK*	CY	18,939	Ş	14.28	> 2/0,400	-				
	BO ROCK (B22 ROCK) NEW KULK Reuse B3 Rock*	CY	1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 /	ç	184.91	\$ 2,969,900 \$ 20,000	-				
	C1 Bock (C8 Bock)	CY	27 894	ŝ	158 79	\$ 4 429 300	-				
	C2 Rock	CY	12.014	ś	128.15	\$ 1,539,600	-				
	D Fill	CY	56,022	ŝ	146.35	\$ 8,198,800					
	E Fill	CY	454,550	\$	10.19	\$ 4,631,900					
	F Fill	CY	84,724	\$	53.30	\$ 4,515,800					
	D1 Surface Course	CY	4,273	\$	107.69	\$ 460,200					
	Relocate Rock for Re-use (A Rock & B Rock)	CY	48,518	\$	7.20	\$ 349,500	-				
	* Assumed 75% of demoed rock for reuse						-				
	EAST BW/CAUSEWAY	LF	450	Ş	34,396.00	\$ 15,478,200					
	Dredge for Causeway BW Armor toe	CY	5,211	Ş ¢	18.41	\$ 95,900 ¢ 9.149.500	-				
	AS Rock	CY	13,840	¢	364.99	\$ 2,484,500	-				
	B2 Bock	CY	12 738	Ś	207.10	\$ 2,434,000	-				
	B3 Rock (B22 Rock)	CY	2,234	Ś	184.91	\$ 413,100	-				
	C1 Rock (C8 Rock)	CY	1,762	\$	158.79	\$ 279,800					
	C2 Rock	CY	2,159	\$	128.15	\$ 276,600					
	Filter Rock (D8)	CY	3,704	\$	121.15	\$ 448,700					
	D Fill	CY	4,735	\$	146.35	\$ 693,000	-				
			Cub Tabal (CNF	Dunulu		¢ 153 301 010	-				
			Sub-Total (Give	Бгеак	water work j:	\$ 155,501,010	1				
12	NAVIGATION PORTS & HARBORS						-				
											1 plant
,	Dredge Plant Mobilization (Cost Per Season)	EA	3	\$	3,448,593.00	\$ 10,345,779	Duration in Months	Depths	Total Quantity	Duration	3 mont
1	Outer Basin Expand and Deepening Area									months	mob/d
	Dredge to -28' Max Pay Line (126Kcy/month)	CY	298,000	\$	17.81	\$ 5,307,400	2.37	-26/-37	0	0	
								-26/-42	997,000	8	
	Deep Water Basin area	<i></i>		<u>,</u>				20/			
	Dredge to -32' Max Pay Line (123K cy/month)	CY	114,000	ş	18.13	\$ 2,066,800	0.93	-28/-32	412,000	3	+
	Dreuge to -42 Iviax Pay Line (121K Cy/month)	ιĭ	997,000	Ş	18.39	ə 18,334,800	8.24	-20/-42	1,295,000	11	
	Local Sponsor Facility (LSE) Funded Items						1				
	2. Sur opensor rading tory runded items		-				1				
10	Breakwater and Seawall						1				
	Causeway Access Road on West Extension	LS	1			\$ 9,607,900					
	E Fill	CY	454,550	\$	10.19	\$ 4,631,900	_				
	F Fill	CY	84,724	\$	53.30	\$ 4,515,800	-				
	D1 Surface Course	CY	4,273	\$	107.69	\$ 460,200	-				
							-				
13	Navigation Ports and Hashors						-				
12	Navigation Ports and Harbors	10				¢ 13 000 100					
12	Navigation Ports and Harbors New Causeway Docks Moroing Dolohins	LS FA	1	s	603.530.16	\$ 12,888,100 \$ 1,207,100	-				
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate	LS EA EA	1 2 1	\$ \$	603,530.16 19.158,85	\$ 12,888,100 \$ 1,207,100 \$ 19,200	-				
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' 0B WD (Sheetpile Dock @ 42')	LS EA EA LF	1 2 1 600	\$ \$ \$	603,530.16 19,158.85 19,436.25	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661.800	-				
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42')	LS EA EA LF	1 2 1 600	\$ \$ \$	603,530.16 19,158.85 19,436.25	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800					
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') Building Grounds and Utilities	LS EA EA LF	1 2 1 600	\$ \$ \$	603,530.16 19,158.85 19,436.25	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800 \$ 2,257,300					
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') Building Grounds and Utilities 8" Steel Water and Fire	LS EA EA LF LS LF	1 2 1 600 1 2,400	\$ \$ \$ \$	603,530.16 19,158.85 19,436.25 180.00	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800 \$ 2,257,300 \$ 432,000	-				
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') Building Grounds and Utilities 8''Steel Water and Fire Electric	LS EA EA LF LS LF LF	1 2 1 600 1 2,400 2,200	\$ \$ \$ \$ \$	603,530.16 19,158.85 19,436.25 180.00 529.70	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800 \$ 2,257,300 \$ 432,000 \$ 1,165,300					
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') Building Grounds and Utilities 8' Steel Water and Fire Electric Fuel	LS EA EA LF LS LF LF LF	1 2 1 600 1 2,400 2,200 2,200	\$ \$ \$ \$ \$ \$ \$	603,530.16 19,158.85 19,436.25 180.00 529.70 300.00	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800 \$ 2,257,300 \$ 432,000 \$ 1,165,300 \$ 660,000					
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') Building Grounds and Utilities 8" Steel Water and Fire Electric Fuel	LS EA EA LF LS LF LF LF	1 2 1 600 2,400 2,200 2,200	\$ \$ \$ \$ \$ \$	603,530.16 19,158.85 19,436.25 180.00 529.70 300.00	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800 \$ 2,257,300 \$ 432,000 \$ 1,165,300 \$ 660,000 \$ 24,753,200					
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') Building Grounds and Utilities 8" Steel Water and Fire Electric Fuel	LS EA EA LF LS LF LF LF	1 2 1 600 2,200 2,200 2,200 2,200 2,200 2,200	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	603,530.16 19,158.85 19,436.25 180.00 529.70 300.00 tal (LSF Items )	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800 \$ 2,257,300 \$ 432,000 \$ 1,165,300 \$ 660,000 \$ 24,753,300	DEDTUC				-
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') Building Grounds and Utilities 8' Steel Water and Fire Electric Fuel	LS EA EA LF LS LF LF LF SUN	1 2 1 600 2,400 2,200 2,200 2,200 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	\$ \$ \$ \$ \$ <i>wb-Tot</i>	603,530.16 19,158.85 19,436.25 180.00 529.70 300.00 tal (LSF Items ) with DIFF	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800 \$ 2,257,300 \$ 432,000 \$ 432,000 \$ 1,165,300 \$ 660,000 <b>\$ 24,753,300</b> <b>ERENT DREDGE</b>	DEPTHS	5001.04	Gasting	7-01	
12	Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') Building Grounds and Utilities 8' Steel Water and Fire Electric Fuel Different Dredge Depth Scenarios 2 Each Meth Demohor + Dender 22 and 22	LS EA EA LF LS LF LF LF SUM	1 2 1 1 2,400 2,200 2,200 2,200 5 5 7 MARY FOR ALL GNF Drgd GNF Drgd	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	603,530.16 19,158.85 19,436.25 180.00 529.70 300.00 tal (LSF Items ) With DIFF GNF BW 152.201.010	\$ 12,888,100 \$ 1,207,100 \$ 19,200 \$ 11,661,800 \$ 2,257,300 \$ 432,000 \$ 432,000 \$ 660,000 \$ 24,753,300 ERENT DREDGE LSF Total \$ 25,700	DEPTHS FED 1% 51 802 127	SIOH 4%	Contingency SEC 224 A21	Total \$268.807.776	PI

	OPTION 3c - ANNUAL 0&M COSTS												
ITEM NO.	ITEM NO. DESCRIPTION UOM QUANTITY UNIT COST												
	OUTER BASIN EXPANSION AND DEEPENING (w/sediment trap)												
	-26MAXPAY		CY	45,000	\$	33	\$	1,467,000					
	-28MAXPAY		CY	45,000	\$	32.60	\$	1,467,000					
	DEEPWATER BASIN DREDGING												
	-32MAXPAY		CY	11,000	\$	26.33	\$	289,630					
	-42MAXPAY		CY	26,000	\$	33.16	\$	862,160					

7.5% 7.5%

	A1 rock	B2 rock	C1 rock	A5 rock	B3 rock	C2 rock	D fill	E fill	F fill	Filter	D1 Surface F	Rock Demo	Dredge	Dredge
DEMO SPUR BW	15,194	12,178	1,695	-	-	-	5,128	-	-	-	-	34,195		
DEMO EXIST BW	16,561	13,074	1,886	5,707	1,976	2,467	5,416	-	-	2,978	-	50,065		
WEST CAUSEWAY EXTENSION	164 642	98 491	27 894	37,498	17.543	12.014	56 022	454.550	84 724	_	4 273	_	52.041	
		00,01	_//00 !	07,000	_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,			0.,/		.,		0_,0.1	
EAST BW REALIGNMENT	15,840	12,738	1,762	6,807	2,234	2,159	4,735	-	-	3,704	-	-	5,211	
OUTER BASIN EXPANSION AND DEEPENING														
	-26MAXPAY												214,000	25.8
	-28MAXPAY												298,000	25.8
DEEPWATER BASIN DREDGING														
	-32MAXPAY												114,000	35.4
	-37MAXPAY												394,000	54.2
	-40MAXPAY												997,000	88.3
INNER BASIN DEEPENING														
	-13MAXPAY												33200	9.1
INNER CHANNEL MODIFICATION														
	-13MAXPAY												34000	15 9



# NOME PORT MODIFICATION COST ESTIMATE ALTERNATIVE 4

				Dat	e:	13-Nov-19	_		
BS No.	FEATURE ACCOUNT / ITEM DESCRIPTION	UOM	QUANTITY	UNIT COST		TOTAL COST			
	Relocations								
02.1	Structure Daice and /or Delegation	E 4		ć 200.000.0	, ć				
02.1	General Navigation Funded Work Items	EA		\$ 200,000.0	Ş	-			
)	BREAKWATER AND SEAWALL								
					-				
	Mob, Demob. and Site Preparation	EA	6	\$ 805,18	5 \$	4,831,110			
					-				
	CRAB HABITAT MITIGATION	LS	1	\$ 1,000,00	) \$	1,000,000			
	DEMO SPUR/BREAKWATER/400 FT OF EXISTING BW	CY	282,193	\$ 16.3	5\$	4,614,000			
	"A1"- Rock Removal	CY	32,574	\$ 32.3	<b>\$</b>	1,056,000			
	"A5"- Rock Removal	CY	73,221	\$ 23.5	1\$	1,724,000			
	"B2"- Rock Removal	CY	25,940	\$ 14.2	3\$	371,000			
	"B3" - Rock Removal	CY	19,608	\$ 13.5	LŞ.	265,000			
	Core and Quarry Spall Removal	CY	130,851	\$ 9.1	5 Ş	1,198,000			
		1.5	2.242	¢		117 110 100	-		
	Dredge for Causeway BW Armonton		2,340	ə 50,050.9	, > , c	1 409 900			
	A1 Rock (A22) NEW ROCK		01,412	ب 18.4 د ۲۱۸۸	2 6	77 120 100			
	Reuse A1 Rock*	CV	240,212	γ 514.4 ζ 27.2	, ç	701 200	1		
	A5 Rock	CY	26,726	\$ 364.9	s s	9,754.800	1		
	B2 Rock NEW ROCK	CY	79.036	\$ 207.1	) Ś	16,368.300	1		
	Reuse B2 Rock*	CY	19,455	\$ 14.2	3 \$	277,800	1		
	B3 Rock (B22 Rock)	СҮ	12,521	\$ 184.9	L\$	2,315,300	1		
	C1 Rock (C8 Rock)	СҮ	27,894	\$ 158.7	) \$	4,429,300	1		
	C2 Rock	СҮ	8,496	\$ 128.1	5\$	1,088,800	]		
	D Fill	CY	52,258	\$ 146.3	5\$	7,648,000			
	E FIII QTY IS FOR -32 MP (NOT -42MP)-IN LSF BELOW	CY	-	\$ 10.1	\$	-			
	F Fill -IN LSF BELOW	CY	-	\$ 53.3	) \$	-			
	D1 Surface Course-IN LSF BELOW	CY	-	\$ 107.6	€ \$	-			
	Relocate Rock for Re-use (A Rock & B Rock)	CY	113,506	\$ 7.2	)\$	817,600			
	* Assumed 75% of demoed rock for reuse	2					-		
	EAST BW/CAUSEWAY	LF	2,990	\$ 14,418.0	3 \$	43,109,900			
	Dredge for Causeway BW Armor toe	CY	98,819	\$ 18.4	LŞ	1,819,300			
	A1 ROCK (A22) NEW ROCK	CY	14,459	\$ 514.4	5 5	7,438,100			
	AS ROCK NEW RUCK	CY	22,015	\$ 364.9	4 Ş	8,035,200	-		
	Reuse AS ROCK	CY	12 094	\$ 25.5 \$ 207.1	+ > \ ¢	2 504 600			
	B3 Rock (B22 Rock) NEW ROCK	CY	35 140	\$ 207.1 \$ 184.9	, , , ,	6 497 800			
	Reuse B3 Bock*	CY	14 706	\$ 135	i s	198 700	-		
	C1 Bock (C8 Bock)	CY	1.524	\$ 158.7	- <del>-</del>	242,100			
	C2 Rock	CY	19.726	\$ 128.1	5 \$	2.527.900			
	Filter Rock (D8)	СҮ	1,446	\$ 121.1	5 \$	175,200	1		
	D Fill	СҮ	31,481	\$ 146.3	5 \$	4,607,300	1		
	E Fill QTY IS FOR -32 MP (NOT -42MP)	СҮ	170,762	\$ 10.1	) \$	1,740,100	1		
	F Fill	СҮ	102,336	\$ 53.3	) \$	5,454,500	]		
	D1 Surface Course	CY	5,352	\$ 107.6	\$	576,400			
	WEST CAUSEWAY 400 LF DOCK	LF	400	\$ 7,124.0	) \$	2,849,600			
	E Fill	CY	104,521	\$ 10.1	\$	1,065,100			
	F Fill	CY	29,468	\$ 53.3	) \$	1,570,700			
	D1 Surface Course	CY	1,985	\$ 107.6	\$	213,800			
						470 -00			
			Sub-Total (	GINF Breakwater Work	: \$	1/3,523,710	{		
2							-		
۲							-		
	Dredge Plant Mobilization (Cost Per Season)	FΔ	3	\$ 3 4/8 502 0	) ¢	10 3/15 770	1		
	Outer Basin Expand and Deepening Area		3	- 3,440,353.0	د .	10,545,779			
	Dredge to -28' Max Pay Line (126Kcv/month)	CY	799.000	Ś 17 R	LŚ	14,230,200			
	Steage to Lo maximy line (Loncy/month)		755,000	- 17.0		17,230,200	Duration in Months	Denths	
	Deep Water Basin area				-			Deptilo	
	Dredge to -32' Max Pay Line (123K cy/month)	СҮ	114,000	\$ 18.1	3\$	2,066,800		-26/-32	
		CY	997,000	\$ 18.3	) \$	18,334,800		-26/-42	
	Dredge to -42' Max Pay Line (121K cy/month)								
	Dredge to -42' Max Pay Line (121K cy/month)	<i>.</i> .							
	Dredge to -42' Max Pay Line (121K cy/month) Inner Basin Deepening						0.93	-28/-32	_
	Dredge to -42' Max Pay Line (121K cy/month) Inner Basin Deepening Dredge to -13' Max Pay Line (115K cy/month)	СҮ	<u>-</u>	\$ 12.9	5\$	-		-28/-32 -28/-37	
	Dredge to -42' Max Pay Line (121K cy/month) Inner Basin Deepening Dredge to -13' Max Pay Line (115K cy/month)	СҮ	-	\$ 12.9	5\$	-	8.24	-28/-32 -28/-37 -28/-42	
	Dredge to -42' Max Pay Line (121K cy/month) Inner Basin Deepening Dredge to -13' Max Pay Line (115K cy/month) Inner Channel Modification	CY	-	\$ 12.9	5\$	-	- 8.24	-28/-32 -28/-37 -28/-42	

