CITY OF
WASILLA
• ALASKA •

Date of Action:	7.28.14
Approved ☑	Denied ☐
By:	

CITY COUNCIL ACTION MEMORANDUM

AM No. 14-34: Contract Award to USKH, Inc. the amount of $412,112 for Wastewater Outfall Engineering Services.

Originator: Public Works Director
Date: July 16, 2014 Agenda of: July 28, 2014

Route to:	Department Head	Signature	Date
X	Public Works Director		7/16/14
X	Finance Director		7-17-14
X	Deputy Administrator		7-17-14
X	City Clerk		7.17.14

Reviewed by Mayor Verne E. Rupright:

Fiscal Impact: ☒yes $412,112 **Funds Available:** ☒yes

Account name/number: Sewer Treatment Plant-State/310-4359-435-45-29
Attachments: CIP Detail Sheet (1 page)
USKH Proposal (25 pages)

Summary Statement: This contract award is in response to the City's Request for Proposal No. 0321-0-2014/AG that was advertised on March 21, 2014 for engineering services. Three proposals were received and evaluated with USKH, Inc. providing the number one ranked proposal. This contract will evaluate the newly acquired 77-acre parcel next to the sewer plant for options to improve the City's outfall system. This contract will be funded through a $3 million state grant to fully implement the sewer treatment plant improvements.

Staff Recommendation: Adopt AM No. 14-34.

City Of Wasilla
Capital Improvement Project Detail
Fiscal Year 2013
Through Fiscal Year 2017

Project Title: Sewer Plant Expansion

Project Number: (Assigned By Finance Department)

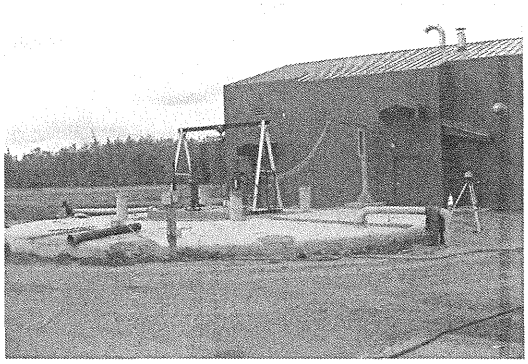
Project Description: Expand capacity at sewer plant

Department/Div.: Public Works/Sewer Utility

Ranking: (Assigned By Administration)

Project Narrative:

To expand the capacity at the sewer plant to include new drainfields and other improvements.



Impact on Operating Budget:

None

Project Cost Summary

Expenditure Category:

	Prior Budget	Project Expenditures To Date	Project Balance	Additions: Fiscal YR 2013	Fiscal YR 2014	Fiscal YR 2015	Fiscal YR 2016	Fiscal YR 2017	Total CIP Cost
Administration/OH	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Land	-	-	-	-	-	-	-	-	-
Design Services	-	-	-	-	-	-	-	-	-
Engineering	-	-	-	-	300,000	-	-	-	300,000
Construction	-	-	-	-	2,700,000				2,700,000
Equipment	-	-	-	-		-	-	-	-
Other Services	-	-	-	-					-
Contingency	-	-	-	-	-	-	-	-	-
Totals	$ -	$ -	$ -	$ -	$ 3,000,000	$ -	$ -	$ -	$ 3,000,000

Funding Source Summary

Funding Sources:

	Prior Budget	Project Revenue To Date	Project Balance	Additions: Fiscal YR 2013	Fiscal YR 2014	Fiscal YR 2015	Fiscal YR 2016	Fiscal YR 2017	Total CIP Funding
Local:									
State Grant	$ -	$ -	$ -	$ -	$ 3,000,000				$ 3,000,000
Totals	$ -	$ -	$ -	$ -	$ 3,000,000	$ -	$ -	$ -	$ 3,000,000

Cost Beyond 5-Year Program: $ -

Stantec Consulting Services Inc.
2515 A Street
Anchorage AK 99503-2709
Tel: (907) 276-4245
Fax: (907) 258-4653

July 15, 2014

Archie Giddings
City of Wasilla
290 E. Herning Ave
Wasilla, AK 99654-7091

Project: Proposal No. 0321-0-2014/AG; Wastewater Outfall Study Engineering Services
Subject: Professional Services Fee Proposal

Dear Mr. Giddings:

As requested at our meeting of June 20th, we have prepared a task outline and fee proposal for the subject project.

Based upon our understanding of the project scope and City needs, USKH proposes to prepare a feasibility study which considers the relocation of the Wasilla Wastewater Treatment Plant Outfall and related improvements on the project site. The following general tasks and scope of services are proposed. These have been outlined to match our response to your RFP with clarifications based on our meeting with you.

Task 1 - Investigations

Task 1A – Wetlands and Habitat Delineation. Kacy Hillman, Certified Wetlands Scientist with USKH, will map the existing wetlands and characterize the soils and vegetation forms. This is a field investigation and a USACE requirement for any wetlands permit. A wetlands report will be produced that is sufficient for permitting and include a map of wetland boundaries and types.

Task 1B – Topographic Survey. For the study, Borough mapping and LiDAR topography is sufficient. The proposed survey is for the wetlands boundaries, boundary recovery, control establishment, as well as wetland and boring locations.

Task 1C – Geotechnical Investigation. The wetlands and uplands geology must be investigated for use in the groundwater study and design of basins and wetlands. Shannon and Wilson, Inc. (S&W) will perform this work. Sampling will include tests for nitrates, metals, and coliform to establish existing background levels. Approximately 14 borings are proposed. Work will include coordination with the US Army Corps of Engineers (USACE) for coverage under a nationwide permit (NW6) for exploration. Utility locates and survey of installed piezometers and monitoring wells will be required. Tree clearing will also be required for drill rig and site access. See the attached geotechnical investigation proposal for additional detail.

Reference: Proposal No. 0321-0-2014/AG; Wastewater Outfall Study Engineering Services

Task 1D – Infiltration Testing. Percolation and effluent disposal capacity will be estimated. To provide the needed values for design and final sizing of wetlands and basins, S&W will perform four large scale infiltration tests.

