APPENDIX I

Spring Creek North Ecosystem Restoration Project

Appendix I

Cost Engineering

Table of Contents

List of Tables

List of Figures

List of Attachments

INTRODUCTION

This Appendix presents the detailed cost estimates for Spring Creek North Ecosystem Restoration. The Spring Creek North project is part of the Jamaica Bay restoration project which area is a 47 acre portion of Spring Creek Park located adjacent to the banks of Spring Creek and Ralph's Creek. The project area consists of undeveloped City of New York parkland that straddles the boundary between the Boroughs of Brooklyn and Queens in Kings and Queens Counties respectively, New York City, New York. The restoration provides improvement to environmental quality by increasing ecosystem function as well as storm water capture and reducing runoff to the combined sewer system. It consists of general site work such as excavation, loading and transportation of onsite material along with final grading and planting in the marsh and upland vegetation communities. The Total First Cost is presented in Table C1 below.

Table I1 –First Cost

Spring Creek North

October 2015 Price Level

Feasilibity Report Cost Estimate Summary

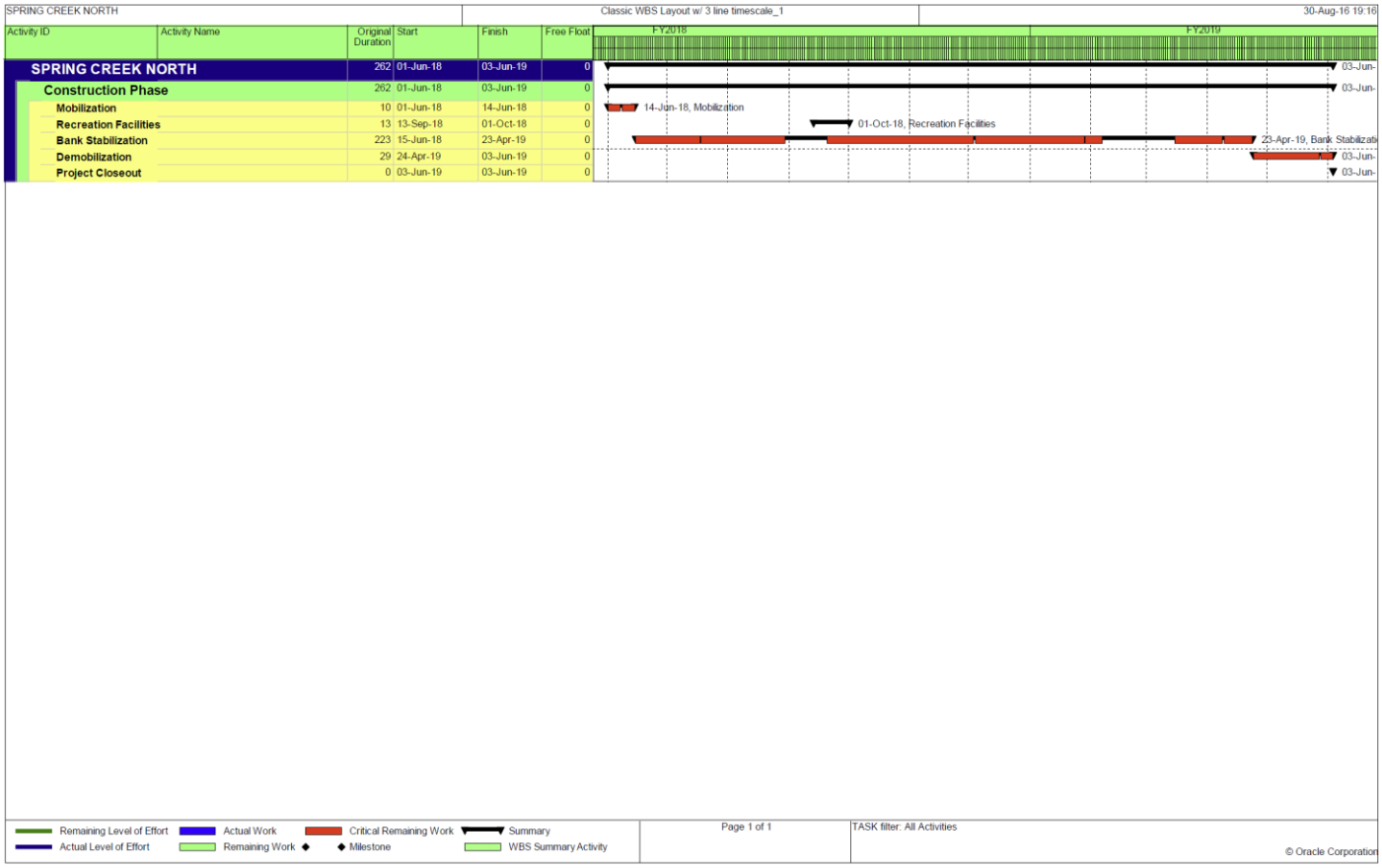
Feat. Acct.	Description	Qty	UoM	Subtotal	Cont. %	Cont $$	Total Cost
	Cost Shared Project Activities (75% Fed / 25% Non-Fed)						
01	LANDS AND DAMAGES	1	LS	$ 12,595	20%	$ 2,519	$ 15,114
16	BANK STABILIZATION	1	LS	$ 7,592,506	18%	$ 1,358,493	$ 8,950,998
30	PLANNING, ENGINEERING AND DESIGN	1	LS	$ 728,881	23%	$ 166,471	$ 895,351
31	CONSTRUCTION MANAGEMENT	1	LS	$ 607,000	25%	$ 150,311	$ 757,311
	Total Cost Shared Project Activities			$ 8,940,981		$ 1,677,793	$ 10,618,775
	Non-Federal Enchancement Actions - 100% Non-Fed Funding Only						
14	RECREATION FACILITIES	1	LS	$ 107,107	18%	$ 19,164	$ 126,272
16	BANK STABILIZATION	1	LS	$ 3,531,962	18%	$ 631,958	$ 4,163,920
30	PLANNING, ENGINEERING AND DESIGN	1	LS	$ 349,351	23%	$ 79,789	$ 429,140
31	CONSTRUCTION MANAGEMENT	1	LS	$ 291,126	25%	$ 72,091	$ 363,217
	Total Non-Federal Enchancement Actions			$ 4,279,546		$ 803,002	$ 5,082,548

