

## SUPPLEMENTAL RI

### TASK 1.0 Access Agreements

Includes coordinating and providing technical support to the Borough to prepare and submit Access Agreements to be prepared for the third party owned properties where the Supplemental Remedial Investigation (RI) is proposed using the template provided by Excel. Assumes four Access Agreements will be required.

#### Labor:

Project Director/LSRP	8 hours @	\$200 /hour	\$1,600.00
Sr. Geologist/Scientist	8 hours @	\$135 /hour	\$1,080.00
Staff Scientist/Geologist II	16 hours @	\$95 /hour	\$1,520.00

**Total Labor** \$4,200.00

**TASK 1.0 TOTAL \$4,200.00**

### TASK 2.0 Supplemental Soil Quality Investigation

Includes installation of up to 12 soil borings to further evaluate PFAS soil quality within the landfill (AOC 16), establish site-specific Migration to Groundwater Soil Remediation Standards for PFAS, and investigate the nature and extent of any clay under the landfill. Estimated field duration is three days.

#### Labor:

Project Geologist/Scientist I	30 hours @	\$105 /hour	\$3,150.00
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**Total Labor** \$3,150.00

#### Materials and Equipment:

Personal Protection Equipment	3 days @	\$20 /day	\$60.00
GPS Unit	3 days @	\$200 /day	\$600.00
Gem 2000+ Multi Gas Meter	3 days @	\$161 /day	\$483.00
Soil Sampling Equipment	3 days @	\$20 /day	\$60.00
MiniRae PID	3 days @	\$105 /day	\$315.00
Vehicle	3 days @	\$100 /day	\$300.00

**Total Materials and Equipment** \$1,818.00

#### Outside Services:

Driller (SET) - Installation of soil borings (3 days)			\$7,280.00
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#### Analytical Services for Soil Samples (Sor Labs) - Standard TAT

Permeability	3 samps @	\$1,300 /samp	\$3,900.00
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#### Analytical Services for Soil Samples (Eurofins) - Standard TAT

PFAS	8 samps @	\$275 /samp	\$2,200.00
SPLP PFAS	8 samps @	\$330 /samp	\$2,640.00
Field Blank/Sample disposal	2 samps @	\$285 /samp	\$570.00

Outside Services Subtotal \$16,590.00

15% Fee on Outside Services			\$2,488.50
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**Total Outside Services** \$19,078.50

**TASK 2.0 TOTAL \$24,046.50**

### TASK 3.0 Supplemental Surface Water Investigation

Includes collection of surface water samples from the original 6 sediment/surface water locations to further evaluate PFAS surface water quality at the Site. Estimated field duration is one day.

#### Labor:

Staff Scientist/Geologist II	10 hours @	\$95 /hour	\$950.00
<b>Total Labor</b>			<b>\$950.00</b>

#### Materials and Equipment:

Personal Protection Equipment	1 day @	\$20 /day	\$20.00
GPS Unit	1 day @	\$200 /day	\$200.00
MiniRae PID	1 day @	\$105 /day	\$105.00
Vehicle	1 day @	\$100 /day	\$100.00
<b>Total Materials and Equipment</b>			<b>\$425.00</b>

#### Outside Services:

##### Analytical Services for Surface Water Samples (Eurofins) - Standard TAT

PFAS	6 samps @	\$275 /samp	\$1,650.00
Field Blank/Sample disposal	1 samp @	\$285 /samp	\$285.00

Outside Services Subtotal \$1,935.00

15% Fee on Outside Services \$290.25

**Total Outside Services \$2,225.25**

**TASK 3.0 TOTAL \$3,600.25**

### TASK 4.0 Potable Well Sampling

Includes sampling of up to six potable drinking/irrigation wells identified by Excel during the NJDEP-required Receptor Evaluation well search. Wells to be sampled and analyzed by Garden State Labs for VOCs and PFAS compounds.

#### Labor:

Staff Scientist/Geologist II	12 hours @	\$95 /hour	\$1,140.00
<b>Total Labor</b>			<b>\$1,140.00</b>

#### Outside Services:

##### Field Sampling and Analytical Services for Potable Wells (Alpha) - Standard TAT

Potable Well Sampling for VOCs and PFAS	6 samps @	\$875 /samp	\$5,250.00
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Outside Services Subtotal \$5,250.00

15% Fee on Outside Services \$787.50

**Total Outside Services \$6,037.50**

**TASK 4.0 TOTAL \$7,177.50**

#### **TASK 5.0 Ecological Risk Assessment**

Includes performance of an Ecological Risk Assessment (ERA) in accordance with N.J.A.C. 7:26E-4.8. The ERA is required because the data indicate that a complete pathway exists from overburden groundwater to surface water with respect to PFAS, certain metals, and PAHs.