Task 2 – Hydrologic Analysis and Groundwater Study

Task 2A – Hydrologic Analysis. Surface runoff rates, transit times, and wetlands residence times will be computed using rainfall data, infiltration rates, groundwater levels, soils types, and topography.

Task 2B – Groundwater Study. Li Ma of S&W will provide analysis and modeling of ground water gradients and rate of flow to quantify impacts of the proposed wastewater disposal. Gradients will be measured through monitoring of groundwater levels in 10 piezometers and 4 monitoring wells at boring sites.

Task 3 – Wastewater Treatment Engineering

Task 3A – Biologic Wastewater Treatment Kinetics. Dean Syta and Mike Pollen of NTL Alaska, Inc. (NTL) will provide analysis of wastewater treatment rates, nitrate removal, and fecal coliform removal. Scoping of overland treatment scheme alternatives.

Task 4 – Effluent Study and Testing (T&M).

Task 4A – Effluent Study and Testing. While the WWTP has good historic data, some additional testing is expected to be required to support a surface discharge, including nutrient load assessment (nitrate, nitrite, other nitrogen forms, and phosphorus), and whole effluent toxicity (WET). The WET test shows whether the effluent is compatible with aquatic life and microorganisms. The full extent of the analytical tests will be determined after review of existing data and preliminary investigations and may change as alternates are developed and is therefore as a time and materials (T&M) task, not to exceed $19,825 for laboratory and collection services. At a minimum, tests to capture the transitions between seasons, mid-summer, and mid-winter to try to capture a range of states are anticipated.

Task 5 – Feasibility Study/Report

Task 5A – Wetlands Modifications. Discharging to the new parcel, will impact the natural wetlands and is likely to involve modification with dikes, ponds, or additional vegetation. USKH will develop potential alternates for these developments. Analysis is expected to consider existing conditions and two alternates.

Task 5B – Feasibility Study Report Preparation. While the background work is completed in other tasks, Task 5 provides a completed report for distribution and discussion. The preparation of cost estimates, report writing and compilation of calculations will be completed. Figures will be developed at a conceptual level as required to illustrate concepts and prepare cost estimates.

Reference: Proposal No. 0321-0-2014/AG; Wastewater Outfall Study Engineering Services

Task 6 – Environmental Activities

Task 6A – Environmental Review. The USKH environmental group will identify any critical issues, such as eagle nests, cultural or historic resources, and habitat issues early in the project, so these can be mitigated as the concepts are developed. Information gathered in this effort will be used in agency coping letters (Task 11).

Task 6B – Agency Scoping. During the study, a scoping letter will be sent to relevant regulatory agencies, including ADEC, USACE, and USFWS. The letter outlines the project, the potential known impacts, and the anticipated benefits. During a 30 day comment period, we invite the agencies to a scoping meeting to present the project and answer agency concerns. This "tests the waters" to gauge how difficult permitting will be, identify issues to be addressed or mitigated during design, and provide an opportunity for agencies to help shape alternate development.

Task 6C – Permit Negotiation. The work as proposed will not involve the development of a project for construction and will conclude with a feasibility study. No permit applications will be submitted, but permitting requirements for the work will be identified.

Task 6D – Environmental Documents. It is our understanding that federal money is not currently being used on the project and that environmental documents (e.g. EA, CatEx) are not required and will not be provided.

Task 7 – Additional Services as Requested (T&M)

An allowance for additional project tasks not foreseen at this time has been incorporated into our fee proposal. This task is proposed with a T&M value of $15,080 with fees to be approved by the City prior to expenditures.

This is our understanding of the current requirements for this project. Information collected, analysis, and potential wastewater outfall alternatives will be developed and documented in a single feasibility study with related appendices. We propose to provide this document in two submittals, a draft and final, each including costs and schematic designs as required for analysis.

Fee Proposal

The total fee for all services is $412,112. A spreadsheet showing the approximate distribution of the fee between the project tasks is attached.

Schedule

The schedule for the completion of this project will be detailed with you as the process progresses. Overall we are anticipating a final completion date of approximately May 29,2015 to allow for the testing, analysis, and report development proposed. This anticipates beginning work immediately to complete investigations this field season and begin gathering seasonal effluent data.

Reference: Proposal No. 0321-0-2014/AG; Wastewater Outfall Study Engineering Services

Closure

We trust this proposal meets your needs, and we are ready to begin immediately upon approval and your notice to proceed. If you have any questions, please contact me or Stephanie Gould at (907) 276-4245. Thank you for this opportunity to work with the City of Wasilla, and to help the wastewater treatment plant address regulatory requirements and community growth.

Sincerely,

Dean E. Syta, P.E.
Water Section Leader

Attachment: Fee worksheet; S&W geotechnical proposal
c: File
Work Order: 1448200
DES\sdg I:\1448200\Proposal\Fee\1448200 Wasillawwtp Fee Proposal.Doc

2515 A Street
Anchorage, AK 99503-2709
Fee Estimate for Professional Services
Prepared by: Stephanie Gould

1448200
Wastewater Outfall Study Engineering Services
City of Wasilla
Jul 14, 2014

SUMMARY OF LABOR AND EXPENSES

Task No.	Task Name	Survey	Civil	Water Resources, Environmental	Subconsultant(s)	Subconsultant Markup (10%)	Expenses by Task	Subtotal
1	Investigations	23,520.66	14,780.00	8,390.00	98,723.00	9,872.30	550.00	$155,835.96
2	Hydrologic Analysis and Groundwater Study	0.00	26,090.00	0.00	59,862.00	5,986.20	250.00	$92,188.20
3	Wastewater Treatment Engineering	0.00	42,980.00	540.00	8,038.00	803.80	250.00	$52,611.80
4	Effluent Testing As Required (T&M)	0.00	11,940.00	0.00	350.00	35.00	7,500.00	$19,825.00
5	Feasibilty Study / Report	0.00	50,960.00	2,290.00	1,574.00	157.40	1,700.00	$56,681.40
6	Environmental Activities	0.00	11,300.00	6,550.00	1,400.00	140.00	500.00	$19,890.00
7	Additional Services as Requested (T&M)	0.00	15,080.00	0.00	0.00	0.00	0.00	$15,080.00
Total		$23,521	$173,130	$17,770	$169,947	$16,995	$10,750	$412,112

NOTES

1	City to provide available discharge records, analytical test results, groundwater monitoring records, geotechnical reports, and other information as may be available.
2	Investigations includes survey, wetland and habitat delineation, and geotechnical work.
3	Environmental activities will not include permitting, or related environmental documents (e.g. EA).