BASIS OF COST

The construction cost estimate was developed in MCACES, Second Generation (MII) using the appropriate Work Breakdown Structure (WBS) and based on current estimated quantities provided by the Hydraulics & Hydrology. The cost estimate was developed from these quantities using cost resources such as RSMeans, historical data from similar construction features, and MII Cost Libraries. The contingencies were developed based on input to the Abbreviated Cost Schedule Risk Analysis (ARA) (template provided by the Cost Mandatory Center of Expertise, MCX, Walla

Walla District). These contingencies were applied to the construction cost estimates to develop the Total Project First Cost. The construction duration for Spring Creek North was estimated at 12 months (11 months for the recommended plan and 1 month for the Non-Federal Enhancement Actions), as shown in Figure I1. The construction schedule was developed based on the crew outputs referenced from RSMeans with the assumption that multiple crews would work simultaneously.

Figure I1 – Construction Schedule



CONTINGENCIES

As stated in ER 1110-2-1302, the goal in contingency development is to identify the uncertainty associated with an item of work or task to an acceptable degree of confidence. Consideration must be given to the detail available at each stage of planning, design, or construction for which a cost estimate is being prepared. Contingency may vary throughout the cost estimate and could constitute a significant portion of the overall costs when data or design details are unavailable. Final contingency development and assessment of the potential for cost growth is included in this cost estimate. To develop the Total Project First Cost, contingencies developed in the ARA were applied. The construction cost contingency developed per ARA for Spring Creek North resulted in a factor of 17.89%. The Total Planning,

Engineering & Design contingency and the Construction Management contingency developed per ARA for Spring Creek North resulted in a factor of 22.84% and 24.76% respectively.

PLANNING, ENGINEERING AND DESIGN

The cost was developed for all activities associated with the planning, engineering and design effort. The cost for this account includes the preparation of Design Documentation Reports, plans, and specifications for Spring Creek North and engineering support during construction through project completion. It includes all the in-house labor based upon work-hour requirements, material and facility costs, travel, and overhead. The percentage of the total construction cost was provided by the Project Manager to cover these activities as shown in the Total Project Cost Summary (TPCS) on Figure I2 on page I5.

CONSTRUCTION MANAGEMENT

The cost was developed for all construction management activities from pre-award requirements through final contract closeout. This cost includes the in-house labor based upon work-hour requirements, materials, facility costs, support contracts, travel and overhead. The cost was developed based on the input from the construction division in accordance with the Civil Works Breakdown Structure (CWBS) and includes, but is not limited to, anticipated items such as the salaries of the resident engineer and staff, surveyors, inspectors, drafters, clerical, and custodial personnel; operation, maintenance and fixed charges for transportation and for other field equipment; field supplies; construction management, general construction supervision; and project office administration, distributive cost of area office and general overhead charged to the project.

INTEREST DURING CONSTRUCTION

Interest during construction (IDC) is the amount of interest the construction cost would earn were it invested from the beginning of construction until the accumulation of benefits begins. IDC cost has been added to the project cost to determine investment cost. Average annual cost was determined based on investment cost, which includes IDC. The pre-base year costs were estimated using the Federal interest rate of 3.125 percent (FY16).