##### **Labor:**

Staff Scientist/Geologist II	6 hours @	\$95 /hour	\$570.00
<b>Total Labor</b>			<b>\$570.00</b>

##### **Outside Services:**

Ecological Risk Assessment (Davy Resource Group)		\$41,641.44
	Outside Services Subtotal	\$41,641.44
15% Fee on Outside Services		\$6,246.22
<b>Total Outside Services</b>		<b>\$47,887.66</b>

<b>TASK 5.0 TOTAL</b>	<b>\$48,457.66</b>
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#### **TASK 6.0 Supplemental Groundwater Quality Investigation**

Includes refinement of the preliminary Conceptual Site Model (CSM), delineation of constituents of concern in overburden and bedrock groundwater, and verification of a potential upgradient and offsite source of impacts to groundwater quality through the installation of a total of twenty (20) monitoring wells, and sampling of the shallow overburden aquifer within the landfill and the deeper bedrock aquifer underlying the landfill.

##### **Task 6.1 Shallow Monitoring Well Installation**

Includes the installation of up to six (6) offsite overburden monitoring wells to verify groundwater quality and complete delineation within the areas downgradient of the landfill based on the results of the initial groundwater quality investigation. Estimated field duration is 3 days.

##### **Labor:**

Project Geologist/Scientist I	30 hours @	\$105 /hour	\$3,150.00
<b>Total Labor</b>			<b>\$3,150.00</b>

##### **Materials and Equipment:**

Personal Protection Equipment	3 days @	\$20 /day	\$60.00
MiniRae PID	3 days @	\$105 /day	\$315.00
Vehicle	3 days @	\$100 /day	\$300.00
<b>Total Materials and Equipment</b>			<b>\$675.00</b>

##### **Outside Services:**

Driller (SET) - Installation of six (6) overburden monitoring wells (3 days)		\$14,290.00
Surveying (E&LP) - cost provided in Task 6.2		\$0.00
Drum Disposal - cost provided in Task 6.2		\$0.00
Generated Groundwater Disposal - cost provided in Task 8.0		\$0.00
	Outside Services Subtotal	\$14,290.00
15% Fee on Outside Services		\$2,143.50
<b>Total Outside Services</b>		<b>\$16,433.50</b>

<b>Task 6.1 Total</b>	<b>\$20,258.50</b>
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### Task 6.2 Deep Bedrock Monitoring Well Installation

Includes the installation of eight (8) double-cased bedrock monitoring wells to verify the underlying bedrock and hydrogeologic framework beneath the landfill, geochemical conditions, and the bedrock aquifer groundwater quality below and surrounding the landfill. Geophysical logging will be conducted on the installed boreholes prior to setting and screening the monitoring wells to gain a better understanding of the regional and local hydrogeologic framework and conditions, which will be instrumental in completing the Conceptual Site Model. Packer testing (three or four samples per borehole) will also be conducted on each of the installed boreholes prior to setting and screening the monitoring wells but after the geophysical logging has been completed. The packer testing will provide valuable information regarding what fractures within the bedrock aquifer are high and low yielding. Estimated field duration for the borehole install, geophysical logging, packer testing and monitoring well completion is 35 days. Note, the supplemental deep bedrock monitoring well installations will be completed at four distinct locations. Based on the preliminary CSM, it is anticipated that monitoring wells will be set to monitor up to three to four discrete intervals within the bedrock aquifer; therefore, two boreholes will be installed at each of the four locations with either one or two monitoring wells set per borehole.

#### Labor:

Sr. Geologist/Scientist	100 hours @	\$135 /hour	\$13,500.00
Staff Scientist/Geologist II	350 hours @	\$95 /hour	\$33,250.00
<b>Total Labor</b>			<b>\$46,750.00</b>

#### Materials and Equipment:

Personal Protection Equipment	35 days @	\$20 /day	\$700.00
MiniRae PID	12 days @	\$105 /day	\$1,260.00
Vehicle	35 days @	\$100 /day	\$3,500.00
<b>Total Materials and Equipment</b>			<b>\$5,460.00</b>

#### Outside Services:

Driller (Advanced) 14 ~varying depth bedrock wells and Packer Testing			\$207,910.00
Geophysical Logging (Hagar-Richter)	4 wells @	\$4,450.00 /well	\$17,800.00
Surveying (E&LP) well elevations and Form Bs (20 wells)			\$2,400.00
Drum Disposal (95 drums of generated soil cuttings)			\$8,300.00
Groundwater Handling - Frac Tank Mob/Demob	1 event @	\$1,200.00 event	\$1,200.00
Groundwater Handling - Frac Tank Rental	60 days @	\$35.00 /day	\$2,100.00
Groundwater Handling - Vac Truck Services	8 days @	\$2,140.00 /day	\$17,120.00

#### Analytical Services for Groundwater Packer Testing (Eurofins) - 72-hour TAT

21 Parameter PFAS Suite	14 samps @	\$440 /samp	\$6,160.00
VOCs	14 samps @	\$90 /samp	\$1,260.00

#### Analytical Services for Soil/Rock Waste Characterization (Eurofins) - Standard TAT

Total VOCs (8260B)	8 samples @	\$60 /sample	\$480.00
SVOCs (8270D)	8 samples @	\$130 /sample	\$1,040.00
TCLP Metals	8 samples @	\$65 /sample	\$520.00

Outside Services Subtotal \$266,290.00

15% Fee on Outside Services \$39,943.50

**Total Outside Services \$306,233.50**

**Task 6.2 Total \$358,443.50**

**TASK 6.0 TOTAL \$378,702.00**

**TASK 7.0    72-hour Pump Test**

Includes conducting a 72-hour pump test to determine which wells and which water-bearing zones in select wells are being influenced by the Townships Potable Well located on the subject property. The test will include placement of transducers in select monitoring wells and monitoring the change in water level when the potable well is turned off.

**Labor:**

Sr. Project Geologist/Scientist	16 hours @	\$175 /hour	\$2,800.00
Sr. Geologist/Scientist	50 hours @	\$135 /hour	\$6,750.00
Project Geologist/Scientist I	50 hours @	\$105 /hour	\$5,250.00
<b>Total Labor</b>			<b>\$14,800.00</b>

**Outside Services:**

Transducers	12 transducers @	\$235 /week	\$2,817.00
Data Loggers	12 data loggers @	\$122 /week	\$1,464.00
Miscellaneous Equipment			\$250.00
<b>Total Outside Services</b>			<b>\$4,531.00</b>
15% Fee on Outside Services			\$679.65

<b>TASK 7.0 TOTAL</b>	<b>\$20,010.65</b>
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### TASK 8.0 Groundwater Purging, Sampling, and Analysis

Includes purging and a complete round of sampling of all wells including the twelve (12) existing overburden wells, the six (6) newly installed overburden wells, the six (6) existing deep wells and the fourteen (14) newly installed bedrock wells on the subject property and nearby properties. Cost includes analysis for PFAS (all wells), arsenic (select wells) and select SVOCs (select wells). Estimated field duration is two (2) people for twelve (12) days.

#### Labor:

Project Geologist/Scientist I	120 hours @	\$105 /hour	\$12,600.00
Staff Geologist/Scientist II	120 hours @	\$95 /hour	\$11,400.00
<b>Total Labor</b>			<b>\$24,000.00</b>

#### Materials and Equipment:

(2) Personal Protection Equipment	12 days @	\$20 /day	\$480.00
Tote (purge water storage)	1 tote @	\$150 /tote	\$150.00
MiniRae PID	2 days @	\$105 /day	\$210.00
(2) Groundwater Sampling Equipment	12 days @	\$400 /day	\$9,600.00
Vehicle (pickup truck)	12 days @	\$100 /day	\$1,200.00
<b>Total Materials and Equipment</b>			<b>\$11,640.00</b>

#### Outside Services:

##### Analytical Services for Water Samples (Eurofins) - Standard TAT

21 Parameter PFAS Suite	39 samps @	\$275 /samp	\$10,725.00
VOCs	39 samps @	\$60 /samp	\$2,340.00
1,4-Dioxane	39 samps @	\$125 /samp	\$4,875.00
TAL Metals - Total	39 samps @	\$90 /samp	\$3,510.00
TAL Metals - Dissolved	39 samps @	\$90 /samp	\$3,510.00
SVOCs w/SIMS	39 samps @	\$165 /samp	\$6,435.00
Full TCL/TAL	4 samps @	\$500 /samp	\$2,000.00
Ammonia as N	39 samps @	\$15 /samp	\$585.00
Nitrate as N	39 samps @	\$15 /samp	\$585.00
Chloride	39 samps @	\$15 /samp	\$585.00
TDS	39 samps @	\$15 /samp	\$585.00
Dissolved CH <sub>4</sub>	39 samps @	\$80 /samp	\$3,120.00
Dissolved CO <sub>2</sub>	39 samps @	\$15 /samp	\$585.00
Total Organic Carbon	39 samps @	\$20 /samp	\$780.00
PFAS Free Field Blank Water	39 gallons @	\$25 /gallon	\$975.00
Trip Blank	6 samps @	\$60 /samp	\$360.00
Field Blanks/Sample disposal	6 samps @	\$998 /samp	\$5,985.00