LABOR BREAKDOWN: SURVEY

				Regular		Overtime			
Personnel Classification	Senior Surveyor IV	Senior Surveyor II	Survey Designer / Technician I	1-Person Survey Crew	2-Person Survey Crew	1-Person Survey Crew	2-Person Survey Crew	TOTAL COST	TOTAL HOURS
Rate	$210.00	$165.00	$100.00	$145.00	$235.00	$193.33	$313.25		
1 Investigations									
Project Management								$0.00	0
Research/Coordination	1	2	2					$740.00	5
Set HV control					16		4	$5,013.00	20
Boundary Recovery					16		4	$5,013.00	20
Test Bore Stakeout					8		2	$2,506.50	10
Test Bore Elev. TBM					8		2	$2,506.50	10
Wetland Delineation Assistance		2		4				$910.00	6
Adapt MSB LIDAR		2	10					$1,330.00	12
Locating top/toe, LIDAR ground truthing				8		2		$1,546.66	10
Reduction		4	8					$1,460.00	12
Drafting		1	20					$2,165.00	21
Quality Control		2						$330.00	2
								$0.00	0
Totals for Task 1	1	13	40	12	48	2	12	$23,520.66	128

SURVEY LABOR TOTALS	1	13	40	12	48	2	12	$23,520.66	128

LABOR BREAKDOWN: CIVIL

Personnel Classification	Senior Civil Engineer IV	Senior Civil Engineer III	Senior Civil Engineer II	Civil Engineer II	Civil Engineer in Training II	Civil Designer / Technician I	Civil Designer / Technician II	Civil Designer / Technician I	TOTAL COST	TOTAL HOURS
Rate	$210.00	$185.00	$165.00	$135.00	$100.00	$100.00	$95.00	$95.00		
1 Investigations										
Coordination and Project Kickoff Meeting:	2	8	4	4				4	$3,480.00	22
Site Visits, Existing Process Investigation		8		8	8				$3,360.00	24
Wetlands and Habitat Delineation		2		2		4			$1,040.00	8
Topographic Survey		2		4					$910.00	6
Geotechnical Investigation		2		4					$910.00	6
Infiltration Testing		6		2					$1,380.00	8
Project Mangement / Quality Control	4	8		6				6	$3,700.00	24
Totals for Task 1	6	36	4	30	8	4	0	10	$14,780.00	98
2 Hydrologic Analysis and Groundwater Study										
Hydrologic Analysis		4	6	8	12				$4,010.00	30
Groundwater Study		4	6	8					$2,810.00	18
Surface Water Hydrology	2	2	12	24	4		4		$6,790.00	48
Wetlands Modeling	2	2	16		32				$6,630.00	52
Analysis Reporting for Feasiblity Study	2		6		12		8	4	$3,750.00	32
Project Management / Quality Control	2	6						6	$2,100.00	14
Totals for Task 2	8	18	46	40	60	0	12	10	$25,090.00	194
3 Wastewater Treatment Engineering										
Review Existing WWTP Data / Operations		4	6	12					$3,350.00	22
Formulate Treatment Alternatives		8	8	8					$3,880.00	24
Treatment Kinetics, Process Analysis, Calculations		8	30						$6,430.00	38
Heat Balance / Winter Freeze Analysis		4		8	12				$3,020.00	24
Concept / Schematic Design Drawings, including:									$0.00	0
Vicinity Map				4		8			$1,340.00	12

LABOR BREAKDOWN: CIVIL

	Personnel Classification	Senior Civil Engineer IV	Senior Civil Engineer III	Senior Civil Engineer II	Civil Engineer II	Civil Engineer in Training II	Civil Designer / Technician I	Civil Designer / Technician II	Civil Designer / Technician I	TOTAL COST	TOTAL HOURS
	Rate	$210.00	$185.00	$165.00	$135.00	$100.00	$100.00	$95.00	$95.00		
	Process Diagram		8				12			$2,680.00	20
	Property Map				4		8			$1,340.00	12
	Site Plan / Wetlands Use Plan (4 Sheets)		16		24	10	40			$11,200.00	90
	Sections and Details (2 sheets)		8		16		24			$6,040.00	48
	Project Management / Quality Control	4	8		6				6	$3,700.00	24
										$0.00	0
	Totals for Task 3	4	84	44	82	22	92	0	6	$42,980.00	314
4	**Effluent Testing As Required (T&M)**										
	Sampling and Collection (6 events)		2		24	24				$6,010.00	50
	Laboratory Coordination				6				6	$1,380.00	12
	Analysis of Results		6	16		8				$4,550.00	30
	Totals for Task 4	0	8	16	30	32	0	0	6	$11,940.00	92
5	**Feasibilty Study / Report**										
	Team Meetings		4	4	4	8	4		4	$3,520.00	28
	Draft Feasibilty Report		16	32	40				8	$14,400.00	96
	Analysis of Alternates		12	12						$4,200.00	24
	Figures		4		12		8	16		$4,680.00	40
	Cost Estimates		4		8	16				$3,420.00	28
	Review Conference		4	4	4					$1,940.00	12
	Final Report		24	20	30	8	8	8	8	$14,910.00	106
	Project Management / Quality Control	4	8		6				8	$3,890.00	26
	Totals for Task 5	4	76	72	104	32	20	24	28	$50,960.00	360
6	**Environmental Activities**										

LABOR BREAKDOWN: CIVIL

Personnel Classification	Senior Civil Engineer IV	Senior Civil Engineer III	Senior Civil Engineer II	Civil Engineer II	Civil Engineer in Training II	Civil Designer / Technician I	Civil Designer / Technician II	Civil Designer / Technician I	TOTAL COST	TOTAL HOURS
Rate	$210.00	$185.00	$165.00	$135.00	$100.00	$100.00	$95.00	$95.00		
Team Meetings		4		4					$1,280.00	8
Environmental Review		1		4					$725.00	5
Agency Scoping Letter		1		4					$725.00	5
Scoping Meeting		8		8					$2,560.00	16
Agency Coordination/ Preliminary Permit Negotiation		6		12					$2,730.00	18
Environmental Assessment (Not required).									$0.00	0
									$0.00	0
Project Management / Quality Control	2	8		6				6	$3,280.00	22
									$0.00	0
Totals for Task 6	2	28	0	38	0	0	0	6	$11,300.00	74