OPERATION AND MAINTENANCE

The Operation and Maintenance (O&M) cost was estimated to represent the anticipated annual costs necessary to maintain the project at full operating efficiency throughout the project life. Following completion of the project, operation and maintenance of project facilities would be the responsibility of the non-Federal sponsor in accordance with Federal regulations and operations manual.

ESTIMATED ANNUAL COST

Annual costs are based on an economic period of analysis of 50 years and an interest rate of 3.125%. The annual costs include the annualized investment cost. A detailed breakdown of annual costs for Spring Creek North is presented in Table I2 and Table I3 for the recommended plan and the Non-Federal Enhancement Actions respectively.

Table I2 – Annualized Cost for the Recommended Plan

Spring Creek North
Recommended Plan

First Cost	$	10,618,775
Sunk Cost	$	-
Investment Cost		
Interest During Construction (a)	$	149,810
Total Investment Cost:	$	10,768,585
Annual Costs		
Annualized Investment Cost (b)	$	428,514
Annualized Operation & Maintenance Cost (c)	$	3,600
Total Annual Cost*	**$**	**432,114**

*October 2015 Price Level
(a) Based on 11 months of construction @ 3.125% (IDC, E&D and RE costs calculated separately and included in this total)
(b) Annualized investment cost only includes the remaining features. For annualized investment cost with the sunk cost, please see the economic appendix. I = 3.125% and n = 50 yrs
(c) Cost provided by the Environmental Branch on August 2016.

Table I3 – Annualized Cost for Non-Federal Enhancement Actions

Spring Creek North
Non-Federal Enchancement Actions

First Cost	$	5,082,548
Sunk Cost	$	-
Investment Cost		
Interest During Construction (a)	$	-
Total Investment Cost:	$	5,082,548
Annual Costs		
Annualized Investment Cost (b)	$	202,250
Total Annual Cost*	**$**	**202,250**

*October 2015 Price Level
(a) Based on 1 month of construction @ 3.125% (IDC and E&D calculated separately and included in
(b) Annualized investment cost only includes the remaining features. For annualized investment cost with the sunk cost, please see the economic appendix. I = 3.125% and n = 50 yrs

COST SUMMARY

The Total Fully Funded Project cost is $11,580,000. The costs are to be 75% federally funded and 25% non-federally. The Total Fully Funded Non-Federal Enchantments Actions is $5,535,000. The total federal cost of the project is $8,685,000 as shown in the TPCS on Figure I2.

Figure I2 – Total Project Cost Summary

PROJECT: **Spring Creek North**
PROJECT NO: **P2 110068**
LOCATION: **Brooklyn and Queens, NY**

DISTRICT: **NAN New York District** PREPARED: **9/29/2016**
POC: **CHIEF, COST ENGINEERING, MUKESH KUMAR**

This Estimate reflects the scope and schedule in report; CAP Feasibility STUDY - SPRING CREEK NORTH

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)						TOTAL PROJECT COST (FULLY FUNDED)			
						Program Year (Budget EC): / Effective Price Level Date:				2017 / 1-Oct- 16					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	REMAINING COST ($K)	Spent Thru: 10/1/2015 ($K)	TOTAL FIRST COST ($K)	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
16	BANK STABILIZATION	$7,593	$1,358	18%	$8,951	4.5%	$7,933	$1,419	$9,352		$9,352	3.9%	$8,244	$1,475	$9,719
	CONSTRUCTION ESTIMATE TOTALS:	$7,593	$1,358		$8,951		$7,933	$1,419	$9,352		$9,352		$8,244	$1,475	$9,719
14	RECREATION FACILITIES	$107	$19	18%	$126	-1.7%	$105	$19	$124		$124	3.9%	$109	$20	$129
16	BANK STABILIZATION	$3,532	$632	18%	$4,164	4.5%	$3,690	$660	$4,351		$4,351	3.9%	$3,835	$686	$4,521
30	PLANNING, ENGINEERING & DESIGN	$349	$80	23%	$429	4.8%	$366	$84	$450		$450	5.6%	$387	$88	$475
31	CONSTRUCTION MANAGEMENT	$291	$72	25%	$363	4.8%	$305	$76	$381		$381	7.6%	$328	$81	$410
	Non-Federal Enhancement Actions														
	ESTIMATE TOTALS:	$4,280	$803		$5,083	4.4%	$4,467	$838	$5,305		$5,305	4.3%	$4,659	$875	$5,535
01	LANDS AND DAMAGES	$13	$3	20%	$15	0.9%	$13	$3	$15		$15	2.9%	$13	$3	$16
30	PLANNING, ENGINEERING & DESIGN	$729	$166	23%	$895	4.8%	$764	$174	$938		$938	5.6%	$807	$184	$991
31	CONSTRUCTION MANAGEMENT	$607	$150	25%	$757	4.8%	$636	$157	$794		$794	7.6%	$685	$170	$854
	PROJECT COST TOTALS:	$13,221	$2,481	19%	$15,701		$13,812	$2,592	$16,404		**$16,404**	4.3%	$14,408	$2,707	$17,114

