452-05

DEPARTMENT OF THE ARMY
Office of the Assistant Chief of Staff for Installation Management
BRAC Division
Seneca Army Depot, Seneca, NY

MEMORANDUM FOR RECORD 15 May 2017

SUBJECT: Environmental Liabilities for site SEAD-006, Ash Landfill Site (SEAD-3, 6, 8, 14, and 15) at Seneca Army Depot

This memorandum serves as formal documentation of the information used to develop the Cost-To-Complete (CTC) estimate for SEAD 006 during the 2017 data call. Estimators experience is documented on the Estimator Experience Form, per the Federal Accounting Standards Advisory Board (FASAB) Handbook Technical Release 2 (Enclosure 1). Future monitoring cost is based on task order pricing for monitoring. Well Abandonment costs including site closeout were estimated using costs from the FY11 contract W912DY-08-D-0003, Task Order 0008; 6 wells @ $31,398= $5,223, and closeout report, $18,206.00. These costs were escalated to FY16 in the FY16 CTC. These costs were escalated from FY16 to FY17 using the FY17 escalation factor in the 3 April 2017 Data Call Memorandum. The technical and project management oversight costs were estimated using the hourly rates in the FY17 Data Call Memorandum. Seneca Army Depot Activity is in the "other US" areas and additional locality adjustment is not required. RA(O) in the form of groundwater monitoring costs were obtained from the contract task order (Source 2). The ROD implementation was initiated in 2007. Of the expected 15 years of monitoring expected per the ROD (Enclosure 2), 5 years remain. The required Land Use Control management of this AOC is included in SEAD 009.

Site History: The Ash Landfill OU (Ash Landfill) occupies approximately 130 acres along the western boundary of SEAD. The Ash Landfill is composed of five SWMUs:
- The Incinerator Cooling Water Pond (SEAD-003),
- The Ash Landfill (SEAD-006),
- The Non-Combustible Fill Landfill (NCFL) (SEAD-008),
- The Refuse Burning Pits (SEAD-014), and
- The Abandoned Solid Waste Incinerator Building (SEAD-015).

Primary contaminants are volatile organic compound (VOCs), semi-volatile organic compound (SVOCs) [mainly polycyclic aromatic hydrocarbons (PAHs)] and metals. The source of the VOCs was most likely the three alleged solvent dump areas located northwest of the Ash Landfill site.

Two removal actions have been performed at the Ash Landfill. The first action removed a former 1,000-gallon heating oil underground storage tank (UST) and the second was a non-time critical removal action conducted between August

1994 and June 1995. The latter consisted of excavation and thermal treatment of VOC-impacted soils using the low temperature thermal desorption process.

A ROD was signed in 2004 that included the RAs of excavation and off-site disposal of debris piles, establishment and maintenance of a vegetative soil cover for the Ash Landfill and the NCFL, and installation of three in situ permeable reactive barrier walls.

The LUC Inspection and 5 year Review for this site has been combined with SEAD-009. These requirements are now included with SEAD-009 and do not appear with this site.

The Final Report for the Annual Report for 2015 for the groundwater monitoring is not yet approved by EPA and the 2014 Annual Report is included (encl 4).

This site includes SEAD-003, SEAD-008, SEAD-014, and SEAD-015 for tracking purposes.

Current Site Status: SEAD-006, Ash Landfill Site (SEAD-3, 6, 8, 14, and 15). In-situ treatment and monitoring of ground water is required until ground water and soil meet cleanup standards. Groundwater data has demonstrated the need for regeneration of the bioreactive wall, which is consistent with industry regeneration time frames. A contract was awarded 30 March 2016 to accomplish biowall regeneration of available organic content. The field work for regeneration is scheduled for 4Q FY17.

Exit Strategy: The RA(O) includes monitoring until GW cleanup standards have been met, followed by site closeout documentation. The ramp-down strategy is detailed in the LTM plan. This plan contains provisions to reduce monitoring requirements as cleanup goals are met, as reviewed in the five year reviews. Land use controls are required to maintain landfill covers. The LUC will be in perpetuity however costing is estimated for 30 years IAW the Army Defense Environmental Restoration Program (DERP) Manual. LUC Cost for this site is included in SEAD 009 as part of the installation LUC review and the 5 Year review program.

Enclosures:
1. Estimator's Experience Form
2. Final Record of Decision, Ash Landfill, January 2005
3. Contract #: W912DY-09-D-0062, D.O. 0023 dated 30 May 2016
4. Final Annual Report and Year 6 Review for the Ash Landfill dated April 2014
5. Engineering Estimate and backup contract costs
6. Estimate Summary Table Escalation Rates per 3 April 2017 Data Call Memorandum

Engineering Estimate Assumptions:

Well Abandonment (LTM)

1. Three well groups: Group 1 (19 wells), Biowall (11 wells), Trench (11 wells)= 41 Wells
2. Well depth: 15 feet
3. Well diameter: 2 inches
4. Formation type: Unconsolidated
5. Method: Overdrill/removal

Site Closeout Documentation (LTM phase):

1. Site Closeout is moderate complexity
2. Kick-off, review and regulatory meetings included
3. Work Plans and reports- one completion report
4. Documents (16 Boxes) will be stored for 30 years

Owner Support Assumptions:
COE oversight costs are estimated by estimated hours and rates shown in the 3 April Data Call Memorandum. Estimated hours are based upon project and technical management requirements for scoping, contract management and stakeholder interaction over the life of the project.

Cost Summary SEAD-6, 3, 8, 14, 15

RA(O)

GW Monitoring / year:
Sampling events (task 5(a) Enclosure 3)
$51,594.03 x 6 years= $309,564.18 **$309,564**
(Rounded to $309,564)

Owner Support Cost (Enclosure 4)
$184.50 x 210 hrs = $38,745 **$38,745**

LTM

Well Abandonment/Site Close-out (RACER) **$136,138**
Engineering Estimate = $136,138.40
Rounded, $136,138)

Total Site Cost **$484,447($484K)**

The cost estimate on the EST form rounded the CTC to $484K.