7 Additional Services as Requested (T&M)									
								$0.00	0
Allowance for Additional Services, Unforseen Project Ta	16	16	24	16	16	16	16	$15,080.00	120
To be approved by City prior to use.								$0.00	0
								$0.00	0
Totals for Task 7	0	16	16	24	16	16	16	$15,080.00	120

CIVIL LABOR TOTALS	24	246	198	348	170	132	52	82	$173,130.00	1,252

LABOR BREAKDOWN: WATER RESOURCES, ENVIRONMENTAL, HAZMAT

	Personnel Classification		Senior Environmental Specialist II	Environmental Specialist II	Environmental Specialist in Training II	Environmental CAD Operator	TOTAL COST	TOTAL HOURS
	Rate	$0.00	$175.00	$135.00	$100.00	$90.00		
1	**Investigations**							
							$0.00	0
	Project Management		1				$175.00	1
	Wetlands and Habitat Delineation			40	12	16	$8,040.00	68
	Quality Control		1				$175.00	1
	Totals for Task 1	0	2	40	12	16	$8,390.00	70
3	**Wastewater Treatment Engineering**							
	Input on wetland development			4			$540.00	4
	Totals for Task 3	0	0	4	0	0	$540.00	4
5	**Feasibilty Study / Report**							
	Project Management						$0.00	0
	Environmental Narrative for Feasibility Report		2	4	14		$2,290.00	20
	Totals for Task 5	0	2	4	14	0	$2,290.00	20
6	**Environmental Activities**							
	Environmental Review/Background		2	4	4	4	$1,650.00	14
	Agency Scoping Letter		2	4	8	8	$2,410.00	22
	Agency Scoping Meeting		4	8		4	$2,140.00	16
	Environmental Documents & Permits (not included)						$0.00	0
	Project Management/Quality Control		2				$350.00	2
	Totals for Task 6	0	10	16	12	16	$6,550.00	54
	ENVIRONMENTAL LABOR TOTALS	0	14	64	38	32	$17,770.00	148

SUBCONSULTANTS

	Subconsultant(s)	Amount	Remarks
1	**Investigations**		
	Shannon & Wilson	98,723.00	
	Totals for Task 1	$98,723.00	
2	**Hydrologic Analysis and Groundwater Study**		
	Shannon & Wilson	59,862.00	
	Totals for Task 2	$59,862.00	
3	**Wastewater Treatment Engineering**		
	NTL Inc	8,038.00	Treatment Kinetics
	Totals for Task 3	$8,038.00	
4	**Effluent Testing As Required (T&M)**		
	NTL Inc	350.00	Planning
	Totals for Task 4	$350.00	
5	**Feasibilty Study / Report**		
	NTL Inc	1,574.00	Report review and input
	Totals for Task 5	$1,574.00	
6	**Environmental Activities**		
	NTL Inc	1,400.00	Regulatory/Permitting Consultation
	Totals for Task 6	$1,400.00	

SUBCONSULTANTS

Subconsultant(s)	Amount	Remarks
7 Additional Services as Requested (T&M)		
To be determined		
Totals for Task 7	$0.00	

Subtotal	169,947.00
10% Markup	16,994.70
SUBCONSULTANT TOTALS	$186,941.70

EXPENSES BREAKDOWN

	Item Description	Quantity	Units	Rate	Total	Remarks
1	**Investigations**					
	Site visits	3	Day	$100.00	300.00	mileage and field supplies
	Survey Supplies	1	LS	$250.00	250.00	
	Totals for Task 1				$550.00	
2	**Hydrologic Analysis and Groundwater Study**					
	Misc. Copies and Printing	1	LS	$250.00	250.00	
	Totals for Task 2				$250.00	
3	**Wastewater Treatment Engineering**					
	Misc. Copies and Printing	1	LS	$250.00	250.00	
	Totals for Task 3				$250.00	
4	**Effluent Testing As Required (T&M)**					
	Effluent Testing	6	EA	$500.00	3,000.00	
	Site Visits	6	EA	$100.00	600.00	mileage and field supplies
	Whole Effluent Toxicity Testing	4	EA	$975.00	3,900.00	Shrimp & minnow, 2 sample events
	Totals for Task 4				$7,500.00	
5	**Feasibilty Study / Report**					
	Copying charges	1	LS	$1,200.00	1,200.00	3 copies of final report with CD to client
	Misc. Copies and Printing	1	LS	$500.00	500.00	
	Totals for Task 5				$1,700.00	
6	**Environmental Activities**					
	Site Visit	2	Day	$100.00	200.00	mileage and field supplies
	Database research	1	LS	$300.00	300.00	

EXPENSES BREAKDOWN

Item Description	Quantity	Units	Rate	Total	Remarks
Totals for Task 6				$500.00	
7 Additional Services as Requested (T&M)					
TBD				0.00	
Totals for Task 7				$0.00	
EXPENSES TOTALS				$10,740.00	

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

ALASKA
CALIFORNIA
COLORADO
FLORIDA
MINNESOTA
MISSOURI
OREGON
WASHINGTON

July 7, 2014

USKH, Inc.
2515 A Street
Anchorage, Alaska 99503

Attn: Mr. Dean Syta, P.E. Phone: (907) 276-4245

RE: PROPOSAL FOR GEOTECHNICAL SERVICES, PROPOSED WASTEWATER TREATMENT PLANT IMPROVEMENTS, WASILLA, ALASKA

We are pleased to submit herein our proposal and estimated costs for providing geotechnical services for the above referenced project. The purpose of this study is to conduct subsurface explorations and infiltration testing in the proposed improvement area at the wastewater treatment plant (WTP) in Wasilla, Alaska. We understand that the proposed improvements to the site include several new infiltration basins immediately west of the existing lagoons and an overland percolation and wetland/bioswale-type treatment area in a 70 acre parcel to the west of the existing facility. We understand that the design of the improvements will require a detailed understanding of the infiltration and percolation nature of the soils, the nature of the existing groundwater table or tables, and identification of background conditions for nitrates and other analytes in the soil and groundwater at the site. In addition, the project design will require recommendations for developing fill berms on existing soils to address settlement and slope stability considering the expected seepage that will occur at the site during operation.