##### Generated Groundwater Disposal

Groundwater Handling - Sampling and Analysis	1 sample @	\$550.00 /sample	\$550.00
Groundwater Handling - Vac Truck Services	2 days @	\$2,140.00 /day	\$4,280.00
Groundwater Handling - Frac Tank Cleanout	1 day @	\$4,515.00 /day	\$4,515.00

Outside Services Subtotal \$56,885.00

15% Fee on Outside Services \$8,532.75

**Total Outside Services \$65,417.75**

**TASK 8.0 TOTAL \$101,057.75**

### TASK 9.0 Updated Conceptual Site Model

Includes time to update the preliminary conceptual site model based on the findings of the supplemental investigation activities described above. Specifically includes updates to the bedrock geology and hydrogeology models using the information gained from installation of the proposed bedrock boreholes and preparation of a landfill specific cross section to depict its construction. The conceptual site model will be a critical tool to identify sources, receptors, and pathways associated with the already identified soil, sediment, surface water, and groundwater impacts at the Site.

#### Labor:

Project Director/LSRP	10 hours @	\$200 /hour	\$2,000.00
Sr. Geologist/Scientist	16 hours @	\$135 /hour	\$2,160.00
Project Geologist/Scientist I	20 hours @	\$105 /hour	\$2,100.00
Staff Geologist/Scientist II	20 hours @	\$95 /hour	\$1,900.00
CAD Operator	20 hours @	\$85 /hour	\$1,700.00
<b>Total Labor</b>			<b>\$9,860.00</b>

<b>TASK 9.0 TOTAL</b>	<b>\$9,860.00</b>
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### TASK 10.0 Data Tabulation and Evaluation

Includes analytical data reduction and validation of landfill soil, surface water and groundwater samples, QA/QC, and tabulation of and evaluation of data in comparison to the applicable NJDEP standards. Also includes download and interpretation of the pump test results and preparation of color figures for presentation of data and determination of media quality.

#### Labor:

Project Director/LSRP	10 hours @	\$200 /hour	\$2,000.00
Sr. Geologist/Scientist	16 hours @	\$135 /hour	\$2,160.00
Project Geologist/Scientist I	20 hours @	\$105 /hour	\$2,100.00
Staff Geologist/Scientist II	20 hours @	\$95 /hour	\$1,900.00
CAD Operator	20 hours @	\$85 /hour	\$1,700.00
<b>Total Labor</b>			<b>\$9,860.00</b>

<b>TASK 10.0 TOTAL</b>	<b>\$9,860.00</b>
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**TASK 11.0 Update of the RI Report**

Task includes additional labor to update the RI Report to document the additional soil, surface water and groundwater delineation data and the PFAS investigation activities and analytical results. The report will include, if warranted, recommendations for further RI and/or Remedial Action (RA).

**Labor:**

Project Director/LSRP	30 hours @	\$200 /hour	\$6,000.00
Sr. Geologist/Scientist	40 hours @	\$135 /hour	\$5,400.00
Staff Geologist/Scientist II	60 hours @	\$95 /hour	\$5,700.00
<b>Total Labor</b>			<b>\$17,100.00</b>

<b>TASK 11.0 TOTAL</b>	<b>\$17,100.00</b>
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**Task 12.0 Technical Consulting/NJDEP Negotiation and Communication/Project Management**

Includes technical consulting and professional support that will be provided during the course of the project regarding interaction with various NJDEP departments, including HDSRF and technical teams. Also includes client and attorney communications, expert consultation and technical negotiations regarding work scope, resolution of technical/regulatory issues, and overall project management including schedule and budget control.

**Labor:**

Equal to 10% of Supp RI costs for Tasks 1.0 through 11.0

<b>TASK 12.0 TOTAL</b>	<b>\$62,407.23</b>
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<b>SUPPLEMENTAL RI TOTAL</b>	<b>\$686,479.54</b>
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