Material Change:

The CTC for FY16 was $479K and the CTC for FY17 is $484K. The calculated percentage change was 4% more than 2016. There is a material change due to the technical and project management oversight rate calculation and escalation rate.

Material Change = absolute value of (indexed prior year CTC – current CTC – current obligations)/indexed prior year CTC

MC = (($484K * 1.0338) – $479K – 0) / ($484K * 1.0338) = %

21,359 / 500,359 = .0427 = 4.3%

Prepared by: Randall Battaglia
Cost Estimator

Signature Date

Reviewed by: Bill Millar
Cost Estimate Reviewer

Signature Date

ESTIMATOR EXPERIENCE

ESTIMATOR NAME: Randall Battaglia	**POSITION: Project Manager**
LOCATION: USACE NY Seneca Proj. Ofc	**YEARS OF EXPERIENCE: 31 years**
EMAIL: Randy.W.Battaglia@usace.army.mil	**PHONE NUMBER:607-869-1532**

DESCRIPTION: (Insert description of experience here, such as educational background, training, etc.)
B.S. Chemical Engineering, 1982; Certified Project Manager, 2007;

Work Experience: Project Manager, USACE, 1995-Present: Prepare and manage Life-Cycle Cost for HTRW projects; executes the COE project management business process & establishing a project management plan with a project development team consisting of interdisciplinary, regional or other agencies teams to execute & ensure all projects meet customer, budgetary, safety, scope and schedule requirements during the life cycle of the project, under changing management parameters. Represents the Army as an Alternate for the installation manager in all customer/sponsor, congressional, public contacts, including public meetings, organizations, property transfers with the state, EPA, county, & independent organizations interested in the projects.

Environmental Coordinator, Seneca Army Depot, 1985-1995; performed all program management, cost estimation, budget regulatory, permitting, and other management for the environmental program at the active Seneca Army Depot for hazardous waste, TSDF, air, wetlands, CERCLA, RCRA, engineering projects, etc.

Process Engineer, IEC Electronics, 1983-1985 Process engineering for production, product development, personnel, process & quality control

Relevant Continuing Education: Network Systems Analysis; Project Management for Military Projects & HTRW projects; Environmental Auditing; Economic Assessment; Various Project Management & environmental remediation courses; Cost Estimating

SITE TYPE REVIEWED: Insert site number(s) at which experience gained for each site type to the maximum extent possible.

	SITE TYPE	SITE NUMBER		SITE TYPE	SITE NUMBER
	Above Ground Storage Tank	SEAD 5,59,71		Open Burn	SEAD 23, 24, 006-R-01, 003-R-01, 007-R-01
	Burn Area	SEAD 24,45,25,26		Plating Shop	
	Chemical Disposal	SEAD 13,72,4		POL (Petroleum/Lubricant Lines	SEAD 9
	Contaminated Buildings	SEAD 12, 16,17, 3		Radioactive Waste Area	SEAD 012,48,72, 63, NRC License closeout
	Contaminated Fill	SEAD 3, 9,4		Sewage Treatment Plant	SEAD 20,21,22
	Contaminated Groundwater	SEAD 025,006, 001-R-01, 023, 064B&D, 041		Small Arms Range	SEAD 57, 46, 120B,122A,122B
	Contaminated Sediments	SEAD 4, 3,		Soil Contamination After Tank Removal	SEAD 59,
	Contaminated Soil Piles	SEAD 5		Spill Site Area	SEAD 122
	Dip Tank			Storage Area	SEAD 123
	Disposal Pit/Dry Well			Surface Disposal Area	SEAD 023, 006-R-01, 024,
	Explosive Ordnance Disposal Area	SEAD 23, 24, 006-R-01, 003-R-01, 007-R-01		Training and Maneuver Area	
	Fire/Crash Training Area	SEAD 025,026		Underground Storage Tank	SEAD 27
	Firing Range	SEAD 122		Underground Tank Farm	
	Incinerator	SEAD 006, 001-R-01,019, 018		Unexploded Munitions/Ordnance	SEAD 006-R-01, 001-R-01,003-R-01, 007-R-01
	Industrial Discharge			Wash rack	
	Landfill	SEAD 006, 064 A,B&D, 011,		Waste Lines	
	Maintenance Yard	SEAD 122		Waste Treatment Plant	
	Oil Water Separator	SEAD 27,			

US Army Corps of Engineers®

Certificate of Completion

Randall w Battaglia

has successfully completed

Environmental Liability (EL)/Cost to Complete (CTC) Training

Nov 09, 2015 - Web/Audio Teleconference

Sandi Zebrowski, P.E.
Director, USACE Environmental and Munitions Center of Expertise,

FUDS Training Services
fudstraining@usace.army.mil

ENCLOSURE 2

FINAL

RECORD OF DECISION

FOR

ASH LANDFILL

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared for:

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

and

UNITED STATES ARMY CORPS OF ENGINEERS
4820 UNIVERSITY SQUARE
HUNTSVILLE, ALABAMA

Prepared By:

PARSONS
150 Federal St, 4th Floor
Boston, Massachusetts

Contract Number: DACA87-95-D-0031
Delivery Order 0022

January 2005

ENCL 2

natural biodegradation, since the chemical and biological
hydrogen, a substance that is used up in microbial dechlorination. This would decrease contaminan
levels, which can be expected to significantly reduce the time to achieve ARAR compliance
compared to Alternatives MC-3, MC-5 and MC-6.

Alternatives MC-5 and MC-6 include surface water discharge of treated groundwater. Discharge requirements are generally the federal and State AWQC. The discharge from the groundwater treatment system would be designed to meet the federal AWQC and the anti-degradation limits.

Alternatives MC-5 and MC-6 are expected to achieve other ARARs including the RCRA requirements for treatment facilities, the Department of Transportation (DOT) requirements for off-site transportation of any residual materials, and the New York Solid and Hazardous Waste Regulations and the Occupational Safety and Health Act (OSHA). In addition, the operation of the treatment system in Alternative MC-4 would comply with federal and state air standards.

10.2.3 Long-Term Effectiveness and Permanence

Alternatives SC-1, MC-1 and MC-2 would not remove or contain contaminants in the groundwater in a continuous or active manner, with the exception of what would be removed by the reactive barrier wall that is currently in place and operating. Contaminants would continue to migrate and the volume of contaminated groundwater would increase. The No-Action alternative, MC-1, and the alternative water supply alternative, MC-2, are not considered to be effective over the long-term because contaminated groundwater, other than that captured via the reactive barrier wall, remains on-site and some migration off of the property would occur. This condition currently does not affect the drinking water of off-site residents and groundwater modeling has indicated that the concentrations of contaminants would be below drinking water standards by the time the groundwater reaches these wells. These alternatives would require long-term monitoring and sampling.

Alternatives MC-3, MC-5 and MC-6 are all expected to be equal in providing long-term permanence, since each alternative would operate until the desired concentration levels are achieved. The limiting factor in achieving this goal is the rate at which contaminants can be flushed out of the soil matrix. Since the aquifer matrix is glacial till and is high in clay content, diffusion is likely to play an important role in releasing contamination from the aquifer. This means the time for cleanup would be long, estimated to be approximately 45 years. MC 3a is expected to take 15 years. ? time - 6a

Alternative SC-2 is ranked high for long-term effectiveness and permanence since all materials would be excavated and disposed of in an off-site landfill. Once in the landfill, the contaminated materials are permanently entombed. However, since this alternative does not permanently fix the contaminants and involves such large volume of soil, these wastes may not be as permanently entombed as Alternative SC-4. Therefore, although SC-2 is ranked high for permanence, Alternative

11.0 SELECTED REMEDY

Based on an evaluation of the various options, the selected remedy is Alternative SC-5 for source control and Alternative MC-3a for migration control (Figure 11-1). The elements that compose the selected remedy include the following:

- Excavation and off-site disposal of debris piles and establishment and maintenance of a vegetative soil cover for the Ash Landfill and the Non-Combustion Fill Landfill (NCFL) for source control;
- Installation of three in-situ permeable reactive barrier walls, and maintenance of the proposed walls and the existing wall for migration control of the groundwater plume;
- A Contingency Plan will be developed to include one of the following options; provision of an alternative water supply for potential downgradient receptors (farmhouse) or air sparging of the plume in the event that groundwater conditions downgradient of the recommended remedial action described above exceed trigger values;
- Land Use Controls (LUCs) to attain the remedial action objectives; and,
- Completion of a review of the selected remedy every five-years (at minimum), in accordance with Section 121(c) of the CERCLA. If a wall material other than iron is selected, the Army will conduct a review of the remedy's effectiveness one year after the walls are installed. Subsequent annual reviews will be performed until the first five year review. The typical five year review schedule will be followed thereafter.

Land Use Control Performance Objectives

The LUC performance objectives for the Ash Landfill are to:

- Prevent access or use of the groundwater until cleanup levels are met.
- Maintain the integrity of any current or future remedial or monitoring system such as monitoring wells and impermeable reactive barriers.
- Prohibit excavation of the soil or construction of inhabitable structures (temporary or permanent) above the area of the existing groundwater plume.
- Maintain the vegetative soil layer over the ash fill areas and the NCFL to limit ecological contact.

The groundwater LUCs will be continued until such time that the concentration of hazardous substances in the groundwater have been reduced to levels that allow for unlimited exposure and unrestricted use. Intrusive restrictions for those areas requiring a vegetative soil cover will continue indefinitely. These land use controls will be implemented over the area of the groundwater plume,

NCFL, and the Ash Landfill, as shown on Figure 1-1.

LUC Remedial Design

In order to implement the Army's remedy, which includes the imposition of land use controls, a LUC Remedial Design for the Ash Landfill will be prepared which satisfies the applicable requirements o Paragraphs (a) and (c), Environmental Conservation Law (ECL) Article 27, Section 1318 Institutional and Engineering Controls. In addition, the Army will prepare an environmenta easement for the Ash Landfill, consistent with Section 27-1318(b) and Article 71, Title 36 of ECL, in favor of the State of New York and the Army, which will be recorded at the time of the property's transfer from federal ownership. A schedule for completion of the draft Ash Landfill LUC Remedial Design Plan (LUC RD) will be completed within 21 days of the ROD signature, consistent with Section 14.4 of the Federal Facilities Agreement (FFA).

The Army shall implement, inspect, report, and enforce the LUCs described in this ROD in accordance with the approved LUC RD. Although the Army may later transfer these responsibilities to another party by contract, property transfer agreement, or through other means, the Army shall retain ultimate responsibility for remedy integrity. Should the Army transfer these responsibilities, the Army shall provide timely written notice to the regulators of the transferee which shall include the entity's name, address, and general remedial responsibility.

During the excavation of the Debris Piles, the Incinerator Cooling Water Pond area will be re-graded to fill the pond.

The five-year reviews are intended to evaluate whether the response actions remain protective of public health and the environment, and they will consist of document review, ARAR review, interviews, inspection/technology review, and reporting.

A contingency plan will be developed as part of this preferred alternative. The contingency plan will include additional monitoring and air sparging, as necessary, and implementation of an alternative water supply for potential downgradient receptor (farmhouse), if required based on trigger criteria. Following installation of the reactive walls, groundwater from monitoring well MW-56 will be analyzed, and the VOC results will be compared to the Class GA groundwater standards (trigger criteria).. If a statistical analysis of the data for this well shows exceedances of Class GA standards, additional remedial action would be required. Temporary wells will be installed in the vicinity of MW-56, and the results will be used to develop an approach for air sparging. A description of the air sparging process is summarized in Alternative MC-3. If concentrations at MW-56 continue to exceed the trigger values following air sparging, an activated carbon system for the farmhouse water supply system would be installed or public water would be delivered to the house. More extensive air sparging would be performed until trigger values are no longer exceeded.

Alternative SC-5 was selected as the preferred source control alternative because the vegetative co will be an effective barrier against exposure and is therefore one of the highest ranked alternati for protectiveness to human and ecological receptors. The alternative minimizes the negat short-term effects, such as truck traffic and dust problems, that a large excavation would cause. SC will be compliant with all ARARs. This alternative also minimizes the amount of off-site land filli that will be required. SC-5 is the easiest to implement and has the lowest cost.

Alternative MC-3a was selected as the preferred management of migration alternative because it wi achieve substantial risk reduction by chemically destroying the dissolved chlorinated ether compounds in groundwater. This alternative is effective in achieving these reductions. Th alternative will be protective of human health and the environment by preventing off-site migratio of the VOC plume. Monitoring of the plume will ensure that downgradient receptors are protected The monitoring plan will provide adequate warning should monitoring data indicate that the plume i threatening the drinking water supply wells of site neighbors, i.e., the farmhouse wells.

GW Monitoring

Section A - Solicitation/Contract Form

AWARD NARRATIVE
Task Order 0023, which contains Firm Fixed-Price (FFP) tasks, is being issued to Parsons Government Services, Inc for Remedial Action at Seneca Army Depot Activity, Romulus, NY, EPA Site ID# NY0213820830, NY Site ID# 8-50-006 in accordance with Performance Work Statement Revision 2, dated March 24, 2016.

The period of performance is date of award through March 30, 2018.

US Department of Labor Wage Determination Number 15-2381, Revision 1, dated March 1, 2016 shall be used with project task order.

The Terms and Conditions of the basic contract, W912DY-09-D-0062 takes precedence in the case of any ambiguity or conflict.

This task order is awarded in the amount of $1,211,190.20 of which $637,951.83 is being funded at the time of award.

Task	Description	Type	Amount	Total
1	UFP-QAPP and QASP	FFP	7,063.20	7,063.20
2	GIS	FFP	3,908.96	3,908.96
2a	Optional, Additional GIS per FY	FFP	1,525.90	
3	Long Term Monitoring of The OB Grounds	FFP		
3a	(FY17) First Annual Groundwater Monitoring	FFP	21,453.84	21,453.84
3b	Optional, (FY18) Second Annual Groundwater Monitoring	FFP	21,457.76	
3c	Optional, (FY19) Third Annual Groundwater Monitoring	FFP	21,461.68	
3d	Optional, (FY20) Fourth Annual Groundwater Monitoring	FFP	21,465.59	
3e	Optional, (FY21) Fifth Annual Groundwater Monitoring	FFP	21,469.51	
4	Long Term Monitoring of the Fire Training and Demonstration Pad Area	FFP		
4a	(FY17) First Annual Groundwater Monitoring	FFP	26,049.47	26,049.47
4b	Optional, (FY18) Second Annual Groundwater Monitoring	FFP	26,080.17	
4c	Optional, (FY19) Third Annual Groundwater Monitoring	FFP	26,110.87	
4d	Optional, (FY20) Fourth Annual Groundwater Monitoring	FFP	26,141.57	
4e	Optional, (FY21) Fifth Annual Groundwater Monitoring	FFP	26,172.27	
5	Long Term Monitoring of the Ash Landfill Operable Unit	FFP		
5a	(FY17) First Annual Groundwater Monitoring	FFP	51,594.03	51,594.03
5b	Optional, (FY18) Second Annual Groundwater Monitoring	FFP	51,686.28	
5c	Optional, (FY19) Third Annual Groundwater Monitoring	FFP	51,778.54	
5d	Optional, (FY20) Fourth Annual Groundwater Monitoring	FFP	51,870.79	
5e	Optional, (FY21) Fifth Annual Groundwater Monitoring	FFP	51,963.04	
6	Ash Landfill Operable Unit Biowall Recharge	FFP	440,038.65	440,038.65
7	Long Term Monitoring of the Deactivation Furnaces Operable Unit	FFP		
7a	(FY17) First Annual Groundwater Monitoring	FFP	23,146.49	23,146.49
7b	Optional, (FY18) Second Annual Groundwater Monitoring	FFP	23,178.47	
7c	Optional, (FY19) Third Annual Groundwater Monitoring	FFP	23,210.46	
7d	Optional, (FY20) Fourth Annual Groundwater Monitoring	FFP	23,242.44	
7e	Optional, (FY21) Fifth Annual Groundwater Monitoring	FFP	23,274.43	
8	Monitoring of LUCs at Various Sites	FFP		
8a	(FY17) First Annual Monitoring Event	FFP	17,934.42	17,934.42

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8b	Optional, (FY18) Second Annual Monitoring Event	FFP	17,934.42	
8c	Optional, (FY19) Third Annual Monitoring Event	FFP	17,934.42	
8d	Optional, (FY20) Fourth Annual Monitoring Event	FFP	17,934.42	
9	Monitoring of LUCs at Various Munition Sites	FFP		
9a	(FY17) First Annual Monitoring Event	FFP	5,895.00	5,895.00
9b	Optional, (FY18) Second Annual Monitoring Event	FFP	5,895.28	
9c	Optional, (FY19) Third Annual Monitoring Event	FFP	5,895.28	
9d	Optional, (FY20) Fourth Annual Monitoring Event	FFP	5,895.28	
10	Five-year Review	FFP	27,488.41	27,488.41
11	Community Relations Support	FFP	13,379.36	13,379.36
11a	Optional, Additional Meetings	FUP	8,646.02	
12	Optional, Administrative Record	FFP	1,013.48	
	Totals		$1,211,190.20	$637,951.83

ORDER FOR SUPPLIES OR SERVICES

1. CONTRACT/PURCH. ORDER/ AGREEMENT NO.	2. DELIVERY ORDER/ CALL NO.	3. DATE OF ORDER/CALL (YYYYMMMDD)	4. REQ. PURCH. REQUEST NO.	5. PRIORITY
W912DY-09-D-0062	0023	2016 Mar 30	W31RYO60838003	

6. ISSUED BY CODE W912DY
US ARMY ENGINEERING & SUPPORT CENTER
CEHNC-CT
4820 UNIVERSITY SQUARE
HUNTSVILLE AL 35816-1822

7. ADMINISTERED BY *(if other than 6)* CODE W912DY
DIRECTORATE OF CONTRACTING - HNC
ATTN: MICHELLE BLACKMON
256-895-2531
HUNTSVILLE AL 35816

8. DELIVERY FOB
[X] DESTINATION
[ ] OTHER
(See Schedule if other)

9. CONTRACTOR CODE 1BVK6 FACILITY
NAME AND ADDRESS
PARSONS GOVERNMENT SERVICES INC.
MICHELLE SMITH
100 W WALNUT ST
PASADENA CA 91124-0001

10. DELIVER TO FOB POINT BY (Date) *(YYYYMMMDD)*
SEE SCHEDULE

11. MARK IF BUSINESS IS
[ ] SMALL
[ ] SMALL DISADVANTAGED
[ ] WOMEN-OWNED

12. DISCOUNT TERMS
Net 30 Days

13. MAIL INVOICES TO THE ADDRESS IN BLOCK
See Item 15

14. SHIP TO CODE W912DY
SEE SCHEDULE
SEE SCHEDULE
SEE SCHEDULE
SEE SCHEDULE AA

15. PAYMENT WILL BE MADE BY CODE 864145
US ARMY ENG & SUP CENTER - FINANCE OFFIC
US ARMY CORPS OF ENGRS FINANCE CTR
5722 INTEGRITY DRIVE
MILLINGTON TN 38054-5005

MARK ALL PACKAGES AND PAPERS WITH IDENTIFICATION NUMBERS IN BLOCKS 1 AND 2.

16. TYPE OF ORDER
DELIVERY/CALL [X] This delivery order/call is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract.
PURCHASE [ ] Reference your quote dated
Furnish the following on terms specified herein. REF:

ACCEPTANCE. THE CONTRACTOR HEREBY ACCEPTS THE OFFER REPRESENTED BY THE NUMBERED PURCHASE ORDER AS IT MAY PREVIOUSLY HAVE BEEN OR IS NOW MODIFIED, SUBJECT TO ALL OF THE TERMS AND CONDITIONS SET FORTH, AND AGREES TO PERFORM THE SAME.

PARSONS GOVERNMENT SERVICES	[signature]	Don Silvernail, VP	3/30/16
NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED (YYYYMMMDD)

[X] If this box is marked, supplier must sign Acceptance and return the following number of copies: 3/30/16

17. ACCOUNTING AND APPROPRIATION DATA/ LOCAL USE
See Schedule

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/ SERVICES	20. QUANTITY ORDERED/ ACCEPTED*	21. UNIT	22. UNIT PRICE	23. AMOUNT
	SEE SCHEDULE				

* If quantity accepted by the Government is same as quantity ordered, indicate by X. If different, enter actual quantity accepted below quantity ordered and encircle.

24. UNITED STATES OF AMERICA
TEL:
EMAIL: MULLADY.RICHARD.J.1090040282
BY: CONTRACTING / ORDERING OFFICER
Digitally signed by MULLADY.RICHARD.J.1090040282
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=MULLADY.RICHARD.J.1090040282
Date: 2016.03.30 15:39:53 -05'00'

25. TOTAL	$637,951.83
26. DIFFERENCES	

27a. QUANTITY IN COLUMN 20 HAS BEEN
[ ] INSPECTED [ ] RECEIVED [ ] ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

b. SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE | c. DATE (YYYYMMMDD) | d. PRINTED NAME AND TITLE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

e. MAILING ADDRESS OF AUTHORIZED GOVERNMENT REPRESENTATIVE

f. TELEPHONE NUMBER | g. E-MAIL ADDRESS

28. SHIP NO.	29. DO VOUCHER NO.	30. INITIALS	
[ ] PARTIAL [ ] FINAL	32. PAID BY	33. AMOUNT VERIFIED CORRECT FOR	
31. PAYMENT [ ] COMPLETE [ ] PARTIAL [ ] FINAL		34. CHECK NUMBER	
		35. BILL OF LADING NO.	

36. I certify this account is correct and proper for payment.
a. DATE (YYYYMMMDD) | b. SIGNATURE AND TITLE OF CERTIFYING OFFICER

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED (YYYYMMMDD)	40. TOTAL CONTAINERS	41. S/R ACCOUNT NO.	42. S/R VOUCHER NO.

3.5 Task 5, (CLIN 0005) DESCRIPTION OF SERVICES FOR LONG TERM MONITORING OF THE ASH LANDFILL OPERABLE UNIT: This is a firm fixed price task.
Objective: Conduct a RA in accordance with the accepted UFP-QAPP, SAP, Seneca LTM Plan, and all applicable standards such that the objective of this PWS is met. The RA shall include annual ground water monitoring to include water level and water quality monitoring and preparation of annual report summarizing the results of each annual event. The annual ground water monitoring shall include two biannual monitoring events at mid-year and end-of-year.

3.5.1 Task 5a, CLIN 0005a (FY17)) FIRST ANNUAL GROUNDWATER MONITORING EVENT. Refer to historical project documentation of site location, historical information, and boundaries.

3.5.2 Task 5b, (Optional) (CLIN 0005b (FY18)) SECOND ANNUAL GROUNDWATER MONITORING EVENT. Refer to historical project documentation of site location, historical information, and boundaries.

3.5.3 Task 5c, (Optional) (CLIN 0005c, (FY19)) THIRD ANNUAL GROUNDWATER MONITORING EVENT. Refer to historical project documentation of site location, historical information, and boundaries.

3.5.4 Task 5d, (Optional) (CLIN 0005d, (FY20)) FOURTH ANNUAL GROUNDWATER MONITORING EVENT. Refer to historical project documentation of site location, historical information, and boundaries.

3.5.5 Task 5e, (Optional) (CLIN 0005e, (FY21)) FIFTH ANNUAL GROUNDWATER MONITORING EVENT. Refer to historical project documentation of site location, historical information, and boundaries.

3.5.6 All subtasks listed above shall meet the following:

3.5.7 Performance Standard: Field work, quality, and analysis of said data shall meet the following standards:
- QC deliverables and QA inspections/review demonstrate that the work was performed in accordance with the UFP-QAPP, SAP, Seneca LTM Plan, applicable laws, regulations, and guidance documents.

3.5.8 AC: Conduct the RA in accordance with the accepted/approved UFP-QAPP, and Seneca LTM Plan. QC data submitted meets requirements described in the most recent geophysics and chemistry DIDs.

- No more than 3-4 CARs/948s for non-critical violations and/or 1 CAR/948 for critical violation. No unresolved corrective action requests.
- All final data and QC tests/documentation submitted. Government QA acceptance of QC tests/documentation gained.
- No Class "A" Safety accidents, contractor at fault; No Class "B", contractor at Fault, no more than 1 non-explosive Class "C" accident; and <2 non-explosive related Class "D" accidents, IAW AR 385-40.
- Major safety violations, no more than 1 non-explosive related safety violation.
- Minor safety violations, no more than 2 safety violations.
- Zero letters of reprimand, grievances, or formal complaints

3.5.9 Measurement / Monitoring: Periodic inspection/review of field work. Verify compliance with accepted UFP-QAPP and SAP and Seneca LTM Plan. Quality control tests/documentation submitted per the QASP for government review.

3.5.10 Task specific Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

3.5.11 Specific Task Requirements:
- Restore all areas to their ***original*** condition; all access/excavation/detonation holes shall be backfilled.

- Hazardous Waste (HW) / Investigative-Derived Waste (IDW) Disposal: The Contractor shall collect, secure, store, and arrange for disposal of hazardous waste, and decontamination wastes, etc. generated as a result of field

activities. The HW/IDW containers shall be staged, secured, labeled, sampled and analyzed (if required) IAW the approved work plan. The Contractor shall recommend appropriate disposal actions for all waste items. The Contractor shall perform the HW disposal in a timely manner.

- The contractor shall propose on the sampling rationale, and methods that will be utilized to ensure that data generated are of an acceptable quality for its intended use. The contractor shall also propose on the quantity, quality and the methods used to verify adherence to the PARCCS parameters for sample collection, handling, laboratory analysis, verification and validation. The contractor shall propose processes that will be utilized to address the corrective actions when established criteria are not being met. Any deviations from the accepted SAP shall be documented in the Daily Quality Control Reports (DQCR) and conveyed to USAESCH personnel immediately.

- Assess the physical condition of each water well.

- **Mid-Year Groundwater Monitoring Event**:

Plume Performance Monitoring. The Contractor shall sample and analyze monitoring wells PT-18, MWT-22, PT-22, PT-17, MWT-7, PT-24, MWT-24, MWT-25, MWT-23, MWT-28, MWT-29 and MW-56 as per the protocols and monitoring wells in the approved plan.

Biowall Process Monitoring. The Contractor shall sample and analyze monitoring wells MWT-7, PT-17, MWT-26, MWT-27, MWT-28, MWT-29 and MWT-23 as per the protocols and monitoring wells in the approved plan.

Preparation of Groundwater Monitoring Letter Report. Following completion of the mid-year groundwater monitoring, the Contractor shall prepare and submit a letter report which summarizes and analyzes the data collected and observations made. Presentation shall include:

- o Trend plots of groundwater elevation data for each of the monitoring wells.
- o Trend plots for all chemical concentration data developed for each of the monitoring wells.
- o Trend plots of key indicator parameter data developed for each of the monitoring wells.

- **End-of-Year Groundwater Monitoring Event**:

Vegetative Cap and Drainage Swale Inspections. The Contractor shall inspect the vegetative soil cover and drainage swales on the site. Inspection shall include observations pertinent to the integrity of the soil and vegetative covering and the condition of run-off channels, infiltration galleries and swales.

Biowall Trench Condition. The Contractor shall inspect the condition of the Biowall trenches.

Groundwater Monitoring Well Inspections. The Contractor shall inspect the condition of the groundwater monitoring wells.

End-of-Year Groundwater Monitoring. The Contractor shall perform the following groundwater monitoring.

Plume Performance Monitoring. The Contractor shall sample and analyze monitoring wells PT-18, MWT-22, PT-22, PT-17, MWT-7, PT-24, MWT-24, MWT-25 and MW-56 as per the protocols and monitoring wells in the approved plan.

Biowall Process Monitoring. The Contractor shall sample and analyze monitoring wells MWT-12R, MWT-13, MWT-15, MWT-17R and MWT-23 as per the protocols and monitoring wells in the approved plan.

Preparation of the Annual Report. Following completion of the annual groundwater monitoring events, the Contractor shall prepare and submit an annual report which summarizes and analyzes the data collected and observations made over the year's effort. Presentation shall include:

- o Complete tabulations, including maximum and minimum levels, of all groundwater elevation data developed.
- o Trend plots of groundwater elevation data for each of the monitoring wells.
- o A potentiometric map of site groundwater.
- o Complete tabulations of all chemical concentration data developed to date.
- o Complete tabulations of all indicator parameter data developed to date.

- Summary presentations (e.g. Sample population, maximums, minimums, median, mean, standard deviation, coefficient of variation, etc) of all chemical concentration data developed to date for down gradient and background wells versus the regulatory criteria values.
- Trend plots for key chemical concentration data developed for each of the key monitoring wells.
- Trend plots for all key indicator parameter data developed for each of the key monitoring wells.
- Recommendations.

- Project Management: The contractor shall manage the delivery order in accordance with the basic contract statement of work. All project management associated with the delivery order, with the exception of the direct technical oversight of the work described in the preceding tasks, shall be accounted for in this task.

3.6 Task 6, (CLIN 0006), DESCRIPTION OF SERVICES FOR BIOWALL RECHARGE OF THE ASH LANDFILL OPERABLE UNIT: This is a firm fixed price task.
Objective: Conduct a RA in accordance with the accepted UFP-QAPP, SAP, Seneca LTM Plan, and all applicable standards such that the objective of this PWS is met. The RA shall include recharging of the biowall that meets FFA requirements.

3.6.1Performance Standard: Field work, quality, and analysis of said data shall meet the following standards:
- QC deliverables and QA inspections/review demonstrate that the work was performed in accordance with the UFP-QAPP, SAP, Seneca LTM Plan, applicable laws, regulations, and guidance documents.

3.6.2 AC: Conduct the RA in accordance with the accepted/approved UFP-QAPP, SAP, and Seneca LTM Plan. QC data submitted meets requirements described in the most recent geophysics and chemistry DIDs.

- No more than 3-4 CARs/948s for non-critical violations and/or 1 CAR/948 for critical violation. No unresolved corrective action requests.
- All final data and QC tests/documentation submitted. Government QA acceptance of QC tests/documentation gained.
- No Class "A" Safety accidents, contractor at fault; No Class "B", contractor at Fault, no more than 1 non-explosive Class "C" accident; and <2 non-explosive related Class "D" accidents, IAW AR 385-40.
- Major safety violations, no more than 1 non-explosive related safety violation.
- Minor safety violations, no more than 2 safety violations.
- Zero letters of reprimand, grievances, or formal complaints

3.6.3 Measurement / Monitoring: Periodic inspection/review of field work. Verify compliance with accepted UFP-QAPP and SAP and Seneca LTM Plan. Quality control tests/documentation submitted per the QASP for government review.

3.6.4 Task specific Incentives/Disincentives: Satisfactory or greater CPARS rating/poor CPARS rating and/or re-performance of work at contractor's expense.

3.6.5 Specific Task Requirements:
- Restore all areas to their ***original*** condition; all access/excavation/detonation holes shall be backfilled.

- Hazardous Waste (HW) / Investigative-Derived Waste (IDW) Disposal: The Contractor shall collect, secure, store, and arrange for disposal of hazardous waste, and decontamination wastes, etc. generated as a result of field activities. The HW/IDW containers shall be staged, secured, labeled, sampled and analyzed (if required) IAW the approved work plan. The Contractor shall recommend appropriate disposal actions for all waste items. The Contractor shall perform the HW disposal in a timely manner.

- The contractor shall propose on the sampling rationale, and methods that will be utilized to ensure that data generated are of an acceptable quality for its intended use. The contractor shall also propose on the quantity, quality and the methods used to verify adherence to the PARCCS parameters for sample collection, handling, laboratory analysis, verification and validation. The contractor shall propose processes that will be utilized to address the

ENCLOSURE 4

FINAL

ANNUAL REPORT AND YEAR 6 REVIEW

FOR THE

ASH LANDFILL OPERABLE UNIT
SENECA ARMY DEPOT ACTIVITY, ROMULUS, NEW YORK

Site

Prepared for:

U.S. ARMY CORPS OF ENGINEERS, ENGINEERING AND SUPPORT CENTER
HUNTSVILLE, ALABAMA

and

SENECA ARMY DEPOT ACTIVITY
ROMULUS, NEW YORK

Prepared by:

PARSONS
100 High Street
Boston, MA 02110

Contract Number W912DY-08-D-0003
Task Order No. 0012
EPA Site ID# NY0213820830
NY Site ID# 8-50-006

April 2014

ENCL 4

were installed as designed, meeting or exceeding the 12-inch of soil cover requirement. **Section 3.5** describes that the covers are intact and effectively prevent ecological contact with the underlying soil; therefore, the vegetative covers are operating properly.

The CCR also details the construction of the biowalls. Deviation from the intended design resulted in wider-than-intended biowalls that required the emplacement of additional mulch; since this is an enhancement of the design, it is fair to say that the biowalls were constructed as designed. The geochemical data presented and discussed in **Section 3.1** indicate that conditions that are favorable to anaerobic reductive dechlorination have been established within and near the biowalls, which was the expectation of the design of the biowall system.

The remedial action is operating "successfully."

A remedial action may receive the USEPA's designation of "operating successfully" (1) if "a system will achieve the cleanup levels or performance goals delineated in the decision document" and (2) if the remedy is protective of human health and the environment. The data presented in **Section 3.3** demonstrate that concentrations of VOCs are decreasing and will eventually meet the Class GA groundwater standards. The time plots presented in **Figures 10A** through **10J** show a decreasing trend for the COCs at the Ash Landfill OU; **Table 5** summarizes the trends in concentrations of COCs over time, demonstrating that the concentrations in groundwater will eventually meet the groundwater standards.

Recent inspection of the vegetative covers at the Ash Landfill and the NCFL indicate that the covers are preventing ecological receptors from contacting the underlying soil; therefore, there is no threat to the environment. The LUCs have been maintained and no one is accessing the groundwater; therefore, there is no threat to human health. Based on a review of the site data, an inspection of the condition of the vegetative covers, and a confirmation that the LUCs are being maintained, the Army believes that the remedial action is operating successfully.

Based on an assessment of the design and construction of the remedial action, as well as an evaluation of the geochemical and analytical data from the three years of groundwater monitoring, the Army believes that the remedial action at the Ash Landfill meets the requirements to be designated as "operating properly and successfully".

4.0 LONG-TERM MONITORING CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Based on the results of the long-term monitoring at the Ash Landfill since the installation of the full-scale biowalls, the Army has made the following conclusions:

- TCE within the biowalls remains below or close to detection limits;

- TCE, cis-DCE, and VC are present in the groundwater at the site at concentrations above respective Class GA groundwater standards;
- Chemical results indicate that the concentrations of chlorinated ethenes are decreasing as they pass through the biowall systems;
- Geochemical parameters indicate that groundwater redox conditions are highly conducive for reductive dechlorination to occur within the biowalls;
- Concentrations of chlorinated ethenes at off-site well MW-56 are below Class GA groundwater standards;
- Continued monitoring is required to determine trends in concentrations of COCs at PT-18A, PT-17, and MWT-7;
- Recharge of the biowalls is not necessary at this time;
- The remedial action continues to meets the requirements of the USEPA's "operating properly and successfully" designation; and
- The Army will continue to monitor the performance of the biowall system, including semi-annual periodic evaluations of the potential need to recharge the biowalls.

Continue to Monitor Frequency

4.2 Recommendations

Based on the first six years of long-term monitoring at the Ash Landfill OU, the Army recommends continuing the semi-annual frequency of monitoring based on the process shown in **Figure 12** (which is also Figure 7-3 of the RDR). The recommendations for LTM during year six of monitoring are as follows:

- Biowall process monitoring wells (MWT-26, MWT-27, MWT-28, MWT-29, and MWT-23) will be monitored on a semi-annual basis. Each year a recharge evaluation will be completed. As stated in the RDR (Parsons, 2006b), if a recharge is conducted, MWT-26, MWT-27, and MWT-29 would be excluded from the LTM program, as detailed in **Figure 12**. MWT-28 and MWT-23 will continue to be monitored as part of the performance monitoring wells to supplement data that will be used to determine whether additional biowall recharge is required. The recharge evaluation(s) conducted each year after the first biowall recharge would review the chemical and geochemical data at MWT-28 and MWT-23, and determine if the contaminant increase is a result of poor biowall performance or due to other issues such as seasonal variations in groundwater levels, unusual precipitation events, or desorption and back diffusion;
- Performance monitoring wells (PT-17, PT-18A, PT-22, PT-24, MWT-7, MWT-22, MWT-24, and MWT-25) will continue to be monitored on a semi-annual basis in a manner consistent with the

SEAD 006

Seneca Army Depot Cost Estimate
Site Closeout and Well Abandonment

Escalating FY16 estimate

TASK	UNITS	UNIT COST (FY11)	NO. WELLS	Amount	FY16 ESCALATION FACTOR	FY16 Estimate= FY11 Amt x Esc	FY 16 x Esc	FY17 Escalated Amt	BASIS/DOCUMENTATION
WELL ABANDONMENT	LS	$ 1,817.31	41 WELLS	$ 74,510.00	1.0666	$ 79,472.37	1.0338	$ 82,158.54	W912DY-08-D-0003, TASK ORDER 0008, FY11; 6 wells @ $31,398= $5,223
Closeout Report	LS	$ 18,206.00			1.0666	$ 19,419.00	1.0338	$ 20,075.36	W912DY-08-D-0003, TASK ORDER 0008, FY11; 6 wells @ $31,398= $5,223
Assembly No.	**Assembly Description**		**FY17 Labor Rate**	**HRS**					
33220101	Senior Project Manager		$ 110.73	10				$ 1,107.30	FY17 Data Call Memorandum
33220102	Project Manager		$ 101.83	40				$ 4,073.20	FY17 Data Call Memorandum
33220105	Project Engineer		$ 70.33	80				$ 5,626.40	FY17 Data Call Memorandum
33220106	Staff Engineer		$ 92.60	80				$ 7,408.00	FY17 Data Call Memorandum
33220108	Project Scientist (Geologist)		$ 76.57	80				$ 6,125.60	FY17 Data Call Memorandum
33220110	QA/QC Officer		$ 72.61	80				$ 5,808.80	FY17 Data Call Memorandum
33220112	Field Technician		$ 46.94	80				$ 3,755.20	FY17 Data Call Memorandum
								$ 136,138.40	

encl 5

ESCALATION RATES

Constant Year (FY17) Dollars

The CTC estimates shall be reported on a current cost basis (unadjusted for inflation). The following factors should be used to bring previous year costs to the current year.

Base Fiscal Year	Escalation Rate*
FY12	1.0897
FY13	1.0736
FY14	1.0578
FY15	1.0463
FY16	1.0338

* Rates based on FY18 Joint Inflation Calculator (weighted index) – 9 Mar 2017

Encl 5

ESCALATION RATES

Constant Year (FY16) Dollars

The CTC estimates shall be reported on a current cost basis (unadjusted for inflation). The following factors should be used to bring previous year costs to the current year.

Base Fiscal Year	Escalation Rate
FY11	1.0666
FY12	1.0568
FY13	1.0421
FY14	1.0288
FY15	1.0157

ESTIMATE SUMMARY TABLE

Site # SEAD -006

Site Number	Phase	CTC Subtotal ($K)	Estimate Type	Assumption	Basis of Assumption	Basis of Assumption Document Name	Location of Basis of Assumption Document
SEAD 006	LTM	310	Contract Price	Contract for GW monitoring	TO 0023, CLIN 0005a	Contract #: W912DY-09-D-0062, D.O. 0023 dated 30 June 2016	HNC 1600 University Square Huntsville Al
		136	IGE	Engineering Estimate	FY11 Well abandonment contract	W912DS-08-D-0003 TO 0008	USACE NY 5786 State Route 96 Romulus, NY 14541
				Escalation factor 2016		Engineering Estimate	
				Escalation factor 2017		Engineering Estimate	
		38	IGE	COE Oversight of Contract	Engineering Estimate	Engineering Estimate	USACE NY 5786 State Route 96 Romulus, NY 14541
Total cost to complete		484					
Does the CTC estimate include work through site closure? (Yes/No)		yes					

encl 6

SEAD - 006 **2017**

Phase	2017	2018	2019	2020	2021	2022	2023	2024	Outyears
LTM	52	53	53	53	53	25	25		
CLOSE OUT							136		
LTM (OVERSIGHT COST)	5	5	5	5	5	3	6		
	57	58	58	58	58	28	167	~~158~~	~~427~~ 485

58 28 167

YES

GWM 310

Site closeout 30

prof Labor 39

well Rbandn 106

485 = MFR