SCOPE OF WORK

Our scope of work consists of reviewing existing information, advancing geotechnical borings, conducting full scale infiltration testing, conducting laboratory testing for soil samples collected from the borings, conducting subsurface hydraulic analyses, and providing geotechnical recommendations for the proposed improvements. It is our opinion that the scope of work described below is consistent with what was requested and the local standard of practice.

5430 FAIRBANKS STREET, SUITE 3
ANCHORAGE, ALASKA 99518-1263
907-561-2120 FAX: 907-561-4483
TDD 1-800-833-6388
www.shannonwilson.com

Information Review

To initiate work, we will conduct a brief review of existing subsurface information from the WTP area. Most of the subsurface information that exists is in the form of geotechnical borings conducted during various phases of development at the WTP. We possess a portion of this information from prior work conducted at the site, and we assume that if more information exists, the City will provide it to us for review. We also understand that groundwater monitoring has been taking place intermittently at the plant and we assume that the City will forward all information they have regarding groundwater levels and analytical testing that has been conducted on site. The information will be reviewed to provide context for our new scope of work and provide the basis for last minute adjustments to our program if necessary.

Subsurface Explorations

Once the data review is complete, subsurface explorations will be conducted. We plan to advance 14 borings and four large scale infiltration tests at the approximate locations shown on the attached site plan. We will advance four of the borings (adjacent to the planned infiltration tests) to 50 feet below the ground surface (bgs) and the remainder will be advanced to 20 feet bgs. Because a significant portion of the explorations will take place in wetland areas, prior to mobilizing to conduct the explorations, we will coordinate with the United States Army Corps of Engineers (USACE) to obtain authorization to conduct the explorations under the Nationwide #6 (NW6) permit. We will also conduct utility locates to identify potential conflicts with buried pipes or cables. We assume that USKH will be able to coordinate with officials at the City for location of WTP-related underground utilities and to gain access to the site.

Upon receipt of authorization from USKH, we will subcontract with a drilling contractor for a drill rig and crew to conduct the field explorations. The contractor will mobilize a truck-mounted, hollow-stem auger drill rig to advance the borings. We will also coordinate with a tree clearing contractor to cut access to the boring locations. We envision that access will require cutting existing trees and brush to create a 10 to 12-foot wide pathway. Cut trees and brush will be cast to the side of the access trail and to the extent practicable, we will use existing pathways through the trees and avoid cutting large trees. We assume that we will not be required to repair or re-plant trees and vegetation in the cut pathways after our exploratory work.

In each boring, Standard Penetration Test (SPT) drive samples will be taken at 2.5-foot intervals to 10 feet bgs, then 5-foot intervals below 10 feet bgs. Samples will be classified in the field and then placed in moisture tight containers for transportation to our Anchorage soils laboratory. Occasional soil samples will be collected in the borings at the top of groundwater elevation for analytical testing. In each boring (except for the four borings closest to the proposed infiltration test locations) we will install 1-inch open ended PVC riser pipe to facilitate groundwater level measurements after drilling. It should be noted that there may be two distinct groundwater tables at the site and if we see indications of such, we may install nested piezometers (to measure both water tables) in the borings as appropriate. Piezometers will be completed by backfilling the borings with cuttings removed during drilling, and nested piezometers will be isolated using a bentonite seal between the suspected groundwater tables. In the four borings closest to the proposed infiltration test locations, we will install 2-inch machine slotted groundwater monitoring well casings (with a sand filter pack). These wells will be developed and used to observe groundwater levels after drilling and provide groundwater samples for analytical testing.

An experienced Shannon & Wilson representative will be present continuously during drilling to observe the conditions encountered. Our representative will record the location of each boring, prepare a descriptive log of each boring, collect samples, and oversee the installation of piezometers and groundwater monitoring wells. To facilitate groundwater modelling, we assume that you will provide a surveyor to record the horizontal and vertical locations of the top of each piezometer and groundwater monitoring well after fieldwork is complete.

Infiltration Testing

Based on the results of our geotechnical explorations, we plan to perform up to seven pilot infiltration tests (PIT). Six tests (at three locations) will be performed in the proposed effluent discharge area, located within the 77-acre parcel west of the existing WWTP, and one test in the proposed subsurface infiltration basins adjacent to the existing lagoons. At each infiltration test location, we plan to excavate a shallow test pit to support the infiltration test. The depth of the test pits will be determined based on information gathered during our geotechnical drilling program, but is expected to be no more than 5 feet deep. The test pits will have a bottom area of approximately 25 to 100 square feet, depending expected infiltration rates and availability of water to the test locations. Excavated materials will be temporarily stored on the ground surface adjacent to the test pits. A representative of Shannon & Wilson will log the test pit and collect one soil sample from the base of each test pit for gradation and moisture content testing in

general accordance with ASTM standards. At each location in the effluent discharge area, we also plan to conduct infiltration tests at the surface by conducting the test in an above-ground, 2 to 3-foot diameter, steel ring embedded several inches into the ground. We plan to conduct these surface tests simultaneously with the test pit tests at each location.

Depending on the test pit depth, the infiltration testing is expected to be conducted by maintaining a constant 2 to 3-foot deep water level in the pit (or steel ring) while recording flow rates at regular time intervals. We plan to conduct this constant head testing until a relatively constant flow rate is measured for a 1 to 2 hour period or for a maximum of 12 hours for the test. Two 3,000 to 4,000 gallon water trucks will be used to supply water for the test. The water trucks will be filled with potable water from a locally available source determined by the contractor. Depending upon the rate of infiltration, it may be necessary to use additional water trucks and/or tanks. Prior to using additional tanks or water trucks we will notify you and discuss costs associated with the additional equipment. After the constant flow rate portion of the test, the water flow will be shut off and infiltration rates will be measured at regular time intervals until the pit is empty or for a maximum of three hours. After infiltration testing is completed, the test pit will be backfilled with materials excavated from the pit. We assume that we will not be required to test for or meet density criteria while backfilling the excavation.