												_
	Local Sponsor Facility (LSF) Funded Items											
10	Breakwater and Seawall											
	Causeway Access Road on West Extension	LS		1		\$ 9,517,400						
	E Fill	CY	393,2	00 \$	10.19	\$ 4,006,700						
	F Fill	CY	90,9	25 \$	53.30	\$ 4,846,300						
	D1 Surface Course	CY	6,1	70 \$	107.69	\$ 664,400						
12	Navigation Ports and Harbors											
	New Causeway Docks	LS		1		\$ 44,698,900						
	Mooring Dolphins	EA		9\$	603,530.16	\$ 5,431,800						
	Security Gate	EA		1 \$	19,158.85	\$ 19,200						
	1-600' DB WD (Sheetpile Dock @ 42')	LF	6	00 \$	19,436.25	\$ 11,661,800						
	1-450' DB WT (Sheetpile Dock @ 42')	LF	4	50 \$	18,742.70	\$ 8,434,200						
	1-400' OB WE (Sheetpile Dock @ 28')	LF	4	00 \$	14,293.16	\$ 5,717,300						
	1-400' OB ET (Sheetpile Dock @ 28')	LF	4	00 \$	14,293.16	\$ 5,717,300						
	1-400' OB WE (Sheetpile Dock @ 28')	LF	4	00 \$	14,293.16	\$ 5,717,300						
	Bridge at Breach	LF	1	25 \$	16,000.00	\$ 2,000,000						
19	Building Grounds and Utilities	1	LS			\$ 2,257,300						
	8" Steel Water and Fire	LF	2,4	00 \$	180.00	\$ 432,000						
	Electric	LF	2,2	00 \$	529.70	\$ 1,165,300						
	Fuel	LF	2,2	00 \$	300.00	\$ 660,000						
				_								
					Sub-Total (LSF Items )	\$ 56,473,600						
SUMM	IARY FOR ALT 4 with DIFFERENT DREDGE D	EPTHS					1					
	Different Dredge Depth Scenarios		GNF Drgd	_	GNF BW	LSF Total						-
	2 Each Mobe Demobes + Dredge -26 and -32		\$ 3,132,2	19 \$	173,523,710	\$ 56,473,600		1	1			
	4 Each Mobe Demobes + Dredge -26 and -37		\$ -	\$	173,523,710	\$ 56,473,600	PED 1%	SIOH 4%	Contingency	Total		
	7 Each Mobe Demobes + Dredge -26 and -40		\$ 25,231,9	36 \$	173,523,710	\$ 56,473,600	\$ 2,331,295.29	\$ 9,325,181.16	\$ 81,595,335.14	4 \$	348,481,108	
	3 Each Mobe Demobes + Dredge -28 and -	32	\$ 24,651,90	5 \$	\$ 173,523,710	\$ 56,473,600	\$2,546,492	\$10,185,969	\$89,127,225	; \$	356,508,901	
	4 Each Mobe Demobes + Dredge -28 and -37		\$ 21,519,6	36 \$	173,523,710	\$ 56,473,600	\$ 2,552,292.96	\$ 10,209,171.84	\$ 89,330,253.60	) \$	353,608,715	
	7 Each Mobe Demobes + Dredge -28 and -	42	\$ 46,359,37	2   \$	\$ 173,523,710	\$ 56,473,600	\$2,763,567	\$11,054,267	\$96,724,839	) \$	386,899,355	
										_		_

Γ 

1 plant drdg for 3 months=> no o

mob/demobe 

	0				 	
	7 Each Mobe Demobes + Dredge -28 and -42	\$	46,359,372	\$ 173,523,710	\$ 56,473,600	\$2,763,567
	OPTION 4 - ANNUAL	. O&M COS	TS			
ITEM NO.	DESCRIPTION		UOM	QUANTITY	UNIT COST	TOTAL COST
	OUTER BASIN EXPANSION AND DEEPENING (w/sediment trap)					
	-26MAXPAY		CY	60,000	\$ 32.60	\$ 1,956,000
	-28MAXPAY		CY	60,000	\$ 32.60	\$ 1,956,000
	DEEPWATER BASIN DREDGING					
	-32MAXPAY		CY	11,000	\$ 26.33	\$ 289,630
	-42MAXPAY		CY	26,000	\$ 33.16	\$ 862,160

7.5% 7.5%

Nome Har	bor Modification														
Concept Q	uantity Computations														
M. Peterso	on 2018-11-8														
ALT 4a		A1 rock	B2 rock	C1 rock	A5 rock	B3 rock	C2 rock	D fill	E fill	F fill	Filter	D1 Surface	Rock Demo	Dredge	Dredge
	DEMO SPUR BW	15,194	12,178	1,695	-	-	-	5,128	-	-	-	-	34,195		
	DEMO EXIST BW	17,379	13,762	1,966	63,646	15,144	38,649	5,885	-	-	41,761	-	198,192		
	DEMO 400 LF WEST CAUSEWAY FOR DOCK	-	-	-	9,575	4,464	3,127	3,374	25,469	3,649	-	150	49,808		
	WEST CAUSEWAY 400 LF DOCK	-	-	-	-	-	-	-	104,521	29,468	-	1,985	-		
	WEST CAUSEWAY EXTENSION	164,573	98,451	27,894	26,726	12,521	8,496	52,258	393,200	90,925	-	6,170	-	81,412	
	EAST BW/CAUSEWAY	14,459	12,094	1,524	76,931	49,846	19,726	31,481	170,762	102,336	1,146	5,352	-	98,819	
	OUTER BASIN EXPANSION AND DEEPENING														
		-26MAXPAY												647,000	47.2
		-28MAXPAY												799,000	47.2
	DEEPWATER BASIN DREDGING														
		-32MAXPAY												114,000	35.4
		-37MAXPAY												394,000	54.2
		-40MAXPAY												997,000	88.3
	INNER BASIN DEEPENING														
		-13MAXPAY												33200	9.1
	INNER CHANNEL MODIFICATION														
		-13MAXPAY												52000	6.4