CHIEF, COST ENGINEERING, MUKESH KUMAR

PROJECT MANAGER, LISA BARON

CHIEF, REAL ESTATE, xxx

CHIEF, PLANNING, xxx

CHIEF, ENGINEERING, xxx

CHIEF, OPERATIONS, xxx

CHIEF, CONSTRUCTION, xxx

CHIEF, CONTRACTING, xxx

CHIEF, PM-PB, xxxx

CHIEF, DPM, xxx

ESTIMATED PROJECT COST:		**$11,580**
ESTIMATED FEDERAL COST:	75%	$8,685
ESTIMATED NON-FEDERAL COST:	**25%**	$2,895
ESTIMATED BETTERMENT COST:		**$5,535**
ESTIMATED FEDERAL COST:		
ESTIMATED NON-FEDERAL COST:	**100%**	$5,535
22 - FEASIBILITY STUDY (CAP studies):		**$17,114**
ESTIMATED FEDERAL COST:		$8,685
ESTIMATED NON-FEDERAL COST:		$8,430
ESTIMATED FEDERAL COST OF PROJECT		**$8,685**

PROJECT: Spring Creek North
LOCATION: Brooklyn and Queens, NY
This Estimate reflects the scope and schedule in report; CAP Feasibility STUDY - SPRING CREEK NORTH

DISTRICT: NAN New York District PREPARED: 9/29/2016
POC: CHIEF, COST ENGINEERING, MUKESH KUMAR

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 4/22/2016 / Estimate Price Level: 10/1/2015				Program Year (Budget EC): 2017 / Effective Price Level Date: 1 -Oct-16								
				RISK BASED										
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST ($K)	CNTG ($K)	CNTG (%)	TOTAL ($K)	ESC (%)	COST ($K)	CNTG ($K)	TOTAL ($K)	Mid-Point Date	ESC (%)	COST ($K)	CNTG ($K)	FULL ($K)
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*P*	*L*	*M*	*N*	*O*
	PHASE 1 or CONTRACT 1													
14	RECREATION FACILITIES	$107	$19	17.9%	$126	-1.7%	$105	$19	$124	2019Q1	3.9%	$109	$20	$129
16	BANK STABILIZATION	$7,593	$1,358	17.9%	$8,951	4.5%	$7,933	$1,419	$9,352	2019Q1	3.9%	$8,244	$1,475	$9,719
16	BANK STABILIZATION	$3,532	$632	17.9%	$4,164	4.5%	$3,690	$660	$4,351	2019Q1	3.9%	$3,835	$686	$4,521
	CONSTRUCTION ESTIMATE TOTALS:	$11,232	$2,010	17.9%	**$13,241**		$11,728	$2,099	$13,827			$12,188	$2,181	$14,369
01	LANDS AND DAMAGES	$13	$3	20.0%	$15	0.9%	$13	$3	$15	2018Q3	2.9%	$13	$3	$16
30	PLANNING, ENGINEERING & DESIGN													
9.60%	Engineering & Design	$729	$166	22.8%	$895	4.8%	$764	$174	$938	2018Q3	5.6%	$807	$184	$991
9.60%	Engineering & Design - Non-Federal Enchan	$349.35	$80	22.8%	$429	4.8%	$366	$84	$450	2018Q3	5.6%	$387	$88	$475
31	CONSTRUCTION MANAGEMENT													
0.08	Construction Management	$607	$150	24.8%	$757	4.8%	$636	$157	$794	2019Q1	7.6%	$685	$170	$854
0.08	Construction Management - Non-Federal En	$291.13	$72	24.8%	$363	4.8%	$305	$76	$381	2019Q1	7.6%	$328	$81	$410
	CONTRACT COST TOTALS:	$13,221	$2,481		**$15,701**		$13,812	$2,592	$16,404			$14,408	$2,707	**$17,114**

Figure I3 – Abbreviated Risk Analysis

Abbreviated Risk Analysis

Project (less than $40M): **Spring Creek North Ecosystem Restoration Feasibility** — **District:** **New York District**
Project Development Stage/Alternative: **Alternative Formulation** — **Alternative:**
Risk Category: **Low Risk: Typical Construction, Simple** — **Meeting Date:** **9/28/2016**

Total Estimated Construction Contract Cost = $ 11,231,575

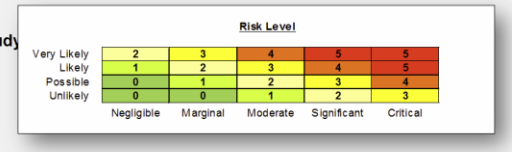
	CWWBS	Feature of Work	Contract Cost		% Contingency	$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate			20.00%	$ -	$ -
1	16 BANK STABILIZATION	Mob Demob	$ 288,643		17.42%	$ 50,274	$ 338,917
2	16 BANK STABILIZATION	Existing Pavement Removal	$ 483,365		15.70%	$ 75,881	$ 559,247
3	16 BANK STABILIZATION	Clearing & Grubbing	$ 957,182		21.97%	$ 210,266	$ 1,167,448
4	16 BANK STABILIZATION	Topographic Survey	$ 335,336		11.97%	$ 40,154	$ 375,491
5	16 BANK STABILIZATION	Excavated Material	$ 1,215,378		21.97%	$ 266,985	$ 1,482,363
6	16 BANK STABILIZATION	Clean Fill	$ 2,247,380		22.23%	$ 499,496	$ 2,746,876
7	16 BANK STABILIZATION	Marsh Region	$ 512,851		15.36%	$ 78,773	$ 591,624.79
8	16 BANK STABILIZATION	Maritime Upland	$ 320,418		17.26%	$ 55,316	$ 375,733.41
9	16 BANK STABILIZATION	Fencing & Gates	$ 850,647		15.54%	$ 132,231	$ 982,878.69
10	16 BANK STABILIZATION	Non-Federal Enchancement Actions	$ 3,531,962		15.36%	$ 542,506	$ 4,074,467.81
11			$ -		0.00%	$ -	$ -
12	All Other	Remaining Construction Items	$ 488,411	4.5%	11.82%	$ 57,733	$ 546,144
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	$ 1,078,231.21		22.84%	$ 246,260	$ 1,324,491
14	31 CONSTRUCTION MANAGEMENT	Construction Management	$ 898,526.01		24.76%	$ 222,501	$ 1,121,027
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)					$ -	

Totals					
Real Estate	$ -	0.00%	$ -	$ -	
Total Construction Estimate	$ 11,231,575	17.89%	$ 2,009,615	$ 13,241,190	
Total Planning, Engineering & Design	$ 1,078,231	22.84%	$ 246,260	$ 1,324,491	
Total Construction Management	$ 898,526	24.76%	$ 222,501	$ 1,121,027	
Total Excluding Real Estate	**$ 13,208,332**	**19%**	**$ 2,478,376**	**$ 15,686,708**	
		Base	**50%**	**80%**	
Confidence Level Range Estimate ($000's)		$13,208k	$14,695k	$15,687k	

* 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.	

Spring Creek North Ecosystem Restoration Feasibility Study
Alternative Formulation
Abbreviated Risk Analysis
Meeting Date: 28-Sep-16



Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
Project Management & Scope Growth				**Maximum Project Growth**		**40%**
PS-1	Mob Demob	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-2	Existing Pavement Removal	• Potential for scope growth, added features?	Existing pavement quantity is confirmed by H&H. No major impact from management or scope growth expected.	Marginal	Unlikely	0
PS-3	Clearing & Grubbing	• Potential for scope growth, added features?	Quantity is based on the project site. Potential of quantity change impact will be addressed under cost and quantity. From management prospective, no impact expected.	Negligible	Unlikely	0
PS-4	Topographic Survey	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-5	Excavated Material	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-6	Clean Fill	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-7	Marsh Region	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-8	Maritime Upland	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-9	Fencing & Gates	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-10	Non-Federal Enchancement Actions	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0
PS-12	Remaining Construction Items	• Potential for scope growth, added features?	No Impact expected	Negligible	Unlikely	0

PS-13	Planning, Engineering, & Design	• Potential for scope growth, added features? • Project accomplishes intent? • Funding Difficulties? • Sufficent Staffing/Support?	New York District has worked closely with local sponsor and local agencies and are confident in both the existing condition accuracy and the absence of utilities. The scope of this project is well defined and unlikely to change. Funding for this account is set for a CAP project, which may pose a challenge later on. No Staffing issues expected.	Moderate	Likely	3
PS-14	Construction Management	• Potential for scope growth, added features? • Project accomplishes intent? • Funding Difficulties? • Sufficent Staffing/Support?	New York District has worked closely with local sponsor and local agencies and are confident in both the existing condition accuracy and the absence of utilities. The scope of this project is well defined and unlikely to change. Funding for this account is set for a CAP project, which may pose a challenge later on. No Staffing issues expected.	Moderate	Likely	3
Acquisition Strategy				**Maximum Project Growth**		**30%**
AS-1	Mob Demob	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-2	Existing Pavement Removal	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-3	Clearing & Grubbing	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-4	Topographic Survey	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-5	Excavated Material	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-6	Clean Fill	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Marginal	Possible	1
AS-7	Marsh Region	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0
AS-8	Maritime Upland	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0
AS-9	Fencing & Gates	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0
AS-10	Non-Federal Enchancement Actions	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0

AS-12	Remaining Construction Items	• Contracting plan firmly established? • 8a or small business likely?	The project will be most likely advertised as 1 contract. There is a possibility of small business or 8a sole source. This may impact bid amount as typically small business or 8a contractors bid higher then open bid contracts.	Negligible	Unlikely	0
AS-13	Planning, Engineering, & Design	• Contracting plan firmly established? • 8a or small business likely?	No Impact expected	Marginal	Possible	1
AS-14	Construction Management	• Contracting plan firmly established? • 8a or small business likely?	Construction office may need to provide extra attention to the small business contractor as the firm may or may not be familiar with USACE requirements.	Moderate	Possible	2
Construction Elements				**Maximum Project Growth**		**15%**
CON-1	Mob Demob	• Special mobilization? • Special equipment or subcontractors needed?	Mob Demob is a % of the total project cost. No special equipment required for the job.	Marginal	Possible	1
CE-2	Existing Pavement Removal	• High risk or complex construction elements, site access, in-water? • Potential for construction modification and claims?	PDT feels that the project site is fairly easily accessible. Removing pavement is fairy simple task.	Marginal	Unlikely	0
CE-3	Clearing & Grubbing	• Water care and diversion plan? • Unique construction methods? • Potential for construction modification and claims?	PDT feels that the project site is fairly easily accessible. Quantity fairly well established however, large tress and roots may not anticipated may cuase delays to clear site	Moderate	Possible	2
CE-4	Topographic Survey	• Accelerated schedule or harsh weather schedule?	There is a possibility that weather can delay survery data. This will impact schedule but no impact on costs	Negligible	Possible	0
CE-5	Excavated Material	• Water care and diversion plan? • Special equipment or subcontractors needed?	No issues with water diversion expected. Excavation is simple, however, excavated material may be contaminated that will require additional cost to dispose.	Moderate	Possible	2
CE-6	Clean Fill	• Accelerated schedule or harsh weather schedule?	Placement of clean fill may be affected depending on weather. Only schedule delay expected, however contractor may have to take precautions to protect material on site from rain damage.	Marginal	Possible	1
CE-7	Marsh Region	• Unique construction methods? • Potential for construction modification and claims?	Planting is very straight forward. Only wether delays may affect schedule.	Marginal	Possible	1
CE-8	Maritime Upland	• Unique construction methods? • Potential for construction modification and claims?	Planting is very straight forward. Only wether delays may affect schedule.	Marginal	Possible	1
CE-9	Fencing & Gates	• High risk or complex construction elements, site access, in-water? • Potential for construction modification and claims?	Fencing & gate features are normal items to place on site. Only wether delays may affect schedule.	Marginal	Unlikely	0
CE-10	Non-Federal Enchancement Actions	• High risk or complex construction elements, site access, in-water? • Potential for construction modification and claims?	PDT feels that the project site is fairly easily accessible. Removing pavement is fairy simple task.	Marginal	Possible	1
CE-12	Remaining Construction Items	• Water care and diversion plan? • Special equipment or subcontractors needed?	No Impact expected	Negligible	Unlikely	0
CE-13	Planning, Engineering, & Design	• High risk or complex construction elements, site access, in-water? • Potential for construction modification and claims?	Access to the site might be challengin. The proximity to water could increase the difficulty of work causing modifications.	Marginal	Possible	1

CE-14	Construction Management	• High risk or complex construction elements, site access, in-water? • Potential for construction modification and claims?	Access to the site might be challengin. The proximity to water could increase the difficulty of work causing modifications.	Marginal	Possible	1
Specialty Construction or Fabrication					**Maximum Project Growth**	**50%**
SC-1	Mob Demob	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-2	Existing Pavement Removal	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-3	Clearing & Grubbing	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-4	Topographic Survey	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-5	Excavated Material	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-6	Clean Fill	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-7	Marsh Region	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-8	Maritime Upland	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-9	Fencing & Gates	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-10	Non-Federal Enchancement Actions	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-11	0	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0
SC-12	Remaining Construction Items	• Atypical construction elements, unusual material or equipment manufactured or installed?	Project involves earthwork, plantings, and miscellaneous fish facilities and recreational construction features. The need for specialty fabrication or equipment is not anticipated.	Negligible	Unlikely	0

SC-13	Planning, Engineering, & Design	• Atypical construction elements, unusual material or equipment manufactured or installed?	No Impact expected	Negligible	Unlikely	0
SC-14	Construction Management	• Atypical construction elements, unusual material or equipment manufactured or installed?	No Impact expected	Negligible	Unlikely	0
Technical Design & Quantities				**Maximum Project Growth**		**20%**
T-1	Mob Demob	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	It is a LS item based on the total construction cost. This cost will be affected if other costs change.	Marginal	Possible	1
T-2	Existing Pavement Removal	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1
T-3	Clearing & Grubbing	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities. However, Geotech data is old that may affect the final quantities in P&S phase.	Moderate	Possible	2
T-4	Topographic Survey	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	No Concern	Negligible	Possible	0
T-5	Excavated Material	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities. However, Geotech data is old that may affect the final quantities in P&S phase.	Moderate	Possible	2
T-6	Clean Fill	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities. However, Geotech data is old that may affect the final quantities in P&S phase.	Moderate	Possible	2
T-7	Marsh Region	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1
T-8	Maritime Upland	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1
T-9	Fencing & Gates	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1

T-10	Non-Federal Enchancement Actions	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1
T-12	Remaining Construction Items	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	H&H developed and updated the quantities in 2015-2016. Design is farily set as this is a CAP project. Various site visits occurred to confirm scope and quantities.	Marginal	Possible	1
T-13	Planning, Engineering, & Design	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	No Impact expected	Negligible	Unlikely	0
T-14	Construction Management	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	No Impact expected	Negligible	Unlikely	0
Cost Estimate Assumptions				**Maximum Project Growth**		**25%**
EST-1	Mob Demob	• Site accessibility, transport delays, congestion?	Cost is developed based on historical data and construciton methodology practice for this item.	Marginal	Possible	1
EST-2	Existing Pavement Removal	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-3	Clearing & Grubbing	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-4	Topographic Survey	No Concerns	No Concerns.	Negligible	Unlikely	0
EST-5	Excavated Material	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-6	Clean Fill	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-7	Marsh Region	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Negligible	Unlikely	0

EST-8	Maritime Upland	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Possible	1
EST-9	Fencing & Gates	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	No change expected as the site area is unlikely to change.	Moderate	Unlikely	1
EST-10	Non-Federal Enchancement Actions	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	'Quantity for this existing item is confirmed. No changes expected. Site visit confirm the quantity.	Marginal	Unlikely	0
EST-12	Remaining Construction Items	• Level of confidence based on design and assumptions? • Appropriate methods applied to calculate quantities? • Sufficient investigations to develop quantities?	No concerns	Negligible	Unlikely	0
EST-13	Planning, Engineering, & Design	• Changes or modifications during construction	This cost is for project design. It is highly unlikely that Modification will be excuted for this project	Marginal	Unlikely	0
EST-14	Construction Management	• Changes or modifications during construction	No major concerns	Marginal	Unlikely	0
External Project Risks				**Maximum Project Growth**		**20%**
EX-1	Mob Demob	• Political influences, lack of support, obstacles? • Potential for market volatility impacting competition, pricing?	No concerns	Marginal	Unlikely	0
EX-2	Existing Pavement Removal	• Political influences, lack of support, obstacles? • Potential for market volatility impacting competition, pricing?	This is a demo item. No major concerns.	Marginal	Unlikely	0
EX-3	Clearing & Grubbing	• Political influences, lack of support, obstacles? • Potential for market volatility impacting competition, pricing?	The risk of severe inflation in the near-term (< 3 years) appears low. However, the outlook for a horizon over three years can not be predicted with confidence. No major opposition from the local sponsors has been received.	Marginal	Possible	1
EX-4	Topographic Survey	• Political influences, lack of support, obstacles? • Potential for market volatility impacting competition, pricing?	No Concerns.	Marginal	Unlikely	0
EX-5	Excavated Material	• Potential for severe adverse weather? • Potential for market volatility impacting competition, pricing? • Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-6	Clean Fill	• Potential for severe adverse weather? • Potential for market volatility impacting competition, pricing? • Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have moderate affect.	Moderate	Possible	2
EX-7	Marsh Region	• Potential for severe adverse weather? • Potential for market volatility impacting competition, pricing? • Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-8	Maritime Upland	• Potential for severe adverse weather? • Potential for market volatility impacting competition, pricing? • Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-9	Fencing & Gates	• Potential for severe adverse weather? • Potential for market volatility impacting competition, pricing? • Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-10	Non-Federal Enchancement Actions	• Potential for severe adverse weather? • Potential for market volatility impacting competition, pricing? • Unanticipated inflations in fuel, key materials?	Adverse weather may affect this item. Inflaction in fuel costs will also have marginal affect.	Marginal	Possible	1
EX-11	0			Negligible	Unlikely	0
EX-12	Remaining Construction Items			Negligible	Unlikely	0
EX-13	Planning, Engineering, & Design	• Political influences, lack of support, obstacles?	Project delays due to lack of political support can cause schedule delays. No concerns for E&D	Negligible	Possible	0
EX-14	Construction Management	• Political influences, lack of support, obstacles?	No concerns.	Negligible	Unlikely	0

MII

Description	Quantity	UOM	ContractCost	Contingency	ProjectCost
Project Cost			**11,231,575.12**	**0.00**	**11,231,575.12**
Spring Creek North	**1.0000**	**LS**	**11,231,575.12**	**0.00**	**11,231,575.12**
16 BANK STABILIZATION	**1.0000**	**EA**	**7,592,505.67**	**0.00**	**7,592,505.67**
14 Non-Federal Enchancement Action: #1 (Recreation Facilities)	**1.0000**	**EA**	**107,107.47**	**0.00**	**107,107.47**
16 Non-Federal Enchancement Action: #2 (Upland Restoration G &F)	**1.0000**	**EA**	**3,531,961.97**	**0.00**	**3,531,961.97**

DQC Comments

Spring Creek North

DQC Comments by MK

24 Aug 2016

The MII CWE is missing the monitoring Costs for the project. Please coordinate with ENV to see if these costs are required for this project.

For Information Only – The monitoring cost is under the project work folder (Account 16 – Bank Stabilization)

The costs for account Engineering & Design (Account 30) and Construction Management (Account 31) must be confirmed with the TM and PM. Please ensure respective offices confirm these numbers.

For Information Only – The cost for the 30 and 31 account has been confirmed by the TM and the PM.

The cost for Real Estate (Account 01) seem outdated. Please have the RE Div. provide the updated costs for this account.

For Information Only – The cost for Real Estate (Account 01) is based on the most recent RE appendix.

The MII file contains a contingency markup of 20.89% at the top folder level. Please ensure that this contingency is removed from MII file as TPCS will have the contingency amount to avoid duplicate contingency. This may potentially reduce project cost by 20.89%.

Concurred – 20.89% contingency markup at the top folder level has been removed however it was not assigned to the folders below. This does not affect overall project cost.

It appears that 60% or more work is sub contracted out. This being an ECO System Restoration project, it is highly likely that a small business will be awarded the construction contract, where most likely bulk of the work will be performed by the prime. Please review.

Concurred – The cost has been adjusted to 96% prime and 4% sub.

Please add notes to the main project title page.

MII title page currently reflects 0 days for construction duration. Please review and edit as necessary.

Concurred – The construction duration has been added.

ARA: Please confirm the names of the PDT members involved in the ARA process. It appears that few names are misplaced.

For Information Only – The names of the PDT members involved in the ARA process were confirmed.

ARA: Meeting dates on PDT involvement page and Input & results tabs do not match. Please review and correct.

Concurred – The date has been adjusted and now matching.

ARA: There is no Real Estate costs shown on the ARA contract cost tab. Please ensure that this cost is included on the TPCS with appropriate contingency.

Concurred – The cost has been added. No change in overall project cost is encountered.

TPCS: The middle column (constant dollar basis) currently shows a de-escalation for account 14. Please review and correct as needed.

For Information Only – The de-escalation is based on the embedded formula: [(Program Yr Index / Price Level Index) -1]

TPCS: The middle column currently reflects Oct 2016 PL. Is this the intent?

For Information Only – It's an intent. According to the PM, the construction of the restoration project will commence in FY17.

TPCS: Account 30 & 31 percentages are not calculated properly. Please see the format of these cells and correct accordingly.

For Information Only – The 30 & 31 percentages are provided and concurred by both the PM and TM. The 30 account cost is based on 7% of the construction cost and the 31 account is based on 8% of the construction cost. The cost for the betterment tasks and the non-betterment tasks are separate.

TPCS: Please ensure that the costs or % of account 30 & 31 is coordinated with the PM. Currently it shows 6.37% and 18.72% for overall project and 2.60% and 2.97% respectively for betterments. Please review.

For Information Only – The cost for the 30 & 31 account has been coordinated with the PM. The calculation for the 6.37%, 18.72%, 2.60% and 2.97% has been adjusted to reflect the percentage provided by the PM. No change in cost is encountered.

Cost Appendix: Please confirm that this is a "General Reevaluation Report GRR". If not adjust the title of the cost appendix accordingly.

Concurred – This is not a "General Reevaluation Report GRR," This is an "Integrated ecosystem restoration report and environmental assessment." The title of the cost appendix has been adjusted accordingly.

The project is a CAP project. Please find out the correct CAP program, i.e. Section 205, Section 14 etc. and reflect that on the cost appendix report title page.

Concurred – This is a Section 1135 CAP project. It has been reflected in the cost appendix report title page.

Cost Appendix: The title page title “Appendix C5 Cost Estimates” should be changed to “Cost Engineering”.

Concurred – This has been changed.

Cost Appendix: Table I3 does not contain any O&M costs yet, cost appendix right up on page I3 indicates that operation and maintenance costs are calculated for this project. Please confirm that there are O&M costs associated with this project and included in the Cost appendix.

Concurred – The O&M cost has been incorporated into Table I3.