Laboratory Testing

Laboratory tests will be performed on soil samples to confirm visual classifications and determine the index properties of the sampled soils. We anticipate that select samples will be tested for natural water content and particle-size gradation. Note that a significant number of gradation tests are needed from above and below the water table to estimate the permeability of the soils and correlate percolation rates measured in the infiltration tests. The water content tests will be run on each sample recovered, and grain size tests will be run on samples representative of the range of materials encountered in our borings. ASTM standard procedures will be followed for the soils testing.

Analytical testing will be conducted on soils collected from our borings and on water collected from groundwater monitoring wells. We will focus our testing effort on the four borings developed as monitoring wells and will generally test for nitrates and metals in soil and groundwater. The purpose of testing is to establish background levels of various analytes and the

number and types of tests to be conducted are shown on the attached cost estimate. Note that our cost estimate assumes that standard turnaround times for the various tests will be requested.

Groundwater Modeling

Based on the results of our field and laboratory testing, we will conduct groundwater modeling to evaluate the effect the proposed improvements will have on the groundwater at the site. We will use the three dimensional numerical modelling program Modflow to support our efforts under this task. Our modeling effort will evaluate seepage of surface water into the subsurface and attempt to predict the effects of seepage on the groundwater (such as mounding, radius of influence, etc.). We will also perform a particle tracking analysis using our Modflow model to evaluate nitrate dispersion in the system. The information from our model will allow the evaluation of transport of effluent in groundwater and changes to flow rates and flow direction of the groundwater after construction of the improvements. The modeling results should also provide an understanding of the capacity of the subsurface for water infiltration and assist in the design of the size of ponds needed to handle the expected effluent. The results of our groundwater modeling will be provided in a separate report that will be attached to our geotechnical report as an appendix as described below.

Geotechnical Report

Upon completion of our field program, laboratory testing, and groundwater modeling, Shannon & Wilson will prepare a geotechnical report presenting the results of our studies. Our report will include a summary of the field efforts including tabulated field and lab testing results, boring logs, and infiltration test results. Along with the basic project summary information, our report will also present a narrative descriptions of the subsurface conditions encountered. We will present an interpretation of the existing groundwater conditions (aquifer, nitrate background conditions, flow and gradient, etc.) at the site and discuss the likely impact (e.g. mounding, flow changes, etc.) of the proposed new lagoons to the groundwater at the site. We will also include recommendations for site development, berm construction, and a discussion of the site stability after construction. Reporting will be prepared under and sealed by a registered civil engineer experienced in geotechnical engineering. We will submit three copies of the final geotechnical report.

SCHEDULE

We are prepared to begin work on this project immediately after we receive written authorization to proceed from you for the above described scope of work. Coordination with the USACE, utility locates, and data review can take place concurrently and we anticipate that the clearing and drilling crew can be mobilized after USACE coordination is complete (approximately two to four weeks after authorization). We will mobilize the clearing crew one day prior to drilling and anticipate that once started, drilling should be completed in three field days. After drilling is completed, we will develop the groundwater monitoring wells, collect water samples, and read water levels in piezometers. We have included effort to visit the site and collect water levels in the wells and piezometers a total of six times after drilling. After drilling, we will conduct laboratory testing on samples collected during drilling, which should two weeks for index testing and approximately four weeks for analytical testing. After index testing is complete, we will mobilize to the field to conduct the infiltration testing, which should be accomplished over the course of approximately one week. Note that the infiltration testing needs to occur when ambient air temperatures are above freezing. Upon completion of our infiltration testing, we will commence geotechnical evaluation, groundwater modelling and the development of our geotechnical report. Considering our current work load, we should be able to deliver our final report within eight weeks of completing the infiltration testing. Preliminary information can be provided prior to the submittal of our report on an informal basis if requested.

FEE BASIS AND LIMITATIONS

We are prepared to undertake the work as outlined above in accordance with the attached Summary Cost Estimate on a time and materials basis. We assume that these services will be provided under a mutually agreed upon subcontract for professional services. This estimate includes the above proposed work through the submittal of our final report. If other services are desired after submittal of the report, such as review of plans and specifications, and construction monitoring or material testing; the cost would be in addition to that quoted above. We attached *Important Information About Your Geotechnical/Environmental Proposal* to our proposal to assist you and others in understanding the proper use and limitation of our services.