## NOME PORT MODIFICATION COST ESTIMATE ALTERNATIVE 8a

02	FEATURE ACCOUNT / ITEM DESCRIPTION	UOM	QUANITY	UNITCOST		IOTAL COST				
	Relocations									
02.4	Characterize Dallas and (an Dallasation	54		¢ 200.000.00	~					
02.1	General Navigation Funded Work Items	EA	-	\$ 200,000.00	Ş					
.0	BREAKWATER AND SEAWALL									
	Mob, Demob. and Site Preparation	EA	6	\$ 805,185	Ś	4,831,110				
	CRAB HABITAT MITIGATION	LS	1	\$ 1,000,000	\$	1,000,000				
	DEMO SPUR/BREAKWATER/400 FT OF EXISTING BW	CY	282,193	\$ 15.15	\$	4,274,000				
	"A1"- Rock Removal	CY	32,574	\$ 32.39	\$	1,056,000				
	"A5"- Rock Removal	CY	69,354	\$ 23.54	Ş	1,633,000				
	"B3" - Rock Removal	CY	17,674	\$ 13.51	\$	239,000				
	Core and Quarry Spall Removal	CY	106,540	\$ 9.15	\$	975,000				
	WEST CALISEWAY EXTENSION	LE	3 937	\$ 59.886.65	¢	235 773 731				
	Dredge for Causeway BW Armor toe	CY	29,197	\$ 18.41	\$	537,500				
	A1 Rock (A22) NEW ROCK	CY	285,321	\$ 514.43	\$	146,777,700				
-	A5 Rock NEW ROCK	CY	24,430	\$ 32.39 \$ 364.99	Ś	5.051.600				
	Reuse A5 Rock*	CY	52,016	\$ 23.54	\$	1,224,446				
	B2 Rock NEW ROCK	CY	158,234	\$ 207.10	\$	32,770,300				
	B3 Rock (B22 Rock) NEW ROCK	CY	19,455	\$ 14.28 \$ 184.91	Ś	5,754,000				
	Reuse B3 Rock*	CY	13,256	\$ 13.51	\$	179,085				
	C1 Rock (C8 Rock)	CY	54,436	\$ 158.79	\$	8,643,900				
	D Fill	CY	19,954	\$ 128.15 \$ 146.35	ş	2,557,100				
	E Fill	CY	566,230	\$ 10.19	\$	5,769,900				
	F Fill	CY	115,989	\$ 53.30	\$	6,182,200				
	Filter Rock	CY	21,818	\$ 121.15 ¢ 107.60	Ş	2,643,200				
	Relocate Rock for Re-use (A Rock & B Rock)	CY	43,885	\$ 7.20	\$	316,100				
	* Assumed 75% of demoed rock for reuse	-								
	EAST BW/CAUSEWAY	LF	3,900	\$ 22,826.95	\$	89,025,100				
	A1 Rock (A22) NEW ROCK	CY	26,932	\$ 18.41 \$ 514.43	\$ \$	1,201,300				
	A5 Rock NEW ROCK	CY	113,901	\$ 364.99	\$	41,572,600				
	Reuse A5 Rock* - assume all new. Reused rock in west	CY	-	\$ 23.54	\$	-				
	B2 Rock NEW ROCK	CY	20,174	\$ 207.10	\$	4,178,000				
	Reuse B3 Rock* -assume all new.reused rock in west	CY	-	\$ 13.51	\$	10,040,200				
	C1 Rock (C8 Rock)	CY	3,250	\$ 158.79	\$	516,000				
	C2 Rock	CY	35,575	\$ 128.15	\$	4,558,900				
	Filter Rock	CY	34,363	\$ 121.15	¢	4,163,100				
	E Fill	CY	65,255	\$ 10.19	\$	664,900				
	F Fill	СҮ	60,985	\$ 53.30	\$	3,250,500				
	D1 Surface Course	CY	3,056	\$ 107.69	\$	329,100				
	WEST CAUSEWAY 400 LF DOCK	LF	400	\$ 7,491.50	\$	2,996,600				
	E Fill	CY	118,948	\$ 10.19	\$	1,212,100				
	F Fill D1 Surface Course	CY	29,468	\$ 53.30	\$	1,570,700				
			Sub Total (CNE	Proglaugtor Mark 1		227 000 541				
					-	557,500,541				
2	NAVIGATION PORTS & HARBORS									
	Dredge Plant Mobilization (Cost Per Season)	EA	3	\$ 3,448,593.00	\$	10,345,779	Duration in Months Dept	ths	Total Quantity	Duration
	Outer Basin Expand and Deepening Area	CY	1 210 000	ć 17.90	ć	21 608 200	0.67 26/	22	1 246 000	months 10
	Dredge to -28' Max Pay Line (126Kcy/month) Dredge to -28' Max Pay Line (126Kcy/month)	CY	2,015,800	\$ 17.80	ŝ	35,901,400	16.00 -26/-	-32	1,402,000	10
							-26/-	42	1,814,240	15
	Deep Water Basin area Dredge to -22' Max Pay Line (122K cy/month)	CY	27.000	ć 19.12	ć	489 500	0.22 -28/	22	2 042 800	16
	Dredge to -37' Max Pay Line (125K cy/month)	CY	183,000	\$ 18.38	\$	3,363,500	1.51 -28/-	-37	2,198,800	18
	Dredge to -42' Max Pay Line (121K cy/month)	CY	595,240	\$ 18.39	\$	10,946,500	4.92 -28/-	-42	2,611,040	21
	Local Sponsor Facility (LSE) Funded Items									
	Breakwater and Seawall	15	1		ć	10 920 000				
10		L5	1		ŝ	12,901,600				
10	E Fill	CY	1,266,107	\$ 10.19		6.182.200				
10	E FIII F FIII	CY CY	1,266,107 115,989	\$ 10.19 \$ 53.30	\$					
10	E Fill F Fill D1 Surface Course	CY CY CY	1,266,107 115,989 7,021	\$ 10.19 \$ 53.30 \$ 107.69	\$ \$	756,100				
10	E Fill F Fill D1 Surface Course Navigation Ports and Harbors	CY CY CY	1,266,107 115,989 7,021	\$ 10.19 \$ 53.30 \$ 107.69	\$	756,100				
10	E Fill F Fill D1 Surface Course Navigation Ports and Harbors New Causeway Docks	CY CY CY LS	1,266,107 115,989 7,021	\$ 10.19 \$ 53.30 \$ 107.69	\$ \$ \$	756,100				
10	E Fill F Fill D1 Surface Course Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Seruch Cate	CY CY CY LS EA	1,266,107 115,989 7,021 11 11 1 1 1	\$ 10.19 \$ 53.30 \$ 107.69 \$ 603,530.16 \$ 10.155.55	\$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800				
10	E Fill F Fill D1 Surface Course Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB W0 (Sheetpile Dock @ 42')	CY CY CY LS EA EA LF	1,266,107 115,989 7,021 1 1 9 1 600	\$ 10.19 \$ 53.30 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25	\$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 11,661,800				
10	Cloberwy Access Nob On Wex Extension E Fill F Fill D Surface Course New Causeway Docks Mooring Dolphins Security Gate 1-6007 DB WD (Sheetpile Dock @ 42') 1-4507 DB WT (Sheetpile Dock @ 42')	CY CY CY LS EA EA LF LF	1,266,107 115,989 7,021 1 9 1 1 600 450	\$ 10.19 \$ 53.30 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25 \$ 18,742.70	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 11,661,800 8,434,200				
10	Cloberby Access Nob On West Extension E Fill F Fill D1 Surface Course New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') 1-450' DB WT (Sheetpile Dock @ 42')	CY CY CY LS EA EA EA LF LF LF	1,266,107 115,989 7,021 1 9 1 1 600 450 450	\$ 10.19 \$ 53.30 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25 \$ 18,742.70 \$ 18,742.70	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 11,661,800 8,434,200 8,434,200				
10	Cladeway Access Nod On Weak Extension E Fill F Fill D1 Surface Course New Causeway Docks Mooring Dolphins Security Gate 1-600' D8 WD (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-400' O8 WE (Sheetpile Dock) 1-400' O8 ET (Sheetpile Dock)	CY CY CY EA EA EA LF LF LF LF LF	1,266,107 115,989 7,021 1 1 9 1 1 600 450 450 450 450 400	\$ 10.19 \$ 53.30 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 14,293.16 \$ 14,293.16	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 11,661,800 8,434,200 8,434,200 5,717,300 5,717,300				
10	E Fill F Fill D1 Surface Course Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' DB WD (Sheetpile Dock @ 42') 1-450' DB WT (Sheetpile Dock @ 42') 1-450' DB WT (Sheetpile Dock @ 42') 1-400' OB WE (Sheetpile Dock) 1-400' OB ET (Sheetpile Dock) Bridge at Breach	CY CY CY EA EA EA EA LF LF LF LF LF	1,266,107 115,989 7,021 1 1 9 1 1 600 450 450 450 450 400 125	\$         10.19           \$         5.3.30           \$         107.69           \$         603,530.16           \$         19,158.85           \$         19,436.25           \$         18,742.70           \$         14,293.16           \$         14,293.16           \$         16,000.00	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 11,661,800 8,434,200 5,717,300 5,717,300 5,717,300				
10	Cloberwy Access Nob Of Wex Extension E Fill F Fill D Surface Course New Causeway Docks Mooring Dolphins Security Gate 1-6007 DB WT (Sheetpile Dock @ 42') 1-4507 DB WT (Sheetpile Dock @ 42') 1-4507 DB WT (Sheetpile Dock @ 42') 1-4007 0B WE (Sheetpile Dock) Bridge at Breach Building Grounds and Lillither	CY CY CY LS EA EA LF LF LF LF LF LF	1,266,107 115,989 7,021 1 1 9 1 1 600 450 400 450 400 125	\$ 10.19 \$ 5.330 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 14,293.16 \$ 14,293.16 \$ 16,000.00	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 8,434,200 8,434,200 5,717,300 2,000,000 2,257,200				
10	E Fill F Fill F Fill D1 Surface Course Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' D8 WD (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-400' O8 WE (Sheetpile Dock) 1-400' O8 WE (Sheetpile Dock) Bridge at Breach Building Grounds and Utilites 8'' Steel Water and Fire	CY CY CY LS EA EA EA EA LF LF LF LF LF LF LF LF	1,266,107 115,989 7,021 1 9 9 1 1 600 450 450 450 450 400 125	\$ 10.19 \$ 5.3.30 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25 \$ 18,742.70 \$ 18,742.70 \$ 14,293.16 \$ 14,293.16 \$ 16,000.00 \$ 18,000.00 \$ 19,000.00 \$ 10,000.00 \$ 18,000.00 \$ 19,000.00 \$ 18,000.00 \$ 19,000.00 \$	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 8,434,200 8,434,200 5,717,300 2,000,000 2,257,300 432,000				
10	E Fill F Fill D1 Surface Course Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' D8 W0 (Sheetpile Dock @ 42') 1-450' D8 W1 (Sheetpile Dock @ 42') 1-450' D8 W1 (Sheetpile Dock @ 42') 1-400' OB WE (Sheetpile Dock @ 42') 1-400' OB WE (Sheetpile Dock) Bridge at Breach Building Grounds and Utilities 8° Steel Water and Fire Electric	CY CY CY LS EA EA EA LF LF LF LF LF LF LF	1,266,07 115,989 7,021 1 9 9 1 1 600 450 450 400 400 125 1 2,400 2,200	S         10.19           \$         5.3.30           \$         107.69           \$         603,530.16           \$         19,158.85           \$         19,436.25           \$         18,742.70           \$         14,293.16           \$         14,000.00           \$         16,000.00           \$         529.70	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	47,415,800 5,431,800 19,200 11,661,800 8,434,200 5,717,300 2,000,000 2,257,300 432,000 1,165,300				
10	E Fill F Fill F Fill D1 Surface Course Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' D8 WD (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-400' O8 WE (Sheetpile Dock) Bridge at Breach Building Grounds and Utilities 8° Steel Water and Fire Electric Fuel	CY CY CY LS EA EA EA LF LF LF LF LF LF LF LF LF	1,266,107 115,989 7,021 1 9 1 1 600 450 450 450 450 400 400 125 1 1 2,200 2,200	\$ 10.19 \$ 53.30 \$ 107.69 \$ 19,158.85 \$ 19,436.25 \$ 19,436.25 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 16,000.00 \$ 16,000.00 \$ 18,000.00 \$ 529.70 \$ 300.00	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 19,200 11,661,800 8,434,200 5,717,300 2,000,000 2,257,300 432,000 1,165,300 660,000				
10	E Fill F Fill F Fill D1 Surface Course Navigation Ports and Harbors New Causeway Docks Mooring Dolphins Security Gate 1-600' D8 WD (Sheetpile Dock @ 42') 1-600' D8 WT (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-450' D8 WT (Sheetpile Dock @ 42') 1-400' O8 WT (Sheetpile Dock @ 42') 1-400' O8 WT (Sheetpile Dock) Bridge at Breach Building Grounds and Utilities 8° Steel Water and Fire Electric Fuel	CY CY CY LS EA EA EA EA LF LF LF LF LF LF LF LF LF LF	1,266,107 115,989 7,021 1 9 9 1 1 600 450 400 400 400 125 1 2,200 2,200	\$ 10.19 \$ 5.3.30 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25 \$ 19,436.25 \$ 18,742.70 \$ 18,742.70 \$ 14,293.16 \$ 14,293.16 \$ 14,293.16 \$ 16,000.00 \$ 18,000 \$ 18,000 \$ 300.00 \$ 300.	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 11,661,800 8,434,200 8,434,200 5,717,300 5,717,300 2,000,000 2,257,300 432,000 1,165,300 660,000				
10	Could way Access how on Weak Extension  F Fill  F Fill  D Surface Course  New Causeway Docks Mooring Dolphins Security Gate 1-6007 DB WD (Sheetpile Dock @ 42') 1-4507 DB WD (Sheetpile Dock @ 42') 1-4507 DB WT (Sheetpile Dock @ 42') 1-4507 DB WT (Sheetpile Dock @ 42') 1-4007 OB ET (Sheetpile Dock) Bridge at Breach Building Grounds and Utilities 8'' Steel Water and Fire Electric Fuel  MDV EOD ALT Doc with DUFFEDERAT DDFOOD	CY CY CY LS EA EA EA EA LF LF LF LF LF LF LF LF LF EDTL/C	1,266,107 115,989 7,021 1 9 1 1 000 450 450 400 400 400 2,200 2,200 2,200	\$ 10.19 \$ 5.330 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25 \$ 10,769 \$ 10,000 \$ 10,769 \$ 10,000 \$ 10,0000 \$ 10,0000 \$ 10,0000 \$ 10,0000 \$ 10,0000 \$ 10,0000 \$ 10,000	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 5,431,800 19,200 8,434,200 8,434,200 5,717,300 5,717,300 2,000,000 2,257,300 432,000 1,165,300 660,000				
10 12 19	Clober wy Access Nob Of West Extension  E Hil  F Hil  D J Surface Course  Navigation Ports and Harbors New Causeway Docks Mooring Dophins Security Gate 1-600' DB W0 (Sheetpile Dock @ 42') 1-450' DB W1 (Sheetpile Dock @ 42') 1-450' DB W1 (Sheetpile Dock @ 42') 1-400' OB E1 (Sheetpile Dock @ 42') 1-400' OB E1 (Sheetpile Dock) Bridge at Breach Building Grounds and Utilites 8'' Steel Water and Fire Electric Fuel  MARY FOR ALT 8a with DIFFERENT DREDGED DIfferent Double Scenario:	CY CY CY LS EA EA LF LF LF LF LF LF LF EPTHS	1,266,107 115,989 7,021 1 9 1 1 00 450 450 450 450 450 10 2,200	\$ 10.19 \$ 5.33.0 \$ 107.69 \$ 603,530.16 \$ 19,158.85 \$ 19,436.25 \$ 19,436.25 \$ 18,742.70 \$ 14,293.16 \$ 16,000.000 \$ 14,293.16 \$ 16,000.000 \$ 14,293.16 \$ 16,000.000 \$ 14,293.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 14,293.16 \$ 16,000.000 \$ 14,293.16 \$ 16,000.000 \$ 14,293.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 18,742.70 \$ 14,293.16 \$ 16,000.000 \$ 14,293.70 \$ 300.000 \$ 300.0000 \$ 300.000 \$ 300.000 \$ 300.0000 \$ 300.0000 \$ 300.0000 \$ 3	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	756,100 47,415,800 19,200 11,661,800 8,434,200 8,434,200 8,434,200 5,717,300 2,577,300 2,2057,300 1,465,300 69,513,000	DED 1%		Footiesenry	Total

OPTION 8a - ANNUAL O&M COSTS								
ITEM NO.	DESCRIPTION		UOM	QUANTITY		UNIT COST		TOTAL COST
	OUTER BASIN EXPANSION AND DEEPENING (w/sediment trap)							
	-26MAXPAY		CY	88,000	\$	32.60	\$	2,868,800
	-28MAXPAY		CY	88,000	\$	32.60	\$	2,868,800
	DEEPWATER BASIN DREDGING							
	-32MAXPAY		CY	4,000	\$	26.33	\$	105,320
	-42MAXPAY		CY	14,000	\$	33.16	\$	464,240

PED Valu

1 plant drdg for 3 months=> no of mob/demobe

3

4

5

ALT 8a		A1 rock	B2 rock	C1 rock	A5 rock	B3 rock	C2 rock	D fill	E fill	F fill	Filter	D1 Surface	Rock Demo	Dredge	Dredge
	DEMO SPUR BW	15,194	12,178	1,695	-	-	-	5,128	-	-	-	-	34,195		
	DEMO EXIST BW	17,379	13,762	1,966	63,646	15,144	38,649	5,885	-	-	41,761	-	198,192		
	DEMO 400 LF WEST CAUSEWAY FOR DOCK	-	-	-	9,575	4,464	3,127	3,374	25,469	3,649	-	150	49,808		
	WEST CAUSEWAY 400 LF DOCK	-	-	-	-	-	-	-	104,521	29,468	-	1,985	-		
	WEST CAUSEWAY EXTENSION	309,751	177,689	54,436	65,856	31,118	19,954	106,194	566,230	115,989	21,818	7,021	-	29,197	
	EAST BW/CAUSEWAY	18,500	13,979	2,216	120,796	65,782	37,573	38,306	139,323	75,239	20,647	3,607	-	56,651	
	OUTER BASIN EXPANSION AND DEEPENING														
		-26MAXPAY												1,219,000	88.3
		-28MAXPAY												1,504,000	88.3
	DEEPWATER BASIN DREDGING	228447047												26.000	10.0
		-32MAXPAY												26,000	10.8
		-37MAXPAY												136,000	21.0
		-40MAXPAY												475,000	45.3
	INNER BASIN DEEPENING	420.44.204.20												22200	0.1
		-13MAXPAY												33200	9.1
	INNER CHANNEL MODIFICATION													F2000	<i>C</i> <b>1</b>
		-13MAXPAY												52000	6.4

Nome Port Modification Study 2018 - ALT #8B Nome Port Modification Study 2018 - Alt #8B

This estimate is available at:

### Y:\P\CW\02 W\Nome\18 Nome Port Modification Study 2018\4\_Mii vs 4-4\2\_Alternative #3

Nome is a regional center of transportation for surrounding villages. There are two state-owned airports. The Nome Airport has two paved runways; one is 6,001' long and 150' wide, and the other is 5,576' by 150' wide. Scheduled jet flights are available, as well as charter and helicopter services. The city field offers a 1,950' long by 110' wide gravel airstrip.

The City of Nome is located on the Western coast of Alaska in approximately the middle of the state, in the Bering Strait-Norton Sound area on the south coast of the Seward Peninsula, facing Norton Sound. It lies 539 air miles northwest of Anchorage, a 75-minute flight. It lies 102 miles south of the Arctic Circle and 161 miles east of Russia. The nearest deep water harbor is some 730 miles to the south at Dutch Harbor, AK. Historically, main commodities shipped through Nome include dry goods, fuel, and rock products. Once the freight arrives in Nome, it is loaded onto smaller barges and shipped to villages in the region. Enabling larger vessels to call on Nome could lead to lower costs of commodities, a savings that could be transferred to these neighboring communities.

January temperatures range from -3 to 11 °F; July temperatures are typically 44 to 65 °F. Average annual precipitation is 18 inches, with 56 inches of snowfall.

If vessel activity in the Arctic increases as much as projected, it will result in a significantly increased Federal mission. The primary purpose of the Nome Port Modification study is to investigate the alternatives for developing a deep-draft Arctic port in Nome, Alaska to best serve state and national interests for generations to come.

Description of Project: Alternative #3 of the project is to construct a 2150 LF extension of the existing causeway into deep water with rubble-mound embankment of similar construction to provide landing access to deep draft vessels. Demo existing causeway nose and spur breakwater. Construct one 450' x 50' dock. Construct 2 mooring dolphins of steel piles. Construct extensions of utility lines to new caisson dock to provide fuel, water, and electricity hookups. Dredge new inner (-22) and outer (-28) channels with 2ft advanced maintenance over-dredge. Construct gates to limit public access and improve causeway traffic flow to service ships.

Estimated by CENPOA-EN-CE Designed by CENPOA-EN-G-HH Prepared by Christine Morgan

Preparation Date8/21/2018Effective Date of Pricing8/21/2018Estimated Construction Time1,090 Days

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Description	Quantity	UOM	<u>ContractCost</u>
Nome Mod Study-Alt ROM UNIT PRICE			378,671,512
Federal Funded Items (GNF)	3	YR	105,689,970.59 <b>317,069,912</b>
10-GNF BREAKWATER & SEAWALL	1	EA	260,357,090.90 <b>260,357,091</b>
Mobilization and Demobilization, complete	6	EA	805,172.80 <b>4,831,037</b>
Equipment Standby	2,345	HR	83.30 195,346
Equipment Road Transport	6	EA	12,977.54 <b>77,865</b>
Mob Construction Facilities & Supplies	6	EA	62,374.82 <b>374,249</b>
Barge Mobilization	14,070	MI	276.03 <b>3,883,800</b>
Mob Personnel	54	PN	1,340.72 <b>72,399</b>
Demo Existing Causeway Spur, and East Breakwater	3,484	LF	1,147.66 <b>3,998,432</b>
Demo Causeway & Breakwater Rock	105,583	CY	37.87 <b>3,998,432</b>
"A1" 22 Ton ROCK Removal	32,573	LCY	32.39 <b>1,055,042</b>
"A5" Rock Removal	63,646	CY	23.54 <b>1,498,170</b>
"B2" 2 Ton Rock Rock removal	25,940	BCY	<i>14.28</i> <b>370,385</b>
"B3" Rock (B22 Rock) Removal	15,144	CY	<sup>13.51</sup> <b>204,667</b>
	· · · · · · · · · · · · · · · · · · ·		9.15

Description	Quantity	UOM	ContractCost
Core & Quarry Spall removal	95,084	LCY	870,167
Extend West Causeway - Breakwater	3,484	LF	67,486.32 235,122,352
Dredge for Causeway BW Armor toe	29,197	BCY	18.40 537,369
MECHANICAL DREDGING	29,197	BCY	18.40 <b>537,369</b>
Place New "A1" Rock (A22)	285,321	CY	<sup>514.43</sup> 146,777,700
22 Ton ROCK Placement	285,321	LCY	<sup>514.43</sup> 146,777,700
"B2" Rock	158,234	CY	207.09 <b>32,769,396</b>
2 Ton Rock Rock placement	158,234	BCY	207.09 <b>32,769,396</b>
"C1" Rock (C8 Rock)	54,436	CY	158.79 <b>8,643,883</b>
300# Rock placement	54,436	LCY	158.79 <b>8,643,883</b>
"A5" Rock	59,049	CY	364.98 <b>21,551,946</b>
8 Ton ROCK Placement	59,049	LCY	364.98 <b>21,551,946</b>
"B3" Rock (B22 Rock)	19,760	CY	184.91 <b>3,653,757</b>
1.5 Ton Rock Rock placement	19,760	LCY	184.91 <b>3,653,757</b>
"C2" Rock	19,954	СҮ	128.15 <b>2,557,145</b>
			128.15

Description	Quantity	UOM	ContractCost
100# Rock placement	19,954	LCY	2,557,145
"D" Fill	106,194	CY	146.34 <b>15,540,822</b>
Quarry Spall placement	132,743	LCY	117.07 <b>15,540,822</b>
Reuse Rock to Extend West Causeway - Breakwater: ASSUME 75% REUSED ROCK FROM DEMO	2,340	LF	1,320.66 <b>3,090,335</b>
Place Reused "A1" Rock (A22)	24,430	CY	32.39 <b>791,282</b>
22 Ton ROCK Placement	24,430	LCY	32.39 <b>791,282</b>
Place salvaged "A5" Rock	47,735	CY	23.54 <b>1,123,628</b>
Place salavaged "B2" Rock	19,455	CY	14.28 <b>277,789</b>
2 Ton Rock Rock placement	19,455	BCY	14.28 <b>277,789</b>
Place salvaged "B3" Rock (B22 Rock)	11,358	CY	13.51 <b>153,500</b>
1.5 Ton Rock Rock placement	11,358	LCY	13.51 <b>153,500</b>
Relocate Rock for Re-use (A Rock & B Rock)	102,977	CY	<sup>7.23</sup> <b>744,136</b>
Realign Existing East Breakwater	3,900	LF	4,206.48 <b>16,405,270</b>
Dredge for Causeway BW Armor toe	56,651	BCY	18.40 <b>1,042,658</b>
MECHANICAL DREDGING	56,651	BCY	18.40 <b>1,042,658</b>

Description	Quantity	UOM	ContractCost
"A1" Rock (A22)	15,840	CY	514.43 <b>8,148,572</b>
22 Ton ROCK Placement	15,840	LCY	<i>514.43</i> <b>8,148,572</b>
"A5" Rock	6,807	CY	364.98 <b>2,484,447</b>
8 Ton ROCK Placement	6,807	LCY	364.98 <b>2,484,447</b>
"B2" Rock	12,738	CY	207.09 <b>2,637,970</b>
2 Ton Rock Rock placement	12,738	BCY	207.09 <b>2,637,970</b>
"B3" Rock (B22 Rock)	2,234	CY	174.19 <b>389,151</b>
1.5 Ton Rock Rock placement	2,234	LCY	174.19 389,151
"C1" Rock (C8 Rock)	1,762	CY	158.79 <b>279,788</b>
300# Rock placement	1,762	LCY	158.79 <b>279,788</b>
"C2" Rock	2,159	CY	128.15 <b>276,680</b>
100# Rock placement	2,159	LCY	128.15 <b>276,680</b>
"Filter" Rock (D8 Rock)	3,704	СҮ	121.15 <b>448,733</b>
Ouarry Spall placement	5.000	LCY	89.74 448.733
"D" Fill	4 735	CV	147.26 697.271
	4,755		109.08

Description	Quantity	UOM	ContractCost
Quarry Spall placement	6,392	LCY	697,271
12-NAVIGATION PORTS & HARBORS	1	EA	56,712,820.87 <b>56,712,821</b>
Mobilization and Demobilization, complete	3	YR	3,448,542.62 <b>10,345,628</b>
Hydro & Topo Surveys for above	4	EA	36,656.13 <b>146,625</b>
Hydrographic Survey	4	EA	9,121.69 <b>36,487</b>
Topographic Survey	20	ACR	5,506.89 <b>110,138</b>
Dredge Plant Mobilization	3	MI	3,399,667.79 <b>10,199,003</b>
Dredging	3,955,200	BCY	11.72 <b>46,367,193</b>
Outer Basin Expansion and Deepening area	861,000	BCY	10.10 <b>8,691,878</b>
MECHANICAL DREDGING - 28 MPL	488,000	BCY	17.81 <b>8,691,878</b>
Deep Water Basin area	3,009,000	BCY	12.19 <b>36,674,248</b>
MECHANICAL DREDGING - 42 MPL	1,994,000	BCY	18.39 <b>36,674,248</b>
Inner Basin Deepening area - Mechanical Dredging	52,000	BCY	19.25 <b>1,001,067</b>
MECHANICAL DREDGING -13 MPL	52,000	BCY	19.25 <b>1,001,067</b>
Non-Federal Funded Items (LSF)	1	EA	61,601,600.40 61,601,600
			20,747,735.68

Description	Quantity	UOM	ContractCost
10-LSF BREAKWATER & SEAWALL	1	EA	20,747,736
Causeway - Access Road	1	LS	20,747,736
"E" Fill	542,968	BCY	25.83 <b>14,024,779</b>
"F" Fill	113,674	BCY	53.30 <b>6,058,474</b>
Surface (D1) Course	6,171	CY	107.68 664,483
12-LSF NAVIGATION PORTS & HARBORS	1	EA	38,546,565.02 <b>38,546,565</b>
Construct New Causeway Dock	2	EA	19,273,282.51 <b>38,546,565</b>
Mooring Dolphins	4	EA	603,523.45 <b>2,414,094</b>
Vert Piles	4	EA	91,955.31 <b>367,821</b>
36" x 80 LF Pipe Piles	4	EA	91,955.31 <b>367,821</b>
Batter Piles	16	EA	91,955.31 <b>1,471,285</b>
36" x 80 LF Pipe Piles	16	EA	91,955.31 <b>1,471,285</b>
Anodes	20	EA	<i>1,115.30</i> <b>22,306</b>
New Anodes - Pile protection	20	EA	1,115.30 <b>22,306</b>
Gussets	32	EA	2,123.98 <b>67,967</b>
Decks	4	EA	13,983.78 <b>55,935</b>

Description	Quantity	UOM	ContractCost
Catwalks #	400	LF	1,071.95 <b>428,779</b>
Security Gates	1	EA	19,158.63 <b>19,159</b>
New Caisson Dock East	600	LF	32,268.09 <b>19,360,857</b>
Dredge for Caisson Dock Foundation #	17,000	CY	18.40 <b>312,884</b>
MECHANICAL DREDGING	17,000	LCY	18.40 <b>312,884</b>
Gravel Bedding for Caisson Dock Foundation #	4,299	CY	<sup>97.61</sup> <b>419,623</b>
Transport Caissons	3	EA	1,487,187.39 <b>4,461,562</b>
Concrete Caisson Dock	3	EA	4,426,195.51 <b>13,278,587</b>
Gravel Fill for Caisson Dock	34,200	CY	24.29 <b>830,626</b>
New Caisson Dock West	450	LF	<i>32,315.21</i> <b>14,541,843</b>
Dredge for Caisson Dock Foundation #	12.750	СҮ	18.40 <b>234.663</b>
MECHANICAL DREDGING	12.750	LCY	18.40 <b>234.663</b>
Gravel Bedding for Caisson Dock Foundation #	3.224	CY	99.34 <b>320.284</b>
Transnort Caissons	2,22	FA	<i>1,487,187.39</i> <b>3 346 172</b>
Concrete Caisson Dook	2	БЛ	4,426,746.37 0 060 170
Concrete Caisson Dock	2	ĽA	24.29

Description	Quantity	UOM	ContractCost
Gravel Fill for Caisson Dock	25,650	CY	622,969
Bridge at Breach	1	EA	2,210,613.10 <b>2,210,613</b>
19-BUILDINGS GROUNDS & UTILITIES	1	EA	2,307,299.70 <b>2,307,300</b>
Utilities	3,534	LF	652.89 <b>2,307,300</b>
Water	3,534	LF	128.77 <b>455,085</b>
Water Line from New Causeway Dock to Existing Tie-In point	3,887	LF	115.05 <b>447,248</b>
Water Supply Header	1	EA	4,866.09 <b>4,866</b>
Hydrant	1	EA	2,971.57 <b>2,972</b>
Electric	3,534	LF	319.88 <b>1,130,440</b>
Electrical Power Line from New Causeway Dock Existing Tie-In Point.	3,534	LF	<i>233.78</i> <b>826,173</b>
Conductors	3,534	LF	203.47 <b>719,076</b>
Grounding	10	EA	823.46 <b>8,235</b>
Equipment	1	EA	98,861.68 <b>98,862</b>
High Mast Lighting	3	EA	79,490.70 <b>238,472</b>
Pole Fixtures	3	EA	7,255.89 <b>21,768</b>
			101.66

Description	Quantity	UOM	ContractCost
Conductors	2,100	LF	213,489
Grounding	3	EA	1,071.72 <b>3,215</b>
Fuel	3,534	LF	<sup>204.24</sup> 721,774
Fuel Header for New Causeway	2	EA	17,955.01 <b>35,910</b>
Fuel Lines from New Causeway Dock to Tie-In Point	3,534	LF	194.08 685,864
6" Line	3,534	LF	68.71 <b>242,819</b>
8" Line	6,361	LF	<sup>69.65</sup> <b>443,045</b>

Nome Port Modification Study 2018 - ALT #8B Nome Port Modification Study 2018 - Alt #8B

This estimate is available at:

### Y:\P\CW\02 W\Nome\18 Nome Port Modification Study 2018\4\_Mii vs 4-4\2\_Alternative #3

Nome is a regional center of transportation for surrounding villages. There are two state-owned airports. The Nome Airport has two paved runways; one is 6,001' long and 150' wide, and the other is 5,576' by 150' wide. Scheduled jet flights are available, as well as charter and helicopter services. The city field offers a 1,950' long by 110' wide gravel airstrip.

The City of Nome is located on the Western coast of Alaska in approximately the middle of the state, in the Bering Strait-Norton Sound area on the south coast of the Seward Peninsula, facing Norton Sound. It lies 539 air miles northwest of Anchorage, a 75-minute flight. It lies 102 miles south of the Arctic Circle and 161 miles east of Russia. The nearest deep water harbor is some 730 miles to the south at Dutch Harbor, AK. Historically, main commodities shipped through Nome include dry goods, fuel, and rock products. Once the freight arrives in Nome, it is loaded onto smaller barges and shipped to villages in the region. Enabling larger vessels to call on Nome could lead to lower costs of commodities, a savings that could be transferred to these neighboring communities.

January temperatures range from -3 to 11 °F; July temperatures are typically 44 to 65 °F. Average annual precipitation is 18 inches, with 56 inches of snowfall.

If vessel activity in the Arctic increases as much as projected, it will result in a significantly increased Federal mission. The primary purpose of the Nome Port Modification study is to investigate the alternatives for developing a deep-draft Arctic port in Nome, Alaska to best serve state and national interests for generations to come.

Description of Project: Alternative #3 of the project is to construct a 2150 LF extension of the existing causeway into deep water with rubble-mound embankment of similar construction to provide landing access to deep draft vessels. Demo existing causeway nose and spur breakwater. Construct one 450' x 50' dock. Construct 2 mooring dolphins of steel piles. Construct extensions of utility lines to new caisson dock to provide fuel, water, and electricity hookups. Dredge new inner (-22) and outer (-28) channels with 2ft advanced maintenance over-dredge. Construct gates to limit public access and improve causeway traffic flow to service ships.

Estimated by CENPOA-EN-CE Designed by CENPOA-EN-G-HH Prepared by Christine Morgan

Preparation Date8/21/2018Effective Date of Pricing8/21/2018Estimated Construction Time1,090 Days

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Description	Quantity	UOM	ContractCost
Nome Mod Study-Alt ROM UNIT PRICE			346,131,873
Federal Funded Items (GNF)	3	YR	94,843,343.54 <b>284,530,031</b>
10-GNF BREAKWATER & SEAWALL	1	EA	260,358,112.85 <b>260,358,113</b>
Mobilization and Demobilization, complete	6	EA	805,175.96 <b>4,831,056</b>
Equipment Standby	2,345	HR	83.30 195,347
Equipment Road Transport	6	EA	12,977.59 <b>77,866</b>
Mob Construction Facilities & Supplies	6	EA	62,375.06 <b>374,250</b>
Barge Mobilization	14,070	MI	276.04 <b>3,883,815</b>
Mob Personnel	54	PN	<i>1,340.73</i> <b>72,399</b>
Demo Existing Causeway Spur, and East Breakwater	3,484	LF	<i>1,147.66</i> <b>3,998,447</b>
Demo Causeway & Breakwater Rock	105.583	CY	37.87 <b>3.998.447</b>
"A1" 22 Ton ROCK Removal	32,573	LCY	32.39 <b>1.055.046</b>
"A5" Rock Removal	63.646	CY	23.54 1.498.176
"B2" 2 Ton Rock Rock removal	25 940	BCV	14.28 <b>370 387</b>
"R3" Dock (R22 Dock) Romoval	15 144	CV	13.51 204 669
D5 ROCK (D22 ROCK) REMOVAL	13,144	UI	<b>204,000</b> 9.15

Description	Quantity	UOM	ContractCost
Core & Quarry Spall removal	95,084	LCY	870,170
Extend West Causeway - Breakwater	3,484	LF	67,486.59 <b>235,123,275</b>
Dredge for Causeway BW Armor toe	29,197	BCY	<sup>18.41</sup> 537,371
MECHANICAL DREDGING	29,197	BCY	<sup>18.41</sup> 537,371
Place New "A1" Rock (A22)	285,321	CY	<sup>514.43</sup> 146,778,276
22 Ton ROCK Placement	285,321	LCY	<sup>514.43</sup> 146,778,276
"B2" Rock	158,234	CY	207.10 <b>32,769,525</b>
2 Ton Rock Rock placement	158,234	BCY	207.10 <b>32,769,525</b>
"C1" Rock (C8 Rock)	54,436	CY	158.79 <b>8,643,917</b>
300# Rock placement	54,436	LCY	158.79 <b>8,643,917</b>
"A5" Rock	59,049	CY	364.99 <b>21,552,030</b>
8 Ton ROCK Placement	59,049	LCY	<sup>364.99</sup> <b>21,552,030</b>
"B3" Rock (B22 Rock)	19,760	CY	184.91 <b>3,653,771</b>
1.5 Ton Rock Rock placement	19,760	LCY	184.91 <b>3,653,771</b>
"C2" Rock	19,954	CY	128.15 <b>2,557,155</b>
			128.15

Description	Quantity	UOM	ContractCost
100# Rock placement	19,954	LCY	2,557,155
"D" Fill	106,194	CY	146.34 <b>15,540,883</b>
Quarry Spall placement	132,743	LCY	117.08 <b>15,540,883</b>
Reuse Rock to Extend West Causeway - Breakwater: ASSUME 75% REUSED ROCK FROM DEMO	2,340	LF	1,320.66 <b>3,090,347</b>
Place Reused "A1" Rock (A22)	24,430	CY	32.39 <b>791,285</b>
22 Ton ROCK Placement	24,430	LCY	<sup>32.39</sup> <b>791,285</b>
Place salvaged "A5" Rock	47,735	CY	23.54 <b>1,123,632</b>
Place salavaged "B2" Rock	19,455	CY	14.28 <b>277,790</b>
2 Ton Rock Rock placement	19,455	BCY	14.28 <b>277,790</b>
Place salvaged "B3" Rock (B22 Rock)	11,358	CY	<sup>13.51</sup> <b>153,501</b>
1.5 Ton Rock Rock placement	11,358	LCY	13.51 <b>153,501</b>
Relocate Rock for Re-use (A Rock & B Rock)	102,977	CY	<sup>7.23</sup> 744,139
Realign Existing East Breakwater	3,900	LF	4,206.50 <b>16,405,334</b>
Dredge for Causeway BW Armor toe	56,651	BCY	<sup>18.41</sup> <b>1,042,662</b>
MECHANICAL DREDGING	56,651	BCY	<sup>18.41</sup> <b>1,042,662</b>

Description	Quantity	UOM	ContractCost
"A1" Rock (A22)	15,840	CY	514.43 <b>8,148,604</b>
22 Ton ROCK Placement	15,840	LCY	514.43 <b>8,148,604</b>
"A5" Rock	6,807	CY	364.99 <b>2,484,456</b>
8 Ton ROCK Placement	6,807	LCY	364.99 <b>2,484,456</b>
"B2" Rock	12,738	CY	207.10 <b>2,637,981</b>
2 Ton Rock Rock placement	12,738	BCY	207.10 <b>2,637,981</b>
"B3" Rock (B22 Rock)	2,234	CY	174.20 389,153
1.5 Ton Rock Rock placement	2,234	LCY	174.20 389,153
"C1" Rock (C8 Rock)	1,762	CY	158.79 <b>279,789</b>
300# Rock placement	1,762	LCY	158.79 <b>279,789</b>
"C2" Rock	2,159	CY	128.15 <b>276,681</b>
100# Rock placement	2,159	LCY	128.15 <b>276,681</b>
"Filter" Rock (D8 Rock)	3.704	CY	121.15 <b>448.735</b>
Quarry Snall placement	5,000	LCV	89.74 <b>448 735</b>
	5,000		147.26
	4,735	CY	<b>697,273</b> 109.08

Nome Mod Study-Alt ROM UNIT PRICE Page 5

Description	Quantity	UOM	ContractCost
Quarry Spall placement	6,392	LCY	697,273
12-NAVIGATION PORTS & HARBORS	1	EA	24,171,917.77 <b>24,171,918</b>
Mobilization and Demobilization, complete	3	YR	3,448,556.16 <b>10,345,668</b>
Hydro & Topo Surveys for above	4	EA	36,656.27 <b>146,625</b>
Hydrographic Survey	4	EA	9,121.73 <b>36,487</b>
Topographic Survey	20	ACR	5,506.91 <b>110,138</b>
Dredge Plant Mobilization	3	MI	3,399,681.13 10,199,043
Dredging	3,955,200	BCY	<sup>3.50</sup> 13,826,249
Outer Basin Expansion and Deepening area	861,000	BCY	10.10 <b>8,691,912</b>
MECHANICAL DREDGING - 28 MPL	488,000	BCY	17.81 <b>8,691,912</b>
Deep Water Basin area	3,009,000	BCY	1.37 <b>4,133,266</b>
MECHANICAL DREDGING - 32 MPL	228,000	BCY	18.13 <b>4,133,266</b>
Inner Basin Deepening area - Mechanical Dredging	52,000	BCY	19.25 <b>1,001,071</b>
MECHANICAL DREDGING -13 MPL	52.000	BCY	19.25 <b>1,001,071</b>
Non-Federal Funded Items (LSF)	1	EA	61,601,842.20 61,601.842
	-		20,747,817.11

Description	Quantity	UOM	ContractCost
10-LSF BREAKWATER & SEAWALL	1	EA	20,747,817
Causeway - Access Road	1	LS	20,747,817
"E" Fill	542,968	BCY	25.83 <b>14,024,834</b>
"F" Fill	113,674	BCY	53.30 <b>6,058,497</b>
Surface (D1) Course	6,171	CY	107.68 <b>664,486</b>
12-LSF NAVIGATION PORTS & HARBORS	1	EA	38,546,716.33 <b>38,546,716</b>
Construct New Causeway Dock	2	EA	19,273,358.16 <b>38,546,716</b>
Mooring Dolphins	4	EA	603,525.82 <b>2,414,103</b>
Vert Piles	4	EA	91,955.68 <b>367,823</b>
36" x 80 LF Pipe Piles	4	EA	91,955.68 <b>367,823</b>
Batter Piles	16	EA	91,955.68 <b>1,471,291</b>
36" x 80 LF Pipe Piles	16	EA	91,955.68 <b>1,471,291</b>
Anodes	20	EA	<i>1,115.31</i> <b>22,306</b>
New Anodes - Pile protection	20	EA	<i>1,115.31</i> <b>22,306</b>
Gussets	32	EA	2,123.99 <b>67,968</b>
Decks	4	EA	13,983.84 <b>55,935</b>

Description	Quantity	UOM	ContractCost
Catwalks #	400	LF	1,071.95 <b>428,781</b>
Security Gates	1	EA	19,158.71 <b>19,159</b>
New Caisson Dock East	600	LF	32,268.22 <b>19,360,933</b>
Dredge for Caisson Dock Foundation #	17,000	CY	18.41 <b>312,885</b>
MECHANICAL DREDGING	17,000	LCY	<sup>18.41</sup> <b>312,885</b>
<b>Gravel Bedding for Caisson Dock Foundation #</b>	4,299	CY	97.61 <b>419,625</b>
Transport Caissons	3	EA	1,487,193.23 <b>4,461,580</b>
Concrete Caisson Dock	3	EA	4,426,212.88 <b>13,278,639</b>
Gravel Fill for Caisson Dock	34,200	CY	24.29 <b>830,629</b>
New Caisson Dock West	450	LF	32,315.33 <b>14,541,900</b>
Dredge for Caisson Dock Foundation #	12,750	CY	<sup>18.41</sup> <b>234,664</b>
MECHANICAL DREDGING	12,750	LCY	18.41 <b>234,664</b>
Gravel Bedding for Caisson Dock Foundation #	3,224	СҮ	99.34 <b>320.286</b>
Transport Caissons	2	EA	<i>1,487,193.23</i> <b>3,346,185</b>
- Concrete Caisson Dock	2	EA	4,426,763.75 <b>9,960,218</b>
			24.29

Description	Quantity	UOM	ContractCost
Gravel Fill for Caisson Dock	25,650	CY	622,972
Bridge at Breach	1	EA	2,210,621.78 <b>2,210,622</b>
19-BUILDINGS GROUNDS & UTILITIES	1	EA	2,307,308.76 <b>2,307,309</b>
Utilities	3,534	LF	652.89 <b>2,307,309</b>
Water	3,534	LF	128.77 <b>455,087</b>
Water Line from New Causeway Dock to Existing Tie-In point	3,887	LF	115.05 <b>447,249</b>
Water Supply Header	1	EA	4,866.11 <b>4,866</b>
Hydrant	1	EA	2,971.58 <b>2,972</b>
Electric	3,534	LF	319.88 <b>1,130,445</b>
Electrical Power Line from New Causeway Dock Existing Tie-In Point.	3,534	LF	233.78 <b>826,176</b>
Conductors	3,534	LF	203.47 <b>719,079</b>
Grounding	10	EA	823.46 <b>8,235</b>
Equipment	1	EA	98,862.07 <b>98,862</b>
High Mast Lighting	3	EA	<sup>79,491.01</sup> 238,473
Pole Fixtures	3	EA	7,255.92 <b>21,768</b>
			101.66

Nome Mod Study-Alt ROM UNIT PRICE Page 9

Description	Quantity	UOM	<u>ContractCost</u>
Conductors	2,100	LF	213,490
Grounding	3	EA	1,071.73 <b>3,215</b>
Fuel	3,534	LF	<sup>204.24</sup> <b>721,777</b>
Fuel Header for New Causeway	2	EA	17,955.08 <b>35,910</b>
Fuel Lines from New Causeway Dock to Tie-In Point	3,534	LF	194.08 <b>685,867</b>
6" Line	3,534	LF	68.71 <b>242,820</b>
8" Line	6,361	LF	<sup>69.65</sup> <b>443,047</b>
#### Abbreviated Risk Analysis

	Project (less than \$		Alternative: Alt 8B						
	Project Development Stage/Alterr Risk Ca		Meeting Date:	:	4/8/2019				
		Total Estimated Construction Contract Cost =	\$	383,192,189					
	CWWBS	Feature of Work	<u>C</u>	ontract Cost		% Contingency	<u>\$</u>	Contingency	<u>Total</u>
	01 LANDS AND DAMAGES	Real Estate	\$	-		0.00%	\$	- \$	-
1	32 01 MOB, DEMOB & PREPARATORY WORK	Mob/Demob	\$	4,831,000		24.14%	\$	1,166,356 \$	5,997,35
2	10 BREAKWATERS AND SEAWALLS	New Construction Breakwater/Associated Demo	\$	265,634,010		35.48%	\$	94,246,070 \$	359,880,08
3	12 NAVIGATION, PORTS AND HARBORS	Dredging to -28' & -40'	\$	34,988,979		46.15%	\$	16,148,567 \$	51,137,54
4	10 BREAKWATERS AND SEAWALLS	LSF-Causeway Access Road on W/Extension	\$	24,744,500		33.08%	\$	8,184,967 \$	32,929,46
5	12 NAVIGATION, PORTS AND HARBORS	LSF-New Causeway Docks	\$	50,736,400		40.79%	\$	20,695,649 \$	71,432,04
6	19 BUILDINGS, GROUNDS, AND UTILITIES	LSF-Water, Electric, Fuel Lines	\$	2,257,300		26.90%	\$	607,120 \$	2,864,42
7						0.00%	\$	- \$	-
8			\$			0.00%	\$	- \$	-
9			\$	-		0.00%	\$	- \$	-
10			\$	-		0.00%	\$	- \$	-
11			\$	-		0.00%	\$	- \$	-
12	All Other	Remaining Construction Items	\$	-	0.0%	0.00%	\$	- \$	-
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$	57,018,998		27.48%	\$	15,670,145 \$	72,689,143
14	31 CONSTRUCTION MANAGEMENT	Construction Management	\$	30,425,460		10.00%	\$	3,042,546 \$	33,468,006
xx	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO A	ALL. MUST INCLUDE JUSTIFICATION SEE BELOW)					\$	-	

Totals Real Estate \$ 0.00% - \$ -\$ Total Construction Estimate \$ 383,192,189 36.81% 141,048,728 \$ 524,240,917 \$ Total Planning, Engineering & Design \$ 57,018,998 27.48% \$ 15,670,145 \$ 72,689,143 Total Construction Management \$ 30,425,460 3,042,546 \$ 33,468,006 \$ 0.007 Total Excluding Real Estate \$ 470,636,647 34% 159,761,420 \$ 630,398,066 Ba 50% 80% \$470.6 Confidence Level Range Estimate (\$000's) \$566,494k \$630,398k 7k \* 50% based on base is at 5% 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.

USED 35%CONTINGENCY FOR ALL ALTERNATIVE ROMS (ROUNDED THIS CALCULTED NUMBER FROM 34% TO 35% FOR EASE OF CALCULATION)

#### Nome Harbor Deepening Alt 8B

Alternative Formulation Abbreviated Risk Analysis Meeting Date: 8-Apr-19



**Risk Register** 

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
Project Ma	anagement & Scope Growth			Maximum Proje	ct Growth	75%
PS-1	Mob/Demob	Quantities are based on old survey. Qty's most likely are locked in. One source of material price of stone could vary.		Moderate	Possible	2
PS-2	New Construction Breakwater/Associated Demo	Based on concept design, depth.		Moderate	Likely	3
PS-3	Dredging to -28' & -40'	Basis in floating Clamshell, New Material, Difficult. Piling was discussed and eliminated based dredging density. 1-2 mile distance to disposal open water disposal.	Nearshore disposal requirement, due to depth, wave action, Can material be placed in proposed nearshore option.	Moderate	Likely	3
PS-4	LSF-Causeway Access Road on W/Extension		Minor risk in assembly, design.	Marginal	Likely	2
PS-5	LSF-New Causeway Docks	Current cost is based on pre-fabrication with towing, fill within caisson. Separate cost for assembly, towing and placement. Based on historical design.	Potential for existing pile removal. Potential for boulders.	Significant	Possible	3
PS-6	LSF-Water, Electric, Fuel Lines	Scope is utility replacement. Current basis is, elec is a swag.	Undefined scope concerning fuel and sewer.	Marginal	Likely	2
PS-13	Planning, Engineering, & Design	Project goals are sustainable, habitat and extensive studies have been performed to determine the project requirements. Investigations sufficient to support design assumptions? Design confidence?	The unclear feature in design is the bearing capacity of the subsoil. There is a possibility It could fail. The design will attempt to be performed to control currents. There is some uncertainty about the ability to perform this effort.	Moderate	Likely	3
<u>Acquisitio</u>	<u>n Strategy</u>			Maximum Proje	ct Growth	30%
<u>Constructi</u>	ion Elements			Maximum Proje	ct Growth	25%
CE-2	New Construction Breakwater/Associated Demo	No foreseen additional risk. Estimate will include slower production for assembly. Remote location	Marginal risk due to remote location and working near water in a high climate location.	Marginal	Likely	2
CE-3	Dredging to -28' & -40'	Standard type dredging of the Harbor, Have recent boring in the area to be dredged. Low chance of bedrock. Harbor is assumed clean and easy to dredge. Placement is designated.	Disposal area is risk, where and how, allowed by permits. Area is sensitive to public due to use for public mining of gold. Also, due to length of contract, will require turbity in area of disposal area. Fuel and equipment pricing can influence pricing. Possible naturally occuring arsenic in material.	Moderate	Very LIKELY	4
CE-4	LSF-Causeway Access Road on W/Extension	No foreseen additional risk. Estimate will include slower production for assembly. Remote location	Marginal risk due to remote location and working near water in a high climate location.	Marginal	Likely	2
CE-5	LSF-New Causeway Docks	As identified within scope.	Potential to encounter difficult driving conditions.	Marginal	Likely	2

CE-6	LSF-Water, Electric, Fuel Lines	Standard utilities, Remote location	Marginal risk due to remote location and working near water in a high climate location.	Moderate	Likely	3
CE-7	LSF-Causeway Access Road on W/Extension	Existing bridge may need additional maintenance/reconsturction due to increased amount of traffic due to moving the rock into place for construction	Part of the construction process and most likely to occur	Significant	Very LIKELY	5
SC-3	Dredging to -28' & -40'	Dredge Plant requirements for near shore disposal	Dredge plant in salt water, climate conditions	Marginal	Likely	2
SC-4	LSF-Causeway Access Road on W/Extension	Unit cost for estimate is based on current design types.	Little backup used for estimate	Marginal	Likely	2
SC-5	LSF-New Causeway Docks	Unit cost for estimate is based on current design types.	Little backup used for estimate	Marginal	Likely	2
Cost Estim	nate Assumptions			Maximum Proje	ct Growth	35%
EST-1	Mob/Demob	Cost based Historical Unit Cost, Class 4 level or higier	Results in a highier risk due to project specifics	Marginal	Likely	2
EST-2	New Construction Breakwater/Associated Demo	Cost based Historical Unit Cost, Class 4 level or higier	Results in a highier risk due to project specifics	Marginal	Likely	2
EST-4	LSF-Causeway Access Road on W/Extension	Cost based Historical Unit Cost, Class 4 level or higier	Results in a highier risk due to project specifics	Marginal	Likely	2
EST-5	LSF-New Causeway Docks	Cost based Historical Unit Cost, Class 4 level or higier	Results in a highier risk due to project specifics	Marginal	Likely	2
EST-13	Planning, Engineering, & Design	estimate for PED is agressive level. (14.88%)	Results in a highier risk due to project specifics	Marginal	Likely	2
External P	Project Risks			Maximum Proje	ct Growth	40%
EX-1	Mob/Demob	Weather (sea ice, waves), local community, permitting, Funding levels, HQ approval.	• All permits have been obtained through extensive negotiation with each relevant agency, so it is thought that this risk is minimal and unlikely. Add risk for off shore mob during storm events. Final approval from TSP concerning scope.	Marginal	Likely	2
EX-2	New Construction Breakwater/Associated Demo	Weather (sea ice, waves), local community, permitting, Funding levels, HQ approval.	<ul> <li>All permits have been obtained through extensive negotiation with each relevant agency, so it is thought that this risk is minimal and unlikely. Add risk for off shore mob during storm events.</li> <li>Final approval from TSP concerning scope.</li> </ul>	Marginal	Likely	2
EX-3	Dredging to -28' & -40'	Weather (sea ice, waves), local community, permitting, Funding levels, HQ approval.	• All permits have been obtained through extensive negotiation with each relevant agency, so it is thought that this risk is minimal and unlikely. Add risk for off shore mob during storm events. Final approval from TSP concerning scope.	Marginal	Likely	2
EX-4	LSF-Causeway Access Road on W/Extension	Weather (sea ice, waves), local community, permitting, Funding levels, HQ approval.	<ul> <li>All permits have been obtained through extensive negotiation with each relevant agency, so it is thought that this risk is minimal and unlikely. Add risk for off shore mob during storm events.</li> <li>Final approval from TSP concerning scope.</li> </ul>	Marginal	Likely	2
EX-5	LSF-New Causeway Docks	Weather (sea ice, waves), local community, permitting, Funding levels, HQ approval.	<ul> <li>All permits have been obtained through extensive negotiation with each relevant agency, so it is thought that this risk is minimal and unlikely. Add risk for off shore mob during storm events. Final approval from TSP concerning scope.</li> </ul>	Marginal	Likely	2

EX-6	LSF-Water, Electric, Fuel Lines	Weather (sea ice, waves), local community, permitting, Funding levels, HQ approval.	<ul> <li>All permits have been obtained through extensive negotiation with each relevant agency, so it is thought that this risk is minimal and unlikely. Add risk for off shore mob during storm events.</li> <li>Final approval from TSP concerning scope.</li> </ul>	Marginal	Likely	2
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### USED THIS DATA FOR THE SHEETPILE DOCK ROM COSTS -DATA GATHERED BASED ON HISTORICAL AS-BUILT PROJECTS SIMILAR

	Days	Material	Unit of					
Description	(Total)	Quantity	Measure	Total Unit Cost	Total Cost			
JOB	192.04	1	<b>F</b> A	67 072 250 40	(no calculations i	ncluded)	60 70F 700 27	400 LF
400 LF OLSP DOCK @ 28 Basin	183.04	1	EA	\$7,873,350.49	\$7,873,350.49	6	\$8,795,788.27	\$21,989.47 Cost per LF
Mobilization	0	1	15	\$1,220,060.09	\$1,220,060.09	Grayed out cells not incl	uded in total cost	
Yard Mobilization	5	1	15	\$36 781 05	\$722,281.12			
Mobilization to Site	5	1	15	\$685 500 06	\$685 500 06			
Demobilization	0	1	LS	\$216.399.57	\$216.399.57			
Site Demobilization	3	1	LS	\$26,949.79	\$26,949.79			
Demobilization from Site	3	1	LS	\$189,449.79	\$189,449.79			
Field Personnel Housing, Per Diem, Transportation	0	120	Day	\$2,395.00	\$287,400.00			
OCSP Bulkhead	132.57	1	LS	\$5,150,815.50	\$5,150,815.50			
Provide Sheet Pile	0	1698	Ton	\$1,870.00	\$3,175,260.00	20%	\$635,052.00	Marked up 20%
Set Templates and Temporary Supports	14	14	EA	\$26,681.28	\$373,537.92			
Drive Sheet Pile	96.47	1447	EA	\$993.04	\$1,436,928.88	20%	\$287,385.78	
Cutoff Sheet Pile and Weld Interlocks	22.1	663	EA	\$249.01	\$165,093.63			
Shot Rock Fill	13.91	32000	CY	\$52.56	\$1,681,920.00			
Provide 'E' Fill - Loaded at Quarry	0	32000	CY	\$39.75	\$1,272,000.00			
Transport and Place Core Rock - 'E' Fill	13.91	32000	CY LF	\$12.81	\$409,920.00			
Face Beam Drovide Face Ream Materials (Fabricated Dib HD 14v90)	16.24	400		\$1,260.98	\$504,392.00			
Install Face Ream	0 24	400		\$2.39 \$725 52	\$222,740.00			
Provide and Install Dock Face Bullrail	9.24	400		\$235.53	\$94,212.00			
Provide and Install Safety Ladders	7	400	FΔ	\$12 771 06	\$89 397 42			
Facebeam Mounted Fixed Bollards	,	, 7	EA	\$5.173.90	\$36.217.30			
Fender Piles	10	10	EA	\$27.495.65	\$274,956,50			
Provide and Install Pile Caps	5	10	EA	\$7,682.57	\$76,825.70			
Provide Fender Pile - 30x0.625"	0	630	LF	\$194.30	\$122,409.00			
Drive Fender Pile	5	10	EA	\$7,572.34	\$75,723.40			
Anodes	10.32	1	LS	\$261,396.73	\$261,396.73			
Provide and Install Anodes	10.32	56	EA	\$4,667.80	\$261,396.80			
	Days	Material	Unit of					
Description	Days (Total)	Material Quantity	Unit of Measure	Total Unit Cost	Total Cost			
Description	Days (Total)	Material Quantity	Unit of Measure	Total Unit Cost	Total Cost			450 LF
Description JOB 450 LF OCSP Dock @ 32' Basin	Days (Total) 219.36	Material Quantity 1	Unit of Measure EA	Total Unit Cost \$10,199,844.65	Total Cost \$10,199,844.65	\$8,885,807.37	\$11,374,944.23	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob	Days (Total) 219.36 0	Material Quantity 1	Unit of Measure EA LS	Total Unit Cost \$10,199,844.65 \$1,391,928.44	Total Cost \$10,199,844.65 \$1,391,928.44	\$8,885,807.37	\$11,374,944.23	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Vocal Mediuation	Days (Total) 219.36 0	Material Quantity 1 1	Unit of Measure EA LS LS	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34	\$8,885,807.37	\$11,374,944.23 \$1,314,037.28	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization	Days (Total) 219.36 0 0 6	Material Quantity 1 1 1 1	Unit of Measure EA LS LS LS	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27	\$8,885,807.37	\$11,374,944.23 \$1,314,037.28	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Mobilization to Site Demobilization	Days (Total) 219.36 0 0 6 6	Material Quantity 1 1 1 1 1	Unit of Measure EA LS LS LS LS	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266 866 10	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266 866 10	\$8,885,807.37	\$11,374,944.23 \$1,314,037.28	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Mobilization to Site Demobilization Site Demobilization	Days (Total) 219.36 0 0 6 6 0 4	Material Quantity 1 1 1 1 1 1 1	Unit of Measure EA LS LS LS LS LS LS	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05	\$8,885,807.37	\$11,374,944.23 \$1,314,037.28	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Mobilization to Site Demobilization Site Demobilization Demobilization for Site	Days (Total) 219.36 0 0 6 6 6 0 4 4	Material Quantity 1 1 1 1 1 1 1 1 1	Unit of Measure EA LS LS LS LS LS LS LS LS	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.0 \$35,933.05 \$230,933.05	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05	\$8,885,807.37	\$11,374,944.23 \$1,314,037.28	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Mobilization to Site Demobilization Site Demobilization Demobilization from Site Field Personnel Housing, Per Diem, Transportation	Days (Total) 219.36 0 0 6 6 0 4 4 4 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 35	Unit of Measure EA LS LS LS LS LS LS LS LS Day	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$323,325.00	\$8,885,807.37	\$11,374,944.23 \$1,314,037.28	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Mobilization to Site Demobilization Site Demobilization Demobilization from Site Field Personnel Housing, Per Diem, Transportation OCSP Bulkhead	Days (Total) 219.36 0 0 6 0 4 4 4 0 156.3	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 35 1	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS LS LS LS	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$323,325.00 \$6,468,815.79	\$8,885,807.37	\$11,374,944.23 \$1,314,037.28	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Yemobilization Site Demobilization Site Demobilization Site Demobilization Field Personnel Housing, Per Diem, Transportation OCSP Bulkhead Provide Sheet Pile	Days (Total) 219.36 0 0 6 6 0 4 4 4 0 0 156.3 0	Material Quantity 1 1 1 1 1 1 1 1 1 5 1 1 2227	Unit of Measure EA LS LS LS LS LS LS LS Day LS Ton	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00	\$8,885,807.37 \$4,164,490.00	\$11,374,944.23 \$1,314,037.28 \$832,898.00	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Yemobilization Demobilization Site Demobilization Field Personnel Housing, Per Diem, Transportation OCSP Bulkhead Provide Sheet Pile Set Templates and Temporary Supports	Days (Total) 219.36 0 0 6 6 0 4 4 4 0 0 156.3 0 0 16	Material Quantity 1 1 1 1 1 1 1 1 1 1 3 5 1 1 2227 16	Unit of Measure EA LS LS LS LS LS LS LS Day LS Ton EA	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$232,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12	\$8,885,807.37 \$4,164,490.00 \$403,329.12	\$11,374,944.23 \$1,314,037.28 \$832,898.00	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Yemobilization Demobilization Site Demobilization Site Demobilization Field Personnel Housing, Per Diem, Transportation OCSP Bulkhead Provide Sheet Pile Set Templates and Temporary Supports	Days (Total) 219.36 0 0 6 6 0 4 4 4 0 156.3 0 156.3 0 156.3 0 16 114.87	Material Quantity 1 1 1 1 1 1 1 1 1 1 3 5 1 1 2227 16 1723	Unit of Measure EA LS LS LS LS LS LS LS Day LS Ton EA EA	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$230,935.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$993.04	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$2323,923.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Pemobilization Site Demobilization Site Demobilization Field Personnel Housing, Per Diem, Transportation OCSP Bulkhead Provide Sheet Pile Set Templates and Temporary Supports Drive Sheet Pile Cutoff Sheet Pile and Weld Interlocks	Days (Total) 219.36 0 0 6 6 0 4 4 0 156.3 0 0 156.3 0 0 16 114.87 25.43	Material Quantity 1 1 1 1 1 1 1 1 1 1 3 5 1 1 2227 1 6 1723 763	Unit of Measure EA LS LS LS LS LS LS LS LS Day LS Ton EA EA EA	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$993.04 \$249.01	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$323,923.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Mobilization to Site Demobilization Site Demobilization Mobilization from Site Field Personnel Housing, Per Diem, Transportation OCSP Bulkhead Provide Sheet Pile Set Templates and Temporary Supports Drive Sheet Pile Cutoff Sheet Pile and Weld Interlocks Shot Rock Fill	Days (Total) 219.36 0 0 6 6 0 4 4 4 0 156.3 0 0 156.3 0 0 16 114.87 25.43 20.87	Material Quantity 1 1 1 1 1 1 1 1 1 1 5 1 1 2 227 1 6 1723 763 48000	Unit of Measure EA LS LS LS LS LS LS LS LS Day LS Ton EA EA EA EA CY	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$757,600.08 \$266,866.10 \$35,933.05 \$2230,933.05 \$2230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$993.04 \$249.01 \$52.56	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Yobelization to Site Demobilization to Site Demobilization from Site Field Personnel Housing, Per Diem, Transportation OCSP Bulkhead Provide Sheet Pile Set Templates and Temporary Supports Drive Sheet Pile Cutoff Sheet Pile and Weld Interlocks Shot Rock Fill Provide 'E' Fill - Loaded at Quarry	Days (Total) 219.36 0 0 6 6 0 4 4 0 156.3 0 0 156.3 0 0 16 114.87 25.43 20.87 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 2 227 1 6 1723 763 48000 48000	Unit of Measure EA LS LS LS LS LS LS LS LS LS Day LS Ton EA EA EA CY CY	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$993.04 \$249.01 \$52.56 \$39.75	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Site Demobilization Site Demobilization Si	Days (Total) 219.36 0 0 6 6 6 0 4 4 4 0 156.3 0 156.3 0 16 114.87 25.43 20.87 0 20.87	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 2 227 1 6 1723 7 6 3 48000 48000 48000	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS EA CY CY CY	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$993.04 \$249.01 \$52.56 \$39.75 \$12.81	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$2266,866.10 \$35,933.05 \$223,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Site Demobilization Demobilization for Site Demobilization Site Demobilization Demobilization Site Demobilization Site Dem	Days (Total) 219.36 0 0 6 6 0 4 4 4 0 156.3 0 156.3 0 156.3 0 16 114.87 25.43 20.87 0 20.87 18.4	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 227 1 6 1723 763 48000 48000 48000 48000	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS EA CY CY CY CY LP	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$2266,866.10 \$35,933.05 \$2230,933.05 \$230,933.05 \$23,093.04 \$249,001 \$52,56 \$39.75 \$12.81 \$1,267.40	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,860.08 \$35,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 0 \$570,330.00	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Site Demobilization OcsP Bulkhead Provide Sheet Pile Set Templates and Temporary Supports Drive Sheet Pile Cutoff Sheet Pile Cutoff Sheet Pile Provide 'Fill - Loaded at Quarry Transport and Place Core Rock - 'E' Fill Face Beam Provide Face Beam	Days (Total) 219.36 0 0 6 6 6 0 4 4 4 0 156.3 0 156.3 0 156.3 0 156.3 0 0 20.87 18.4 0 20.87	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 227 1 6 1 7 63 7 63 7 63 7 63 4 8000 4 8000 48000 48000 48000 48000 48000 450 97000 450	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS LS EA EA CY CY CY CY LF LB	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$230,933.05 \$23,935.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$993.04 \$249.01 \$52.56 \$39.75 \$12.81 \$1,267.40 \$2.59 \$12.81	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.01 \$35,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,288.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$251,230.00	\$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 \$5570,330.00 \$251,230.00	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Aobilization Yard Mobilization Yard Mobilization Yard Mobilization Yard Mobilization Site Demobilization Demobilization Site Demobilization OCSP Bulkhead Provide Sheet Pile Set Templates and Temporary Supports Drive Sheet Pile Cutoff Sheet Pile Cutoff Sheet Pile Cutoff Sheet Pile Aback Fill Provide 'F ill - Loaded at Quarry Transport and Place Core Rock - 'E' Fill Face Beam Provide Face Beam Materials (Fabricated DIb HP 14x89) Insuli Face Beam	Days (Total) 219.36 0 0 6 6 6 0 4 4 4 0 156.3 0 156.3 0 156.3 0 0 156.3 0 0 20.87 18.4 0 20.87 18.4 0 0 20.87 18.4 0 0 0 19.4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 227 1 6 1723 763 48000 48000 48000 48000 48000 48000 48000 4500 970000 4500	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS LS EA EA CY CY CY CY LF LB LF	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$12,81 \$1,267.40 \$25.59 \$235.53 \$12.81	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,860.08 \$230,933.05 \$323,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$251,230.00 \$105,988.50	\$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 \$570,330.00 \$251,230.00 \$251,230.00 \$251,230.00	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Aobilization Yard Mobilization Yard Mobilizat	Days (Total) 219.36 0 0 6 6 6 0 4 4 4 0 156.3 0 156.3 0 155.3 20.87 18.4 0 20.87 18.4 0 10.4 0 8	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS LS EA EA EA CY CY CY CY CY CY LF LB LF EA	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$1,207.00 \$25,208.07 \$1,207.00 \$2,209.01 \$1,207.00 \$2,207.01 \$1,207.01 \$	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$1,89,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$105,188.48	\$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$105,188.48	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobil	Days (Total) 219.36 0 0 0 4 4 4 0 156.3 0 156.3 0 155.3 20.87 0 20.87 18.4 0 20.87 18.4 0 20.87 0 8.4 0 0 20.87 0 8.4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Unit of Measure EA LS LS LS LS LS LS LS LS LS Day LS EA EA EA EA EA EA EA EA EA	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$1,870.00 \$25,255.56 \$39.75 \$12.81 \$1,267.40 \$2.59 \$235.53 \$1155.22 \$112,771.06 \$512,771.06	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$1,89,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$570,330.00 \$570,330.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20	\$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41.391.20	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobil	Days (Total) 219.36 0 0 6 6 6 0 4 4 4 0 0 156.3 0 0 156.3 0 0 156.3 0 0 20.87 0 0 20.87 0 0 20.87 18.4 0 10.4 0 20.87 0 20.87 18.4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS LS EA EA EA EA EA EA EA EA EA EA EA EA EA	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$1,281 \$1,267.40 \$2.59 \$12.81 \$1,267.40 \$2.59 \$235.53 \$155.22 \$12,771.06 \$5,173.90 \$28,272.84	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$570,330.00 \$512,230.00 \$105,988.50 \$69,849.00 \$102,168.48	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20 \$339,274.08	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB 450 LF OCSP Dock @ 32' Basin Mob & Demob Mobilization Yard Mobilizat	Days (Total) 219.36 0 0 6 6 6 0 4 4 4 0 0 156.3 0 0 156.3 0 0 156.3 0 0 156.3 0 0 114.87 0 20.87 0 0 20.87 0 8.4 0 0 20.87 18.4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 3 1 3 5 1 1 2 227 1 6 1723 7 63 4 8000 4 8000 4 8000 4 8000 4 8000 4 8000 4 8000 4 800 4 800 8 8 8 8	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS LS CA EA EA EA EA EA EA EA EA EA EA EA EA EA	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$12,81 \$1,267.40 \$22,59 \$12,81 \$1,267.40 \$2,59 \$23,53 \$155.22 \$11,2771.06 \$5,173.90 \$28,272.84 \$7,682.57	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$514,880.00 \$570,330.00 \$614,880.00 \$570,330.00 \$614,880.00 \$570,330.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,291.20 \$339,274.08	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20 \$339,274.08 \$92,190.84	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description JOB	Days (Total) 219.36 0 0 6 6 0 4 4 4 0 0 156.3 0 156.3 0 156.3 0 0 156.3 0 0 20.87 0 20.87 0 20.87 18.4 0 10.4 0 20.87 0 20.20 12 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS CA EA EA EA CY CY CY CY CY CY CY CY LF LB LF LF EA EA EA EA EA EA LF	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$2,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$1,267.40 \$2,59 \$1,267.40 \$2,59 \$235.53 \$155.22 \$12,771.06 \$5,173.90 \$28,272.84 \$5,173.90	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20 \$339,274.08 \$92,190.84 \$92,190.84	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 \$570,330.00 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20 \$339,274.08 \$92,190.84 \$156,217.20	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description         JOB         4S0 LF OCSP Dock @ 32' Basin         Mob & Demob         Mobilization         Yard Mobilization         Yard Mobilization         Yard Mobilization         Demobilization         Demobilization         Demobilization         Demobilization         Demobilization         OcSP Bukhead         Provide Sheet Pile         Stot Templates and Temporary Supports         Drive Sheet Pile         Cutoff Sheet Pile and Weld Interlocks         Shot Rock Fill         Provide Fir Fill - Loaded at Quarry         Transport and Place Core Rock - 'E' Fill         Face Beam         Provide Face Beam Materials (Fabricated Dlb HP 14x89)         Install Face Beam         Provide and Install Dock Face Bullrail         Provide and Install Safety Ladders         Facebeam Misterial Site Pile         Provide and Install Pile Caps         Provide Fender Pile         Provide Fender Pile - 30x0.c52''         Provide Fender Pile	Days (Total) 219.36 0 0 0 4 4 4 0 156.3 0 156.3 0 156.3 0 156.3 0 0 156.3 0 0 156.3 0 0 157.43 20.87 0 20.87 0 0 20.87 18.4 0 0 10.4 0 0 114.87 25.43 20.87 0 0 114.87 0 0 114.87 10.0 0 0 114.87 10.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Unit of Measure	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$22,395.00 \$6,468,815.79 \$1,870.00 \$25,208.07 \$1,870.00 \$25,208.07 \$1,271.00 \$25,259 \$1,267.40 \$2,59 \$235.53 \$155.22 \$12,771.06 \$5,173.90 \$28,272.84 \$7,682.57 \$194.30	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$570,330.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20 \$339,274.08 \$92,190.84 \$156,217.20 \$90,868.08	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 0 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20 \$339,274.08 \$92,190.84 \$156,217.20 \$90,868.08	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF
Description           JOB           4S0 LF OCSP Dock @ 32' Basin           Mob & Demob           Mobilization           Yard Mobilization           Yard Mobilization           Mobilization to Site           Demobilization           Site Demobilization           Demobilization           Site Demobilization           Demobilization from Site           Field Personnel Housing, Per Diem, Transportation           OCSP Bulkhead           Provide Sheet Pile           Catoff Sheet Pile and Weld Interlocks           Shot Rock Fill           Provide Fiel - Souck - S'e Fill           Face Beam           Provide Face Beam Materials (Fabricated Dlb HP 14x89)           Install Face Beam           Provide and Install Dock Face Bullrail           Provide and Install Safety Ladders           Facebeam Mouterelise           Provide and Install Pile Caps           Provide Fender Pile           Provide Fender Pile - Souco.625"           Provide Fender Pile	Days (Total) 219.36 0 0 0 4 4 4 0 0 156.3 0 156.3 0 156.3 0 0 156.3 0 0 156.3 0 0 156.3 0 0 157.43 20.87 0 20.87 0 0 20.87 18.4 0 0 10.4 0 0 114.87 25.43 20.87 0 0 114.87 0 0 114.87 0 0 115.3 10.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Material Quantity 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Unit of Measure EA LS LS LS LS LS LS LS LS LS LS LS CA CA CY CY CY CY LF EA EA LF LF EA EA EA EA LF EA EA LF EA LF EA	Total Unit Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$230,933.05 \$23,955.00 \$6,468,815.79 \$1,287.00 \$25,208.07 \$25,208.07 \$25,208.07 \$25,208.07 \$249.01 \$52.56 \$39.75 \$112.81 \$1,267.40 \$22.59 \$235.53 \$155.22 \$12,771.06 \$5,173.90 \$28,272.84 \$7,682.57 \$194.30 \$7,572.34	Total Cost \$10,199,844.65 \$1,391,928.44 \$801,737.34 \$44,137.27 \$757,600.08 \$266,866.10 \$35,933.05 \$230,933.05 \$323,325.00 \$6,468,815.79 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 \$2,522,880.00 \$1,908,000.00 \$614,880.00 \$570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20 \$339,274.08 \$92,190.84 \$156,217.20 \$90,868.08 \$298,739.12	\$8,885,807.37 \$4,164,490.00 \$403,329.12 \$1,711,007.92 \$189,994.63 0 \$5570,330.00 \$251,230.00 \$105,988.50 \$69,849.00 \$102,168.48 \$41,391.20 \$339,274.08 \$92,190.84 \$156,217.20 \$90,868.08 \$298,739.12	\$11,374,944.23 \$1,314,037.28 \$832,898.00 \$342,201.58	450 LF \$25,277.65 Cost per LF

## USED THIS DATA FOR THE SHEETPILE DOCK ROM COSTS -DATA GATHERED BASED ON HISTORICAL AS-BUILT PROJECTS SIMILAR

	Days	Material	Unit of					
Description	(Total)	Quantity I	Measure	Total Unit Cost	Total Cost			
JOB								450 LF
450 LF OCSP Dock @ 42' Basin	219.36	1 E	A	\$11,537,706.37	\$11,537,706.37		\$12,975,715.23	\$28,834.92 Cost per LF
Mob & Demob	0	1 L	.S		\$1,610,878.44			
Mobilization	0	1 L	.S	\$931,737.34	\$931,737.34			
Yard Mobilization	6	1 L	.S	\$44,137.27	\$44,137.27			
Mobilization to Site	6	1 L	.S	\$887,600.08	\$887,600.08			
Demobilization	0	1 L	.S		\$331,866.10			
Site Demobilization	4	1 L	.S	\$35,933.05	\$35,933.05			
Demobilization from Site	4	1 L	.S	\$295,933.05	\$295,933.05			
Field Personnel Housing, Per Diem, Transportation	0	145 D	Day	\$2,395.00	\$347,275.00			
OCSP Bulkhead	166.97	1 L	.S		\$6,468,815.79			
Provide Sheet Pile	0	2845 T	on	\$1,870.00	\$5,320,150.00	20%	\$1,064,030.00	
Set Templates and Temporary Supports	16	16 E	A	\$25,208.07	\$403,329.12			
Drive Sheet Pile	125.53	1883 E	A	\$993.04	\$1,869,894.32	20%	\$373,978.86	
Cutoff Sheet Pile and Weld Interlocks	25.43	763 E	A	\$249.01	\$189,994.63			
Shot Rock Fill	20.87	48000 C	CΥ	\$52.56	\$2,522,880.00			
Provide 'E' Fill - Loaded at Quarry	0	48000 C	CΥ	\$39.75	\$1,908,000.00			
Transport and Place Core Rock - 'E' Fill	20.87	48000 C	Υ	\$12.81	\$614,880.00			
Face Beam	18.4	450 L	F	\$1,267.40	\$570,330.00			
Provide Face Beam Materials (Fabricated Dlb HP 14x89)	0	97000 L	B	\$2.59	\$251,230.00			
Install Face Beam	10.4	450 L	.F	\$235.53	\$105,988.50			
Provide and Install Dock Face Bullrail	0	450 L	.F	\$155.22	\$69,849.00			
Provide and Install Safety Ladders	8	8 E	A	\$12,771.06	\$102,168.48			
Facebeam Mounted Fixed Bollards	0	8 E	A	\$5,173.90	\$41,391.20			
Fender Piles	12	12 E	A	\$30,215.81	\$362,589.72			
Provide and Install Pile Caps	6	12 E	A	\$7,572.34	\$90,868.08			
Provide Fender Pile - 30x0.625"	0	924 L	F	\$194.30	\$179,533.20			
Drive Fender Pile	6	12 E	A	\$7,572.34	\$90,868.08			
Anodes	11.79	1 L	S		\$298,739.12			
Provide and Install Anodes	11.79	64 E	A	\$4,667.80	\$298,739.20			

	Days	Material	Unit of		
Description	(Total)	Quantity	Measure	Total Unit Cost	Total Cost
JOB					
600 LF OCSP Dock @ 32' Basin	297.55	1	EA	\$14,280,270.00	\$14,280,270.00
Mob & Demob	0	1	LS		\$1,912,632.41
Mobilization	0	1	LS	\$1,025,649.79	\$1,025,649.79
Yard Mobilization	8	1	LS	\$58,849.69	\$58,849.69
Mobilization to Site	8	1	LS	\$966,800.10	\$966,800.10
Demobilization	0	1	LS		\$479,832.62
Site Demobilization	5	1	LS	\$44,916.31	\$44,916.31
Demobilization from Site	5	1	LS	\$434,916.31	\$434,916.31
Field Personnel Housing, Per Diem, Transportation	0	170	Day	\$2,395.00	\$407,150.00
OCSP Bulkhead	206.3	1	LS		\$8,540,026.25
Provide Sheet Pile	0	2940	Ton	\$1,870.00	\$5,497,800.00
Set Templates and Temporary Supports	21	21	EA	\$25,371.76	\$532,806.96
Drive Sheet Pile	151.53	2273	EA	\$993.04	\$2,257,179.92
Cutoff Sheet Pile and Weld Interlocks	33.77	1013	EA	\$249.01	\$252,247.13
Shot Rock Fill	33.91	78000	CY	\$52.56	\$4,099,680.00
Provide 'E' Fill - Loaded at Quarry	0	78000	CY	\$39.75	\$3,100,500.00
Transport and Place Core Rock - 'E' Fill	33.91	78000	CY	\$12.81	\$999 <i>,</i> 180.00
Face Beam	24.87	600	LF	\$1,280.24	\$768,144.00
Provide Face Beam Materials (Fabricated Dlb HP 14x89)	0	130000	LB	\$2.59	\$336,700.00
Install Face Beam	13.87	600	LF	\$235.53	\$141,318.00
Provide and Install Dock Face Bullrail	0	600	LF	\$155.22	\$93,132.00
Provide and Install Safety Ladders	11	11	EA	\$12,771.06	\$140,481.66
Facebeam Mounted Fixed Bollards	0	11	EA	\$5,173.90	\$56,912.90
Fender Piles	17	17	EA		\$480,638.25
Provide and Install Pile Caps	8.5	17	EA	\$7,682.57	\$130,603.69
Provide Fender Pile - 30x0.625"	0	1139	LF	\$194.30	\$221,307.70
Drive Fender Pile	8.5	17	EA	\$7,572.34	\$128,729.78
Anodes	15.47	1	LS		\$392,095.10
Provide and Install Anodes	15.47	84	EA	\$4,667.80	\$392,095.20

	600	LF
\$15,831,265.98	\$26,385.44	Cost per LF

20%	\$1,099,560.00

20% \$451,435.98

### USED THIS DATA FOR THE SHEETPILE DOCK ROM COSTS -DATA GATHERED BASED ON HISTORICAL AS-BUILT PROJECTS SIMILAR

	Days	Material Unit d	of			
Description	(Total)	Quantity Measu	re Total Unit Cost	Total Cost		
JOB						
600 LF OCSP Dock @ 42' Basin	311.55	1 EA	\$16,044,018.47	\$16,044,018.47		\$17,94
Mob & Demob	0	1 LS		\$2,078,557.41		
Mobilization	0	1 LS	\$1,090,649.79	\$1,090,649.79		
Yard Mobilization	8	1 LS	\$58,849.69	\$58,849.69		
Mobilization to Site	8	1 LS	\$1,031,800.10	\$1,031,800.10		
Demobilization	0	1 LS		\$544,832.62		
Site Demobilization	5	1 LS	\$44,916.31	\$44,916.31		
Demobilization from Site	5	1 LS	\$499,916.31	\$499,916.31		
Field Personnel Housing, Per Diem, Transportation	0	185 Day	\$2,395.00	\$443,075.00		
OCSP Bulkhead	220.3	1 LS		\$10,270,744.17		
Provide Sheet Pile	0	3754 Ton	\$1,870.00	\$7,019,980.00	20%	\$1,403,996.
Set Templates and Temporary Supports	21	21 EA	\$25,371.76	\$532,806.96		
Drive Sheet Pile	165.53	2483 EA	\$993.04	\$2,465,718.32	20%	\$493,143.6
Cutoff Sheet Pile and Weld Interlocks	33.77	1013 EA	\$249.01	\$252,247.13		
Shot Rock Fill	33.91	78000 CY	\$52.56	\$4,099,680.00		
Provide 'E' Fill - Loaded at Quarry	0	78000 CY	\$39.75	\$3,100,500.00		
Transport and Place Core Rock - 'E' Fill	33.91	78000 CY	\$12.81	\$999,180.00		
Face Beam	24.87	600 LF	\$1,280.24	\$768,144.00		
Provide Face Beam Materials (Fabricated Dlb HP 14x89)	0	130000 LB	\$2.59	\$336,700.00		
Install Face Beam	13.87	600 LF	\$235.53	\$141,318.00		
Provide and Install Dock Face Bullrail	0	600 LF	\$155.22	\$93,132.00		
Provide and Install Safety Ladders	11	11 EA	\$12,771.06	\$140,481.66		
Facebeam Mounted Fixed Bollards	0	11 EA	\$5,173.90	\$56,912.90		
Fender Piles	17	17 EA		\$513,668.81		
Provide and Install Pile Caps	8.5	17 EA	\$7,682.57	\$130,603.69		
Provide Fender Pile - 30x0.625"	0	1309 LF	\$194.30	\$254,338.70		
Drive Fender Pile	8.5	17 EA	\$7,572.34	\$128,729.78		
Anodes	15.47	1 LS		\$392,095.10		
Provide and Install Anodes	15.47	84 EA	\$4,667.80	\$392,095.20		

#### SUMMARY OF UNIT COSTS DEVELOPED AND CALCULATED USING MCACES COST ESTIMATING SOFTWARE - UNIT COSTS WERE APPLIED TO ALL ALT ROMS

FEATURE ACCOUNT / ITEM DESCRIPTION	UOM	UNIT COST
Relocations		
Structure Raise and/or Relocation	EA	\$ 200,000.00
General Navigation Funded Work Items		
BREAKWATER AND SEAWALL		
Mob, Demob. and Site Preparation	EA	\$ 805,185
CRAB HABITAT MITIGATION	LS	\$ 1,000,000
DEMO SPUR/BREAKWATER/400 FT OF EXISTING BW		
"A1"- Rock Removal	CY	\$ 32.39
"A5"- Rock Removal	CY	\$ 23.54
"B2"- Rock Removal	CY	\$ 14.28
"B3" - Rock Removal	CY	\$ 13.51
Core and Quarry Spall Removal	CY	\$ 9.15
CAUSEWAY		
Dredge for Causeway BW Armor toe	CY	\$ 18.41
A1 Rock (A22) NEW ROCK	CY	\$ 514.43
Reuse A1 Rock*	CY	\$ 32.39
A5 Rock NEW ROCK	CY	\$ 364.99
Reuse A5 Rock*	CY	\$ 23.54
B2 Rock NEW ROCK	CY	\$ 207.10
Reuse B2 Rock*	CY	\$ 14.28
B3 Rock (B22 Rock) NEW ROCK	CY	\$ 184.91
Reuse B3 Rock*	CY	\$ 13.51
C1 Rock (C8 Rock)	CY	\$ 158.79
C2 Rock	CY	\$ 128.15
D Fill	CY	\$ 146.35
E Fill	CY	\$ 10.19
F Fill	CY	\$ 53.30
D1 Surface Course	CY	\$ 107.69
Relocate Rock for Re-use (A Rock & B Rock)	CY	\$ 7.20
* Assumed 75% of demoed rock for reuse		
Filter Rock (D8)	CY	\$ 121.15
NAVIGATION PORTS & HARBORS		
Dredge Plant Mobilization (Cost Per Season)	EA	\$ 3,448,593.00
OUTER BASIN EXPANSION AND DEEPENING		
Dredge to -26' Max Pay Line (126Kcy/month)	CY	\$ 17.80
Dredge to -28' Max Pay Line (126Kcy/month)	CY	\$ 17.81
DEEPWATER BASIN DREDGING		
Dredge to -32' Max Pay Line (123K cy/month)	CY	\$ 18.13
Dredge to -37' Max Pay Line (121K cy/month)	CY	\$ 18.38
Dredge to -42' Max Pay Line (121K cy/month)	CY	\$ 18.39
Inner Basin Deepening		
Dredge to -13' Max Pay Line (115K cy/month)	CY	\$ 12.96
Inner Channel Modification	<b>C</b> 14	A 105-
Dreage to -13" Max Pay Line (115K cy/month)	CY	ə 19.25

#### SUMMARY OF UNIT COSTS DEVELOPED AND CALCULATED USING MCACES COST ESTIMATING SOFTWARE - UNIT COSTS WERE APPLIED TO ALL ALT ROMS

Local Sponsor Facility (LSF) Funded Items				
				-
Navigation Ports and Harbors		-		
New Causeway Docks		-		
Mooring Dolphins (2 each dock)	EA	\$	603,530.16	NOTE: unit costs have the 35% contingency deducted
Security Gate	EA	\$	19,158.85	It will be added back into the total cost when the design continger
1-600' DB WD (Sheetpile Dock @ 42')	LF	\$	19,436.25	is added for the overall total cost. If the contingency calculated via
1-450' DB WT (Sheetpile Dock @ 42')	LF	\$	18,742.70	Abreviated Risk Analysis (ARA) or CSRA changes, these unit costs
1-400' OB WE (Sheetpile Dock @ 28')	LF	\$	14,293.16	need to be updated accordingly.
1-400' OB ET (Sheetpile Dock @ 28')	LF	\$	14,293.16	
Bridge at Breach	LF	\$	16,000.00	
1-600' DB WD (Sheetpile Dock @ 32')	LF	\$	17,150.54	
1-450' DB WT (Sheetpile Dock @ 32')	LF	\$	16,430.48	
Building Grounds and Utilities				
8" Steel Water and Fire	LF	\$	180.00	
Electric	LF	\$	529.70	
Fuel	LF	\$	300.00	

#### Annual O&M Costs

OUTER BASIN EXPANSION AND DEEPENING (w/sedimen trap)		
-26MAXPAY	CY	\$ 32.60
-28MAXPAY	CY	\$ 32.60
DEEPWATER BASIN DREDGING		
-32MAXPAY	CY	\$ 26.33
-37MAXPAY	CY	\$ 29.96
-42MAXPAY	CY	\$ 33.16

From:	Larry Pederson
То:	Morgan, Christine A CIV USARMY CEPOA (USA)
Cc:	Harvey, Karl J CIV USARMY CEPOA (USA); Shane Smithhisler
Subject:	[Non-DoD Source] RE: Nome Quarry Quote Request
Date:	Thursday, December 26, 2019 4:52:28 PM
Attachments:	Corp Quote Request (2).pdf

Christine and Karl,

First of all, my apologies for this taking so long. As this was our first year operating the quarry ourselves, we wanted to finish our 2019 production at Cape Nome to ensure we have a good grasp of current production rates. Out season finished at the end of October.

With that, attached is our most recent estimate of costs for producing Alternatives 8B and 4, as you requested. Please note that these prices are only estimates utilizing current expense rates for equipment, labor, and supplies. Also note that these prices assume that all material would be purchased from Sound Quarry or the Cape Nome Rock Quarry. Lastly these rates do not include transport of the material from the quarry to the project location.

If you need anything else, please let us know. I have included Shane Smithhisler who is our Quarry Manager and was instrumental in putting these estimates together.

Thanks and Merry Christmas and Happy New Year!

Larry

-----Original Message-----From: Morgan, Christine A CIV USARMY CEPOA (USA) [mailto:Christine.A.Morgan@usace.army.mil] Sent: Friday, September 6, 2019 3:20 PM To: Larry Pederson Cc: Harvey, Karl J CIV USARMY CEPOA (US) Subject: Nome Quarry Quote Request

[External Email]

Mr. Pederson,

I was sent your contact information from Joy Baker. I need an updated quote from the Nome Quarry to update our files for the feasibility study to construct a deep water harbor. Please see the attachment for the quantities being considered. Let me know if you need any additional information and I will provide as able. Thank you in advance for any help you can provide on this project...

-- Christine A. Morgan --Cost Engineering Technician (907) 753-5675 Cost Engineering Branch - Alaska District



# Alaska District, U. S. Army Corps of Engineers

Bldg. 2204, 3<sup>rd</sup> Street, P.O. Box 6898 Elmendorf AFB, AK 99506 Phone: (907) 753-5675 Fax: (907) 753-5678 E-Mail: Christine.A.Morgan@usace.army.mil

Please Return To: Christine Morgan

ATTN: Mr. Larry Pederson Phone: (907) 443-4312

COMPANY: Bering Straits Native Corp. FAX #: (907) 443-2985

We are conducting a feasibility study to construct a deep water port in Nome, AK. I have attached the quantities for the anticipated alternatives being considered for the two alternatives. We need to update pricing for A1, A5, B2, B3, C1, C2, Rock, and D, E, and F, Filter Rock loaded on trucks at your plant – quantities approximate. Thank you kindly for your assistance.

What weight/volume conversion do you use for blasted rock? \_\_\_\_\_1.8\_\_\_\_ Ton / CY

What is the approximate haul distance to the harbor? <u>14</u> miles.

		_		1	T			Diaman	
Alternative	Total	υом	Max	Min	Average			Price per	UOM
8B			Weight	Weight	weight			¢120.14	Tan
"A1" Rock	272,664	CY	27 Ton	19 Ton	22 Ton			\$139.14	Ton
"A5" Rock	118,542	CY	10 Ton	6 Ton	8 Ton			\$135.25	Ton
"B2" Rock	156,465	CY	7,500 LB	3,000 LB	4,000 LB			\$113.82	Ton
"B3" Rock	67,716	CY	3,600 LB	1,000 LB	1,600 LB			\$120.32	Ton
"C1" Rock	50,560	CY	1,000 LB	150 LB	300 LB			\$53.75	Ton
"C2" Rock	51,459	CY	150 LB	15 LB	80 LB		<u></u>	\$53.08	Ton
"D1" Surface	11,725	CY						\$28.88	Ton
"D8" Filter	119,237	CY	Well grade	ed gravel r	nax 15% pa	ssing the 3,	/4" sieve	\$11.72	Ton
"E" Filter	660,937	CY	Unclassifie	ed Fill				\$5.33	Ton
"F" Filter	195,641	CY	Classified	3" Max, no	n-frost susc	ceptible		\$11.73	Ton
Alternative		1	Max	Min	Average			Price per	LIOM
4	Total	Inom	Weight	Weight	Weight			CY/Ton	00101
"A1" Rock	154,602	CY	27 Ton	19 Ton	22 Ton			\$141.47	Ton
"A5" Rock	48,741	CY	10 Ton	6 Ton	8 Ton			\$142.91	Ton
"B2" Rock	91,090	CY	7,500 LB	3,000 LB	4,000 LB			\$122.65	Ton
"B3" Rock	47,661	CY	3,600 LB	1,000 LB	1,600 LB			\$126.74	Ton
"C1" Rock	29,418	CY	1,000 LB	150 LB	300 LB			\$58.16	Ton
"C2" Rock	28,222	CY	150 LB	15 LB	80 LB			\$59.96	Ton
"D1" Surface	85,724	CY						\$9.11	Ton
"D8" Filter	1,146	CY	Well grad	ed gravel	max 15% pa	issing the 3	/4" sieve	\$2.50	Ton
"E" Filter	275,283	CY	Unclassifi	ed Fill				\$5.62	Ton
"F" Filter	131,804	CY	Classified	3" Max, no	on-frost sus	ceptible		\$11.09	Ton

QUOTE REQUEST - Alaska District, US Army Corps of Engineers: Christine Morgan

Nome Harbor Expa	ansion Preliminar	/ Aggregate quantities	Assume FOB Cape N	lome loaded on barge.
Description	Est Qty	Max Wt	Min Wt	Est Unit Price
"A1" Rock	182,000 LCY	27 ton	19 ton	\$ 200-°, /ton
"A5" Rock	1,000 LCY	10 ton	6 ton	\$ 150 - /ton
"B2" Rock	500 LCY	7500 lb	3000 lb	\$ 70 - /ton
"B3" Rock	21,000 LCY	3600 lb	1000 lb	\$ 80- /ton
"C1" Rock	23,000 LCY	1000 lb	1 lb	\$ 75 - /ton
"C2" Rock	30,000 LCY	150 lb	1 Ib	\$ 60 - /ton
"D" Filter	2,000 LCY	Well graded gravel, Max. o Max. 5% cobbles none > 6'	f 15% past 3/4" sieve, 	\$ 65 - Aon
"F" Fill	25,000 LCY	Classified fill 3" Max. NFS		\$ 40 - /ton
"E" Fill	25,000 LCY	Unclassified fill		\$ 25 - /ton
Surface Course	5,000 LCY	Classified D1		\$ 30 - /ton
Assur	med Rock Density =	1.5 ton/Ley		
Assum	ed Gravel Density =	1.15 ton/Ley		

# PREVIOUS QUOTE OBTAINED IN 2015

US Army Corps of Engineers

albert.arruda@usace.army.mil

Please return to:

# Mr Albert Arruda