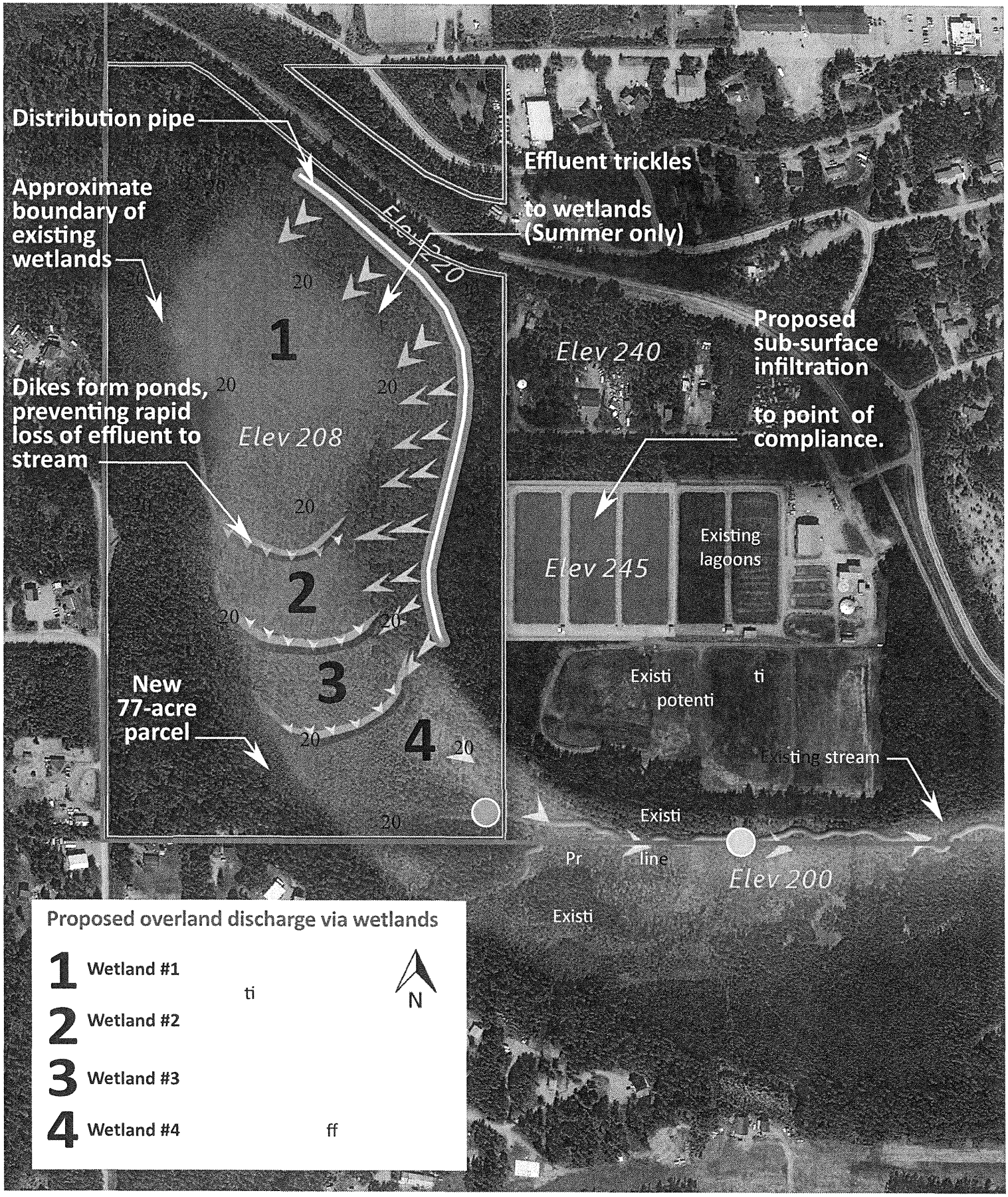
If you have questions or comments or wish to revise the scope of our services, please contact the undersigned. We look forward to the opportunity to work with you on this project.

Sincerely,

SHANNON & WILSON, INC.

Kyle Brennan, P.E.
Senior Associate

Attachments: Site Plan
Summary Cost Estimate
Important Information About Your Geotechnical/Environmental Proposal



20 Proposed Boring Location and Depth in Feet

Proposed Infiltration Test Area

SUMMARY COST ESTIMATE
WASILLA WASTEWATER TREATMENT PLANT IMPROVEMENTS

GEOTECHNICAL SERVICES						COST
1. Existing Data Review						**$ 930.00**
Sr. Principal Engineer	2	hrs. x	$ 135.00	/hr.	$ 270.00	
Senior Professional	6	hrs. x	$ 110.00	/hr.	$ 660.00	
2. Mob./Demob. For Field Program						**$ 2,900.00**
Track Rig & Crew	1	lump sum	$ 920.00	each	$ 920.00	
Project Setup and Utility Locates	6	hrs. x	$ 110.00	/hr.	$ 660.00	
USACE Nationwide #6 Permit Coordination	12	hrs. x	$ 110.00	/hr.	$ 1,320.00	
3. Drilling / Sampling						**$ 39,933.00**
Tree Clearing	1	x	$ 5,175.00	each	$ 5,175.00	
Senior Professional (Tree Clearing Coord.)	12	hrs. x	$ 110.00	/hr.	$ 1,320.00	
Senior Professional (Drilling Observation)	60	hrs. x	$ 110.00	/hr.	$ 6,600.00	
Drill and sample soil borings	5	days x	$ 2,990.00	/day	$ 14,950.00	
Four 50-foot and ten 20-foot geotechnical borings						
2-inch Monitoring Well Materials	200	ft. x	$ 19.00	/ft.	$ 3,800.00	
Piezometer Materials	200	ft. x	$ 2.00	/ft.	$ 400.00	
Bentonite	6	bags x	$ 27.00	/bag	$ 162.00	
Senior Professional (Well Development/Sampling)	20	hrs. x	$ 110.00	/hr.	$ 2,200.00	
Senior Professional (Piezometer Readings - six events)	36	hrs. x	$ 111.00	/hr.	$ 3,996.00	
Field Consumables	14	days x	$ 20.00	/day	$ 280.00	
Vehicle	14	days x	$ 75.00	/day	$ 1,050.00	
4. Infiltration Testing						**$ 45,122.00**
Excavation Contractor Mobilization	1	x	$ 575.00	each	$ 575.00	
Excavate/backfill pits, water trucks, infiltration tests	4	tests x	$ 7,763.00	each	$ 31,052.00	
Sr. Professional Coordination and Setup	16	hrs. x	$ 110.00	/hr.	$ 1,760.00	
Sr. Professional Field Time (Test Pit Observations)	12	hrs. x	$ 110.00	/hr.	$ 1,320.00	
Professional IV Field Time (Infiltration Test Observations)	72	hrs. x	$ 95.00	/hr.	$ 6,840.00	
Tree Clearing	1	days x	$ 1,725.00	/day	$ 1,725.00	
Flow Meter Rental (Includes Two Flowmeters)	4	days x	$ 200.00	/day	$ 800.00	
Vehicle	5	days x	$ 150.00	/day	$ 750.00	
Miscellaneous Field Supplies/Consumables	1	x	$ 300.00	each	$ 300.00	
5. Laboratory Testing						**$ 9,838.00**
Water contents	120	samples x	$ 15.00	each	$ 1,800.00	
Gradation (1.5-inch to #200)	20	samples x	$ 100.00	each	$ 2,000.00	
Gradation and Hydrometer (24 hour)	14	samples x	$ 225.00	each	$ 3,150.00	
P-200	20	samples x	$ 60.00	each	$ 1,200.00	
RCRA Metals-Soil (SW6020)	4	samples x	$ 179.00	each	$ 716.00	
Dissolved Metals (SW6020)	4	samples x	$ 173.00	each	$ 692.00	
Nitrate/Nitrite (SM4500-NO3 F)	4	samples x	$ 41.00	each	$ 164.00	
pH (SM 4500-H+B)	4	samples x	$ 29.00	each	$ 116.00	
6. Groundwater Modeling and Analysis						**$ 41,000.00**
Principal	20	hrs. x	$ 210.00	/hr.	$ 4,200.00	
Sr. Associate	40	hrs. x	$ 170.00	/hr.	$ 6,800.00	
Sr. Principal Engineer	80	hrs. x	$ 135.00	/hr.	$ 10,800.00	
Senior Professional	160	hrs. x	$ 110.00	/hr.	$ 17,600.00	
Admin Asst II	20	hrs. x	$ 80.00	/hr.	$ 1,600.00	
7. Engineering and Reporting						**$ 18,862.00**
Principal	6	hrs. x	$ 210.00	/hr.	$ 1,260.00	
Sr. Associate	12	hrs. x	$ 170.00	/hr.	$ 2,040.00	
Sr. Principal Engineer	20	hrs. x	$ 135.00	/hr.	$ 2,700.00	
Senior Professional	100	hrs. x	$ 110.00	/hr.	$ 11,000.00	
Senior Professional (Environmental)	12	hrs. x	$ 111.00	/hr.	$ 1,332.00	
Admin Asst II	6	hrs. x	$ 80.00	/hr.	$ 480.00	
Reproduction					$ 50.00	
					Total	**$ 158,585.00**

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Proposal 32-2-04641

Date: July 2014
To: USKH
Re: Wasilla WTP Improvements, Wasilla, Alaska

Important Information About Your Geotechnical/Environmental Proposal

More construction problems are caused by site subsurface conditions than any other factor. The following suggestions and observations are offered to help you manage your risks.

HAVE REALISTIC EXPECTATIONS.

If you have never before dealt with geotechnical or environmental issues, you should recognize that site exploration identifies actual subsurface conditions at those points where samples are taken, at the time they are taken. The data derived are extrapolated by the consultant, who then applies judgment to render an opinion about overall subsurface conditions; their reaction to construction activity; appropriate design of foundations, slopes, impoundments, recovery wells; and other construction and/or remediation elements. Even under optimal circumstances, actual conditions may differ from those inferred to exist, because no consultant, no matter how qualified, and no subsurface program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time.

DEVELOP THE SUBSURFACE EXPLORATION PLAN WITH CARE.

The nature of subsurface explorations—the types, quantities, and locations of procedures used—in large measure determines the effectiveness of the geotechnical/environmental report and the design based upon it. The more comprehensive a subsurface exploration and testing program, the more information it provides to the consultant, helping to reduce the risk of unanticipated conditions and the attendant risk of costly delays and disputes. Even the cost of subsurface construction may be lowered.

Developing a proper subsurface exploration plan is a basic element of geotechnical/environmental design, which should be accomplished jointly by the consultant and the client (or designated professional representatives). This helps the parties involved recognize mutual concerns and makes the client aware of the technical options available. Clients who develop a subsurface exploration plan without the involvement and concurrence of a consultant may be required to assume responsibility and liability for the plan's adequacy.

READ GENERAL CONDITIONS CAREFULLY.

Most consultants include standard general contract conditions in their proposals. One of the general conditions most commonly employed is to limit the consulting firm's liability. Known as a "risk allocation" or "limitation of liability," this approach helps prevent problems at the beginning and establishes a fair and reasonable framework for handling them, should they arise.

Various other elements of general conditions delineate your consultant's responsibilities. These are used to help eliminate confusion and misunderstandings, thereby helping all parties recognize who is responsible for different tasks. In all cases, read your consultant's general conditions carefully and ask any questions you may have.

HAVE YOUR CONSULTANT WORK WITH OTHER DESIGN PROFESSIONALS.

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a consultant's report. To help avoid misinterpretations, retain your consultant to work with other project design professionals who are affected by the geotechnical/environmental report. This allows a consultant to explain report implications to design professionals affected by them, and to review their plans and specifications so that issues can be dealt with adequately. Although some other design professionals may be familiar with geotechnical/environmental concerns, none knows as much about them as a competent consultant.

OBTAIN CONSTRUCTION MONITORING SERVICES.

Most experienced clients also retain their consultant to serve during the construction phase of their projects. Involvement during the construction phase is particularly important because this permits the consultant to be on hand quickly to evaluate unanticipated conditions, to conduct additional tests if required, and when necessary, to recommend alternative solutions to problems. The consultant can also monitor the geotechnical/environmental work performed by contractors. It is essential to recognize that the construction recommendations included in a report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site.

Because actual subsurface conditions can be discerned only during earthwork and/or drilling, design consultants need to observe those conditions in order to provide their recommendations. Only the consultant who prepares the report is fully familiar with the background information needed to determine whether or not the report's recommendations are valid. The consultant submitting the report cannot assume responsibility or liability for the adequacy of preliminary recommendations if another party is retained to observe construction.

REALIZE THAT ENVIRONMENTAL ISSUES MAY NOT HAVE BEEN ADDRESSED.

If you have requested only a geotechnical engineering proposal, it will not include services needed to evaluate the likelihood of contamination by hazardous materials or other pollutants. Given the liabilities involved, it is prudent practice to always have a site reviewed from an environmental viewpoint. A consultant cannot be responsible for failing to detect contaminants when the services needed to perform that function are not being provided.

ONE OF THE OBLIGATIONS OF YOUR CONSULTANT IS TO PROTECT THE SAFETY, PROPERTY, AND WELFARE OF THE PUBLIC.

A geotechnical/environmental investigation will sometimes disclose the existence of conditions that may endanger the safety, health, property, or welfare of the public. Your consultant may be obligated under rules of professional conduct, or statutory or common law, to notify you and others of these conditions.

RELY ON YOUR CONSULTANT FOR ADDITIONAL ASSISTANCE.

Your consulting firm is familiar with several techniques and approaches that can be used to help reduce risk exposure for all parties to a construction project, from design through construction. Ask your consultant, not only about geotechnical and environmental issues, but others as well, to learn about approaches that may be of genuine benefit.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland