Work Plan for Operation and Maintenance for the Haight Farm Site Town of Clarendon Orleans County, New York

Site Number 8-37-006

September 8, 2000

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation
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Albany, New York 12233-7010

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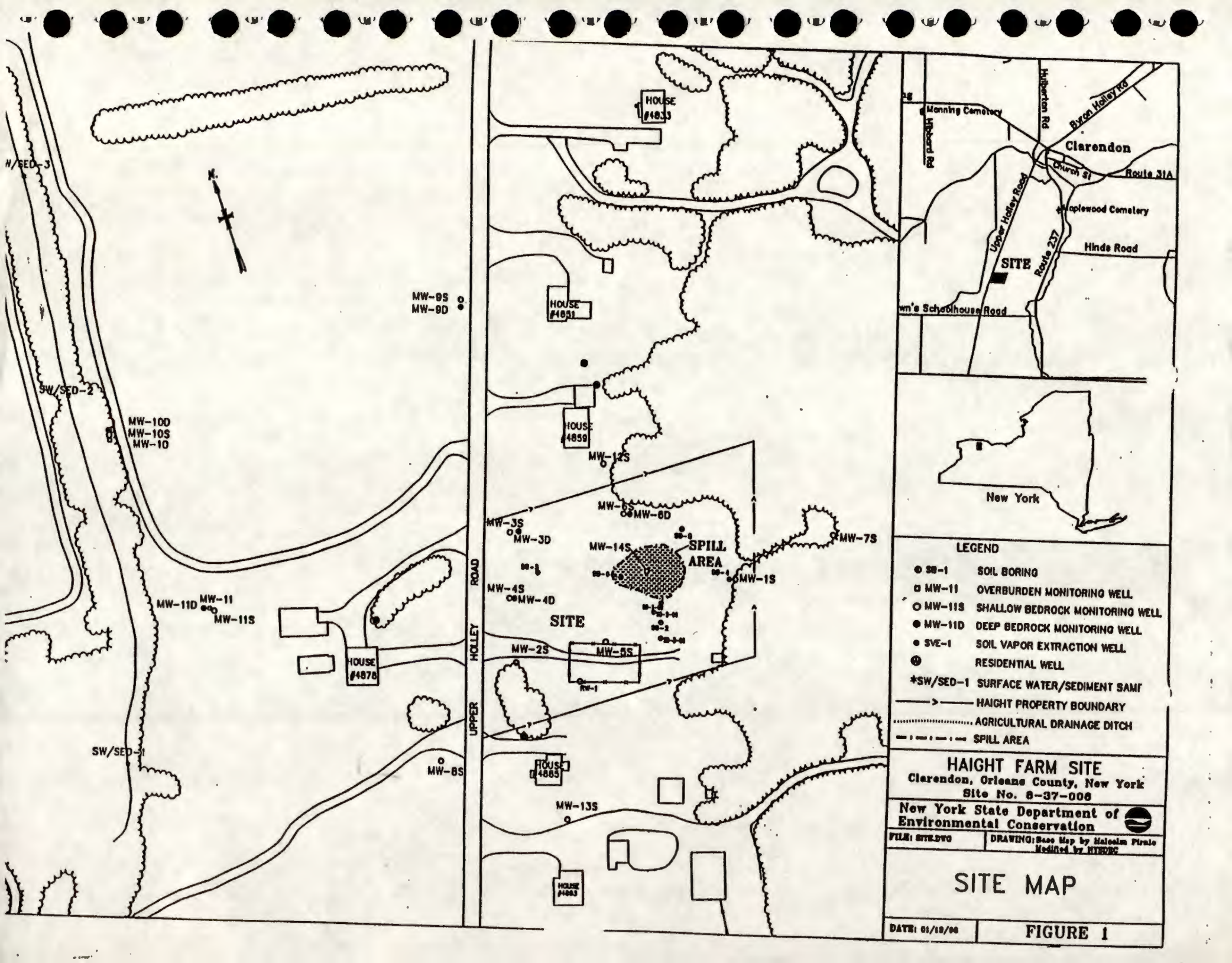
1 Introduction

Pursuant to Work Assignment No. D003493-22 received August 17, 2000, Ecology and Environment Engineering, P.C. (E & E) is submitting to the New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER), this work plan for operation and maintenance (O&M) support at the Haight Farm site (Site #8-37-006) in the town of Clarendon, Orleans County, New York (see Figure 1-1).

E & E will be responsible for the administration of this work assignment. All technical work will be performed by E & E and by Iyer Environmental Group, PLLC (IEG) under a subcontract agreement with E&E. IEG is an MBE firm based in Buffalo, New York.

Section 2 of this work plan details the major tasks and subtasks to be performed. Section 3 presents a discussion of the major milestones of the project and a project schedule. Section 4 discusses subcontracting within this work assignment. Section 5 provides a detailed budget prepared in accordance with contractual reporting requirements, including the 2.11 Forms. Section 6 presents our staffing plan for key team members. Section 7 presents the Minority-owned Business Enterprise/Woman-owned Business Enterprise (MBE/WBE) utilization plan.



HAIGHT FARM SITE

Clarendon, Orleans County, New York
Site No. 8-37-006

New York State Department of Environmental Conservation

FILE: SITE.DWG	DRAWING: Base Map by Malcolm Pirnie Modified by NYSDEC

SITE MAP

DATE: 01/19/96	FIGURE 1

2 Major Tasks and Subtasks

The tasks and requirements of this work assignment are specified in Schedule 1, Work Element VII (Operation & Maintenance) of E&E's Standby Contract with NYSDEC as detailed and limited in this work plan.

Task 1: Project Work Plan

Within two weeks after issuance of the work assignment, E & E's project director discussed, via telephone, with NYSDEC's project manager the components of the work assignment and required changes. At that time, NYSDEC requested that an additional task be added to the work assignment: installation of one shallow off-site monitoring well. This work is needed to better define the groundwater contaminant plume originating from the site and migrating towards the quarry. This is included in this work plan as Task 4. The Engineer submitted an outline of the work plan, via email, following the scope discussion. An LOE estimate and associated cost for completing all tasks and associated deliverables are submitted for negotiation with this work plan.

Within the required 30 days of issuance of the work assignment, E & E has prepared and submitted six copies of this Project Management Work Plan for Operations and Maintenance. The purpose of this work plan is to:

1. Provide more detail to the scope of work, where necessary, to support E & E's LOE estimates in the project budget; and

2. Present a Statement of Work, including a description and purpose of the major tasks and sub-tasks; a detailed schedule with milestones and deliverables; a staffing plan; a MBE/WBE and Equal Employment Opportunity (EEO) Utilization Plan; a proposed list of subcontractors, and a Health and Safety Plan (HASP).

It is E & E's understanding that when an acceptable work plan is produced, a Notice to Proceed will be issued to execute this work assignment. Further, it is E & E's understanding that it is the goal

of NYSDEC to formally approve the work plan within 90 days of issuing the work assignment.

Task 2: Operation and Maintenance/Reporting

The purpose of this operation and maintenance WA is to provide professional engineering services for the proper management, inspection, operation, and maintenance of the dual vapor extraction (DVE) treatment system at the Haight Farm site.

E & E and IEG will maintain, operate, and report on the DVE system operation for a period of six months after restarting the treatment system. The DVE and treatment system consists of a set of wells to simultaneously extract air and entrained groundwater, followed by a phase separator, and parallel treatment of the air and groundwater using granular activated carbon adsorption. The system will be managed in general accordance with the October 1998 Remedial Construction Contract Documents and the site O&M manual, with one exception being system sampling/monitoring occurring biweekly as called for in this work assignment rather than weekly.

IEG will conduct a minor system shakedown during the first week of the six-month O&M period. The shakedown will include pump removal, cleaning, and re-starting the system.

IEG will provide the lead staff member for weekly system maintenance. Weekly system maintenance will include a check of system components, including DVE wells, blower, and pumps. Scheduled maintenance of system components will be performed during this time. On alternate weeks (i.e., biweekly intervals), one staff member from IEG and one from E & E will be at the site to take system measurements as well as perform system maintenance. System measurements will include temperature, water levels, pressure/vacuum and flow rates at the wells and in the treatment system.

Once a month, a two-member team (one from E & E and the other from IEG) will also collect air and groundwater samples from the DVE wells and the treatment system for performance and discharge monitoring. Air samples will be analyzed for volatile organics. All water samples will be analyzed for volatile organics, and the treated groundwater will also be analyzed for pH, TSS, and TDS to confirm that the discharge limits are being met. All laboratory analysis will be performed by E & E's laboratory in accordance with the latest edition of the NYSDOH Analytical Services Protocol (ASP). E & E is currently NYSDOH certified for general and CLP analysis as required by this work assignment. See Table 2-1 for a summary of the monthly O&M sampling.

Table 2-1 Summary of Monthly O&M Sampling

Parameter	DVE Well	Phase Separator	In-between Carbon	Discharge	QC Samples	Total
Water Samples						
VOCs	60	6	6	6	12	90
TDS				6		6
TSS				6		6
pH				6		6
Vapor Samples						
VOCs	18 (headers only)	6	6	6		36

For budgeting purposes, two days are included for each of these six system sampling events.

The O&M data and activities will be detailed in monthly reports to NYSDEC. These reports will include field measurements of system parameters, analytical results for performance and discharge monitoring, groundwater flow nets using the SURFER software, and an analysis of the trends in VOC concentrations at the wells. The first report will be submitted in November (assuming an October system start-up). This report will not have analytical data because of the 28-day turn-around time for the sample analyses. The analytical results for the first month will be presented in the third monthly report. The remaining monthly reports will follow this pattern. March analytical results will be included in the final O&M report.

Task 3: Baseline Groundwater Sampling

E & E and IEG will provide one staff member each to collect one round of groundwater samples after approximately four (4) months of DVE system operation. Four days of field work are assumed for purging the monitoring wells and collecting 17 groundwater samples, one duplicate sample and one trip blank. The samples will be analyzed for TCL volatile organic compounds with a standard 28-day turn around time for analysis and reporting (Category A deliverables). E & E's laboratory will provide sample and shipping containers.

All laboratory analyses will be performed by E & E's laboratory in accordance with the latest edition of the NYSDOH Analytical Services Protocol (ASP). E & E is currently NYSDOH certified for general and CLP analysis as required by this work assignment.

The results of the baseline sampling will be incorporated into the last (sixth) monthly O&M report.

Task 4: Install Groundwater Monitoring Well

E & E and IEG will design and install a shallow off-site groundwater monitoring well similar in depth and construction to MW-15S (see Appendix B). IEG will take the lead on this task. A drilling subcontractor will be hired to install the well at an off-site location to be determined/approved by NYSDEC. E&E will provide a geologist during the well installation and development. Well installation is expected to occur during November or December 2000.

NYSDEC will secure necessary access agreements prior to monitoring well installation.

3

Progress Schedule

The schedule below has been developed using the target dates presented in the work assignment. The schedule closely follows the work assignment schedule. There are differences because the issuance of the work assignment did not occur on the date indicated in the work assignment schedule.

Work Assignment Element	Elapsed Time	Date
1. NYSDEC Issues W.A. (Received on)	0 days	08/17/2000
2. E & E submits outline of Work Plan	5 days	08/24/2000
3. Teleconference with E & E	14 days	08/31/2000
4. Submit Draft Work Plan/Budget	17 days	09/14/2000
5. Receive NYSDOH/NYSDEC Comments	24 days	09/21/2000
6. E & E submits final WP	31 days	09/28/2000
7. Work Plan Approval/Notice to Proceed*	38 days	10/05/2000
8. DVE System Start-up/O & M Begins	45 days	10/12/2000
9. Monitoring Well Installation	--	11/2000 - 12/2000
10. Baseline Sampling	4th month	02/15/2001
11. End of Six Month O &M Period	6th month	04/19/2001
12. Submit final O & M Report*	2 weeks after O&M	05/03/2001

*Project Milestone.

4

Subcontracting Plan

E & E has reviewed the scope and determined that significant portions of the work can be successfully subcontracted. E & E is proposing to team with an MBE firm, Iyer Environmental Group, PLLC (IEG), to complete this work assignment. E & E will be responsible for the administration of this work assignment. Technical work will be performed by both E & E and IEG. IEG's technical responsibility will include operations and maintenance of the system for the duration (6 months) of this work assignment, record keeping, and preparation and submittal of monthly O&M reports. E & E will provide quality control, oversight, a technician for field sampling, and laboratory services.

5 Cost Assumptions and Budget

E & E's proposed budget is $123,020. This budget is predicated on the following assumptions:

- Minor repairs and maintenance items are included. Equipment replacement and major repairs are beyond the current estimate;
- The scoping session with NYSDEC will be a conference call;
- Laboratory samples will be delivered to ASC by E & E staff - no sample shipment costs are included;
- Well purge water and decontamination fluids will be treated on-site using the DVE treatment system;
- VOC analyses will be completed using Method 8021B. Analytical results will be in ASP Category A format;
- Reporting will follow the format and style used during the construction project O&M period;
- The tires from the DVE treatment trailer are currently stored at E & E's warehouse in Buffalo. These tires will be delivered to either the site or NYSDEC Region 8 offices in Avon before the end of this work assignment;
- Utilities will be placed in E & E's name for the period of this work assignment. At the end of the WA, E & E will either have the utilities disconnected and the accounts closed, or NYSDEC will have the account switched over to NYSDEC; and
- No trips to Albany have been included.

Section 7

Schedule 2.11(a) Summary of Work Assignment Price

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-22
Project Name: Haight Farm O&M (6 Months) - Site #8-37-006

1.	Direct Salary Costs (Schedule 2.11(b))	$12,130
2.	Indirect Costs	$22,440
3.	Direct Non-Salary costs (Schedules 2.11(c) and (d))	$29,457

Subcontract Costs

Cost-Plus-Fixed-Fee Subcontracts (Schedule 2.11(e))

	Name of Subcontractor	Services to be Performed	Subcontract Price
A	IYER		49,200
B			
C			
D			
4.	Total Cost-Plus-Fixed-Fee Subcontracts		49,200

Unit Price Subcontracts (Schedule 2.11(f))

	Name of Subcontractor	Services to be Performed	Subcontract Price
A	Lozier Analytical Group	TO-1 Lab Analysis	7,200
B			
C			
D			
5.	Total Unit Price Subcontracts		7,200

6.	Subcontract Management Fee	-
7.	Total Subcontract Costs (Lines 4+5+6)	56,400
8.	Fixed Fee	2,593
9.	Total Work Assignment Price (Lines 1+2+3+7+8)	123,020

NOTE: Rates are in accordance with Section 2.10 of the State Superfund Standby Contract #D003493

Section 7
Schedule 2.11(b) Direct Labor Hours Budgeted

ECOLOGY AND ENVIRONMENT ENGINEERINGg, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-22
Project Name: Haight Farm O&M (6 Months) - Site #8-37-006

DIRECT LABOR HOURS BUDGETED - BY NSPE GRADE

Rates for Year Ending February 1, 2001

NSPE Grade	IX	VIII	VII	VI	V	IV	III	II	I	Total	Labor	Overhead		Fee	
Rate/Hour	$67.65	$44.86	$38.64	$32.69	$27.85	$22.76	$20.19	$17.90	$13.74	Hours	Cost	185%	SUBTOTAL	7.50%	TOTAL
TASK DESCRIPTION															
TASK 1: Workplan/HASP	0	0	0	0	8	8	8	4	0	28	$638	$1,180	$1,818	$136	$1,954
TASK 2: Monthly O&M Sampling/R	2	0	16	60	16	0	262	12	0	368	8,665	16,030	24,695	1,852	26,547
TASK 3: Baseline Sampling	1	0	4	16	0	0	46	2	0	69	1,710	3,164	4,874	366	5,240
TASK 4: Well Installation	0	0	0	8	0	36	0	2	0	46	1,117	2,066	3,183	239	3,422
Est. Direct Labor Hours	3	0	20	84	24	44	316	20	0	511					
Est. Direct Labor Cost	$203	$0	$773	$2,746	$668	$1,001	$6,380	$358	$0	TOTALS	$12,130	$22,440	$34,570	$2,593	$37,163

Engineer/Contract # Ecology & Environment Engineering PC
Project Name Haight Farm Site O&M
Work Assignment No. D003493-22

Date Prepared _____

Schedule 2.11(b-1)
Direct Administrative Labor Hours Budgeted

NSPE Labor Classification	9	8	7	6	5	4	3	2	1	Total No. of Direct Administrative Labor Hrs. Budgeted
Task 1 Work Plan/HASP								4		4
Task 2 Monthly O&M								12		12
Task 3 Baseline Sampling								2		2
Task 4 Well Installation								2		2
Task 5										
Task 6										
Task 7										
Task 8										
Task 9										
Task 10										
Task 11										
Task 12										
Total Hours								20		20

Contract/Project administrative hours would include (subject to contract allowability) but not necessarily be limited to the following activities:

1. Work Plan Development
   - Conflict of Interest Check
   - Develop budget schedules and supporting documentation
2. Review work assignment (WA) progress
   - Conduct progress reviews
   - Prepare monthly project report
   - Update WA progress schedule
   - Prepare monthly M/WBE Utilization Report
3. Review work assignment costs
   - Prepare monthly cost control report
   - Cost control reviews
4. CAP Preparation
   - Oversee and prepare monthly CAP
   - Respond to payment issues/disallowances
   - NSPE list updates
   - Equipment Inventory
5. Manage subcontracts
6. Implement and manage program management and staffing plans
7. Conduct Health and Safety Reviews
8. Word processing and graphic artists
9. Report editing

Contract/Project administration hours would <u>not</u> include activities such as:

1. QA/QC reviews
2. Technical oversight by management
3. Develop subcontracts
4. Work plan development
5. Review of deliverables

Section 7
Schedule 2.11(c) Direct Non-Salary Costs

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-22
Project Name: Haight Farm O&M (6 Months) - Site #8-37-006

ITEM	Maximum Reimbursement Rate	Unit	Estimated No. of Units	Total Estimated Costs
A. IN-HOUSE COSTS*				
Communication Costs	$ 5.00	Call	20	100.00
Reproduction	$ 0.05	Page	3,225	161.25
Blueprinting	$ 1.75	Page	-	-
CAD Computer Usage	$ 10.00	Hour	-	-
Protective Clothing: Level D	$ 15.00	Day	31	465.00
Protective Clothing: Level C	$ 50.00	Day	-	-
Protective Clothing: Level B	$ 70.00	Day	-	-
Shipping: Lab Samples		lbs.	-	-
Shipping: Equipment		lbs.	-	-
Shipping: Other Fedex Priority	$ 22.00	5 lbs.	7	154.00
Postage		Lump Sum	-	200.00
Purchased Items - Incidentals		Lump Sum		19,800.00
Outside Equipment Rental		Lump Sum		-
Miscellaneous Field Supplies/ODCs		Lump Sum		90.00
E&E Analytical Services		Lump Sum		8,331.00
			Subtotal	29,301.25
B. MISCELLANEOUS				
1. TRAVEL				
Airfare: Buffalo/Albany	$ 504.00	RT	-	-
Per Diem: Albany	$ 34.00	Day	-	-
Per Diem: Rochester	$ 34.00	Day	-	-
Lodging: Albany	$ 70.00	Night	-	-
Auto Rental	$ 50.00	Day	-	-
Mini Van Rental	$ 70.00	Day	-	-
Local Mileage	$ 0.31	Mile	480.00	148.80
Parking		Day	-	-
Gasoline/Tolls		RT	4.00	7.60
			Subtotal	156.40
TOTAL DIRECT NON-SALARY COSTS				**$ 29,457.65**

NOTES: *PPE Costs are estimated. Actual costs will be billed.

Schedule 2.11(c)

Direct Non-Salary Costs
Work Assignment Number D003493-22

Item	Max. Reimbursement* Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
A. Sample Analysis Rates (In-House Cost Only, For Subcontracts see Schedule 2.10(f)and 2.11(f))			
8021B (replaces 8010/8020)	$75.00 @ 28day TAT	90	$6,750
TDS	$13.00 @ 28day TAT	6	$78
TSS	$13.00 @ 28day TAT	6	$78
B. Miscellaneous			
Travel (Lodging, Meals, Transportation) See Schedule 2.10(d) for rates			

* See Schedule 2.10(b) for rates.

Section 7
Schedule 2.11(d) Equipment Usage Schedule

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-22
Project Name: Haight Farm O&M (6 Months) - Site #8-37-006

ID No	ITEM	Maximum Reimbursement Rate	Time Period	Estimated No. of Periods	Estimated No. of Units	Total Estimated Cost

NO EQUIPMENT RENTAL CHARGES ARE ALLOWED PER STANDBY CONTRACT

TOTAL EQUIPMENT USAGE

Schedule 2.11(e)

Cost-Plus-Fixed-Fee Subcontracts
Work Assignment Number D003493-22

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE
Iyer Environmental Group, PLLC	Engineering/ Operation & Maintenance	$49,200

A. Direct Salary Costs

Professional Responsibility Level	Average Labor Classification	Reimbursement Rate ($/Hr)	Max. Reimbursement Rate ($/(Hr)	Estimated No. of Hours	Total Est. Direct Salary Cost
VIII	Principal	$42.00		150	$6,300
VII	PM/Scientist	$36.00		6	$216
II	Engineer/Sr Te	$17.50		530	$9,275

Total Direct Salary Costs $ 15,791

Footnotes:

1) These rates will be held firm until December 31, 2000 (DATE).

2) Reimbursement will be limited to the lesser of either the individuals actual hourly rate or the maximum rate for each labor category.

3) Reimbursement will be limited to the maximum reimbursement rate for the professional responsibility level of the actual work performed.

4) Only those labor classifications indicated with an asterisk will be entitled to overtime premium.

5) Reimbursement for technical time of principals, owners and officers will be limited to the maximum reimbursement rate of that labor category, the actual hourly labor rate paid, or the State M-6 job rate, whichever is lower.

6) The maximum rates in each labor category can be modified only by mutual written agreement and approved by both the Department and the Comptroller.

7) This Footnote applies to Schedules for years 4 thru 7 only. If the U.S. cost-of-living index increases at a rate greater than 6% compounded annually, the maximum salary rates will be subject to renegotiation for future years of the contract. There shall be no retroactive adjustments of payment as a result of renegotiated salary schedules.

B. Indirect Costs

Indirect costs shall be paid based on a percentage of direct salary costs incurred which shall not exceed a maximum of 117 % or the actual rate calculated in accordance with 48 CFR Federal Acquisition Regulation, whichever is lower.

Amount budgeted for indirect costs is $18,475

C. Maximum Reimbursement Rates for Direct Non-Salary Costs

Item		Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
1.	Travel	See Schedule 2.10(d) for rates See Attachment C for Details		$2,455
2.	Supplies	See attachment C for details		$4,704
Total Direct Non-Salary Costs				$ 7,159

D. Fixed Fee

The fixed fee is (15% DL + Overhead) $ 5,140
See Schedule 2.10(h) for how the fixed fee should be claimed.

Schedule 2.11(f)

Unit Price Subcontracts
Work Assignment Number D003493-22

1. NAME OF SUBCONTRACTOR	SERVICES TO BE PERFORMED	SUBCONTRACT PRICE	MANAGEMENT FEE
Lozier Analytical Group	Air Analyses	$7,200	$0

Item	Max. Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost
TO-1/TO-2 Volatile	$200.00/sample	36	$7,200

SUB-TOTAL SUBCONTRACT PRICE	$7,200
SUBCONTRACT MANAGEMENT FEE	$0
TOTAL	$7,200

Schedule 2.11(g) - Supplemental

COST CONTROL REPORT
SUBCONTRACTS

Engineer Ecology & Environment Engineering, PC
Contract No. D003493
Project Name Haight Farm Site O&M
Work Assignment No. 22

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Subcontract Name	A Subcontract Costs Claimed this Application Inc. Resubmittals	B Subcontract Costs Approved for Payment on Previous Applications	C Total Subcontract Costs to Date (A plus B)	D Subcontract Approved Budget	E Management Fee Budget	F Management Fee Paid	G Total Costs to Date (C plus F)
1. IYER				$49,200			
2. Lozier				$7,200			
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11. TOTALS				$56,400			

Project Manager _____ Date _____

NOTES:
(1) Costs listed in Columns A, B, C & D do not include any management fee costs.
(2) Management fee is applicable to only properly procured, satisfactorily completed, unit price subcontracts over $10,000.
(3) Line 11, Column G should equal Line 7 (Subcontractors), Column D of Summary Cost Control Report.

Section 7

Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-22
Project Name: Haight Farm O&M (6 Months) - Site #8-37-006

Date Prepared _____
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SUMMARY SCHEDULE Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$12,130	
2. Indirect Costs (185%)							$22,440	
3. Subtotal Direct Salary & Indirect Costs							$34,570	
4. Travel							$156	
5. Other Non-Salary Costs							$29,301	
6. Subtotal Direct Non-Salary Costs							$29,458	
7a. Subcontractors							$56,399	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$120,427	
9. Fixed Fee							$2,593	
10. Total Work Assignment Price							$123,020	

Section 7

Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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TASK 1: Workplan/HASP

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$638	
2. Indirect Costs (185%)							$1,180	
3. Subtotal Direct Salary & Indirect Costs							$1,818	
4. Travel							$0	
5. Other Non-Salary Costs							$60	
6. Subtotal Direct Non-Salary Costs							$60	
7a. Subcontractors							$1,692	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$3,570	
9. Fixed Fee							$136	
10. Total Work Assignment Price							$3,706	

Section 7

Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
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Work Assignment # : D003493-22
Project Name: Haight Farm O&M (6 Months) - Site #8-37-006

TASK 2: Monthly O&M Sampling/Reporting (6

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$8,665	
2. Indirect Costs (185%)							$16,030	
3. Subtotal Direct Salary & Indirect Costs							$24,695	
4. Travel							$117	
5. Other Non-Salary Costs							$27,461	
6. Subtotal Direct Non-Salary Costs							$27,578	
7a. Subcontractors							$44,733	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$97,006	
9. Fixed Fee							$1,852	
10. Total Work Assignment Price							$98,858	

Section 7

Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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TASK 3: Baseline Sampling

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$1,710	
2. Indirect Costs (185%)							$3,164	
3. Subtotal Direct Salary & Indirect Costs							$4,874	
4. Travel							$0	
5. Other Non-Salary Costs							$1,689	
6. Subtotal Direct Non-Salary Costs							$1,689	
7a. Subcontractors							$4,178	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$10,741	
9. Fixed Fee							$366	
10. Total Work Assignment Price							$11,107	

Section 7

Schedule 2.11(g) Monthly Cost Control Report/Summary of Fiscal Information

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Billing Period _____

Invoice No. _____

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.

State Superfund Standby Contract #D003493

Work Assignment # : D003493-22

Project Name: Haight Farm O&M (6 Months) - Site #8-37-006

TASK 4: Well Installation

Expenditure Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approved Budget	H Estimated Under/Over (G-F)
1. Direct Salary Costs							$1,117	
2. Indirect Costs (185%)							$2,066	
3. Subtotal Direct Salary & Indirect Costs							$3,183	
4. Travel							$39	
5. Other Non-Salary Costs							$91	
6. Subtotal Direct Non-Salary Costs							$130	
7a. Subcontractors							$5,796	
7b. Subcontract Management Fee							$0	
8. Total Work Assignment Cost							$9,109	
9. Fixed Fee							$239	
10. Total Work Assignment Price							$9,348	

Section 7

Schedule 2.11(h) Summary of Labor Hours

Page _____ of _____
Date Prepared _____
Billing Period _____
Invoice No. _____

ECOLOGY AND ENVIRONMENT ENGINEERING, P.C.
State Superfund Standby Contract #D003493
Work Assignment # : D003493-22
Project Name: Haight Farm O&M (6 Months) - Site #8-37-006

Rates for Year Ending February 1, 2001

NSPE Grade	IX		VIII		VII		VI		V		IV		III		II		I		TOTAL
Rate/Hour	$67.65		$44.86		$38.64		$32.69		$27.85		$22.76		$20.19		$17.90		$13.74		HOURS
TASK	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./	EST.	EXP./ EST.
TASK 1: Workplan/HASP	0	0	0	0	0	0	0	0	0	6	0	8	0	8	0	4	0	0	0 28
TASK 2: Monthly O&M Sampling/Repo	0	2	0	0	0	16	0	60	0	18	0	0	0	262	0	12	0	0	0 368
TASK 3: Baseline Sampling	0	1	0	0	0	4	0	16	0	0	0	0	0	48	0	2	0	0	0 69
TASK 4: Well Installation	0	0	0	0	0	0	0	8	0	0	0	36	0	0	0	2	0	0	0 46
TOTAL HOURS		3		0		20		84		24		44		318		20		0	511
TOTAL COST		$203		$0		$773		$2,746		$668		$1,001		$6,380		$358		$0	$12,130

6

Staffing Plan

E & E will be responsible for the administration of this work assignment. All technical work will be performed by E & E and IEG under a subcontract agreement. IEG's technical responsibility will include operations and maintenance of the system for the duration (6 months) of this work assignment, record keeping, and preparation and submittal of monthly O&M reports. E & E will provide a technician for field sampling and laboratory services.

E & E proposes the following primary staffing plan for the completion of this work assignment.

Project Director: D. Albers, P.E. (E & E)
Project Manager: M. Morgante, P.E. (E & E)
IEG Project Manager: Dharmarajan Iyer, Ph.D., P.E.

Task 1: Work Plan

T. Lewandowski, P.E. - Principal Review (E & E)
D. Albers - Preparation & Review
M. Morgante - Preparation
D. Iyer - Preparation
T. Siener, CIH - H&S Plan (E & E)

Task 2: Operation and Maintenance/Reporting

T. Lewandowski - Principal Review
D. Albers - Provide quality control and guidance
M. Morgante - PM coordinating IEG and E & E staff, review/-preparation of reports and modeling
D. Iyer - PM for O & M and sampling activities, complete reporting and modeling
Pat Foote - Assist during system shakedown

Task 3: Baseline Groundwater Sampling

T. Lewandowski - Principal Review
D. Albers - Provide quality control and guidance
M. Morgante - PM coordinating IEG and E & E staff
D. Iyer - PM for sampling activities, complete reporting

Task 4: Install Groundwater Monitoring Well

M. Morgante - PM coordinating IEG and E & E staff
D. Iyer -PM for sampling activities, complete reporting

7 MBE/WBE Utilization Plan

Introduction/Objective

E & E fully subscribes to the New York state policy that MBE/WBE firms be afforded the maximum opportunity to participate in contracts offered by New York state agencies. As a prime contractor to NYSDEC, E & E is committed to full compliance with Executive Law Article 15-A and pertinent federal regulations to further MBE/WBE goals and to achieve significant participation by MBE/WBE firms to a level commensurate with their capabilities and responsibilities.

In this section, E & E's MBE/WBE Utilization Plan is described, including goals for this work assignment, and details regarding the services, firms, and portion of work scheduled to be provided by MBE/WBE firms.

Contract Goals

E & E fully expects to commit to the following established percentage goals. Actual dollar amounts will be contingent upon the total dollar value of the awarded contract.

		Dollar Amount
■ Total project amount:		$123,020
Total percent of MBE/WBE work goal:	20%	24,604
- Total percent of MBE work goal:	15%	18,453
- Total percent of WBE work goal:	5%	6,151

E & E maintains an up-to-date affirmative action plan and MBE/WBE hiring plan to ensure equal opportunity for all job applicants, employees, and subcontractors. For the New York State Superfund standby contract, E & E will use the following procedures and resources to meet the established MBE/WBE goals:

- The E & E project manager will consult with the E & E MBE/WBE subcontracting coordinator to identify and evaluate work that requires subcontractor services. The subcontracting opportunities then will be divided into discrete tasks that may each be completed by MBE or WBE firms.

- Following identification of the discrete tasks, the MBE/WBE subcontracting coordinator will review the New York State Directory of Certified Minority and Women-Owned Business Enterprises and E & E's MBE/WBE database.

  E & E has developed a database to facilitate the acquisition of qualified MBE and WBE firms for work on various state and federal government contracts. This database consists of the following:

  - MBE and WBE firms listed in the current New York State Department of Commerce Directory of Minority and Women-Owned Businesses, entered and cross-referenced by nine categories of services most frequently used by E & E. The categories are as follows:

  - Environmental Consulting
  - Drilling/Geophysics
  - Community Relations
  - Supplier/Equipment
  - General Contractors
  - Engineering
  - Laboratory
  - Construction Management
  - Miscellaneous Services

  This listing and cross-referencing facilitates E & E's rapid identification of potentially qualified MBE/WBE firms for use in various projects.

  - Firms identified in the database as performing environmental consulting, engineering/geophysical, or drilling services were sent questionnaires requesting more detailed information regarding the backgrounds of each firm. Any firm responding to this first-tier questionnaire was then requested to submit additional information in a supplemental questionnaire that provided E & E with adequate information in a standardized format enabling the comparison and selection of potential firms using methodical and consistent evaluation criteria.

- Following the identification of qualified, potential MBE/WBE contractors, the project manager will solicit the firms for bids as delineated below under Criteria for Selection.

Subcontracted Services

Typically, E & E has found that opportunities exist for MBE/WBEs in the following work categories:

- Site security fencing;
- Protective services;
- Drilling and monitoring well installation;
- Soil borings;
- Physical soil tests;
- Site and topographical surveys;
- Title searches;
- Engineering services;
- Structural engineering;
- Geophysical engineering;
- Geophysical surveys;
- Photographic services;
- Heavy equipment;
- Laboratory data validation; and
- Photocopying report reproduction services.

Criteria for Selection

The criteria described below are used to obtain and evaluate bids for other nonprofessional services. Following the identification of discrete tasks and potential MBE/WBE firms by the project manager and MBE/WBE subcontracting coordinator, bid solicitations will be requested from qualified firms and, to the extent possible, one or more MBE/WBE firms will be requested to bid on each task. If the bids exceed $10,000, at least five bids will be obtained. If the bids range between $5,000 and $10,000, three bids will be obtained. In either case, based on the bids submitted, an award will be made to the most responsible MBE/WBE bidder. If the bids are less than $5,000, E & E plans to solicit three verbal quotes from MBE/WBE firms.

Professional services will be subcontracted to MBE/WBE firms pursuant to applicable New York state regulations.

MBE/WBE Services Proposed for this Work Assignment

Iyer Environmental Group, PLLC (IEG), (MBE) will be used as a subconsultant to E & E to complete this work assignment. We will work closely together with IEG completing a significant portion of the technical work. The value of the work for IEG was quoted to be $49,200, approximately 40% of the total value of the work.

NYSDEC-E&E W/A D003493-2

HAIGHT FARM SITE REMEDIAL ACTION

DESCRIPTION	NSPE LEVEL	RATE (2000)	TASK 1 WORK PLANS		TASK 2 O&M / REPORTING		TASK 3 BASELINE SAMPLING		TASK 4 MONITORING WELL		PROJECT TOTAL	
			UNITS	COST	UNITS	COST	UNITS	COST	UNITS	COST	UNITS	COST
PRINCIPAL	VIII	$42.00	11	$462	108	$4,536	15	$630	16	$672	150	$6,300
PROJECT MANAGER/SCIENTIST	VII	$36.00	6	$216							6	$216
SR. PROJ.ENGINEER	VI	$30.00									0	$0
PROJ. ENGINEER/SCIENTIST	IV	$25.00									0	$0
SR. ENGINEER/CADD OPER.	III	$22.50									0	$0
ENGINEER/SR. TECHNICIAN	II	$17.50			470	$8,225	40	$700	20	$350	530	$9,275
TEC/DRAFT/WORD PROC.	I	$15.00									0	$0
TOTAL DIRECT LABOR			17	$678	578	$12,761	55	$1,330	36	$1,022	686	$15,791
OVERHEAD		117%		$793		$14,930		$1,556		$1,196		$18,475
FIXED FEE		15%		$221		$4,154		$433		$333		$5,140
TOTAL LABOR				$1,692		$31,845		$3,319		$2,550		$39,406
TRAVEL & SUBSISTENCE												
MILEAGE	MILE	$0.31	0	$0	6840	$2,120	720	$223	360	$112	7920	$2,455
PER DIEM	DAY	$118	0	$0	0	$0		$0		$0	0	$0
TOTAL TRAVEL & SUBSISTENCE				$0		$2,120		$223		$112		$2,455
EQUIPMENT & SUPPLY												
SUBCONTRACT DRILLING	EACH									$2,634		$2,634
PHOTOIONIZATION METER	DAY	$45			0						0	$0
HEALTH AND SAFETY	MD	$18			26	$468	4	$72			30	$540
CARTRIDGE FILTERS	EACH	$25			24	$600					24	$600
WATERRA PUMP	DAY	$16					4	$64			4	$64
MISC. SUPPLIES (w/ recpt.)	TASK	$500			5	$2,500	1	$500	1	$500	7	$3,500
TOTAL EQUIPMENT/SUPPLIES				$0		$3,568		$636		$3,134		$7,338
TOTAL TASK				$1,692		$37,533		$4,178		$5,796		$49,200

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Schedule 2.11 (h)
Monthly Cost Control Report
Summary of Labor Hours
Number of Direct Labor Hours Expended to Date/Estimated Number of Direct Labor Hours to Completion

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22

09/07/00

NSPE Labor Classification	IX EXP / EST*	VIII EXP / EST	VII EXP / EST	VI EXP / EST	V EXP / EST	IV EXP / EST	III EXP / EST	II EXP / EST	I EXP / EST	Total No. of Direct Labor Hrs. Exp/Est
TASK 1	0 / 0	0 / 11	0 / 6	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 17
TASK 2	0 / 0	0 / 108	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 470	0 / 0	0 / 578
TASK 3	0 / 0	0 / 15	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 40	0 / 0	0 / 55
TASK 4	0 / 0	0 / 16	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 20	0 / 0	0 / 36
TASK 5	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
TASK 6	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
TASK 7	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
TOTAL HOURS:	0 / 0	0 / 150	0 / 6	0 / 0	0 / 0	0 / 0	0 / 0	0 / 530	0 / 0	0 / 686

Schedule 2.11(g)

Monthly Cost Control Report
Summary of Fiscal Information

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22
Task 4 - Monitoring Well Installation
Complete %

Page 6 of 6
Date Prepared
Billing Period

Expenditure Category Category	*A* *Costs Claimed This Period*	*B* *Paid to Date*	*C* *Total Disallowed to Date*	*D* *Total Costs Incurred to Date (A+B+C)*	*E* *Estimated Costs to Completion*	*F* *Estimated Total Work Assignment Price (A+B+E)*	*G* *Approval Budget*	*H* *Estimated Over/Under (G-F)*
1. Direct Salary Costs							*$1,022*	*$1,022*
2. Indirect Costs (1.21%)							*$1,196*	*$1,196*
3. Subtotal Direct Salary Costs and Indirect Costs							*$2,218*	*$2,218*
4. Travel							*$112*	*$112*
5. Other Non-Salary Costs							*$500*	*$500*
6. Subtotal Direct Non-Salary Costs							*$612*	*$612*
7. Subcontractors							*$2,634*	*$2,634*
8. Total WA Cost							*$5,463*	*$5,463*
9. Fixed Fee (15%)							*$333*	*$333*
10. Total Work Price							*$5,796*	*$5,796*

Project Manager (Engineer) _____ *DATE:* _____

Schedule 2.11(g)

Monthly Cost Control Report
Summary of Fiscal Information

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22
Task 3 - Baseline Sampling
Complete %

Page 5 of 6
Date Prepared
Billing Period

Expenditure Category Category	A Costs Claimed This Period	B Paid to Date	C Total Disallowed to Date	D Total Costs Incurred to Date (A+B+C)	E Estimated Costs to Completion	F Estimated Total Work Assignment Price (A+B+E)	G Approval Budget	H Estimated Over/Under (G-F)
1. Direct Salary Costs							$1,330	$1,330
2. Indirect Costs (1.21%)							$1,556	$1,556
3. Subtotal Direct Salary Costs and Indirect Costs							$2,886	$2,886
4. Travel							$223	$223
5. Other Non-Salary Costs							$636	$636
6. Subtotal Direct Non-Salary Costs							$859	$859
7. Subcontractors								
8. Total WA Cost							$3,745	$3,745
9. Fixed Fee (15%)							$433	$433
10. Total Work Price							$4,178	$4,178

Project Manager (Engineer) _____ *DATE:* _____

Schedule 2.11(g)

Monthly Cost Control Report
Summary of Fiscal Information

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22
Task 2 - O&M / Reporting
Complete %

Date Prepared
Billing Period

Expenditure Category Category	*A* *Costs Claimed This Period*	*B* *Paid to Date*	*C* *Total Disallowed to Date*	*D* *Total Costs Incurred to Date (A+B+C)*	*E* *Estimated Costs to Completion*	*F* *Estimated Total Work Assignment Price (A+B+E)*	*G* *Approval Budget*	*H* *Estimated Over/Under (G-F)*
1. Direct Salary Costs							*$12,761*	*$12,761*
2. Indirect Costs (1.21%)							*$14,930*	*$14,930*
3. Subtotal Direct Salary Costs and Indirect Costs							*$27,691*	*$27,691*
4. Travel							*$2,120*	*$2,120*
5. Other Non-Salary Costs							*$3,568*	*$3,568*
6. Subtotal Direct Non-Salary Costs							*$5,688*	*$5,688*
7. Subcontractors								
8. Total WA Cost							*$33,380*	*$33,380*
9. Fixed Fee (15%)							*$4,154*	*$4,154*
10. Total Work Price							*$37,533*	*$37,533*

*Project Manager (Engineer)*_____ *DATE:*_____

Schedule 2.11(g)

Monthly Cost Control Report
Summary of Fiscal Information

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22
Task 1 - Scoping/Work Plan
Complete %

*Page_3_ of _6_*
Date Prepared
Billing Period

Expenditure Category Category	*A* *Costs Claimed This Period*	*B* *Paid to Date*	*C* *Total Disallowed to Date*	*D* *Total Costs Incurred to Date (A+B+C)*	*E* *Estimated Costs to Completion*	*F* *Estimated Total Work Assignment Price (A+B+E)*	*G* *Approval Budget*	*H* *Estimated Over/Under (G-F)*
1. Direct Salary Costs							*$678*	*$678*
2. Indirect Costs (1.21%)							*$793*	*$793*
3. Subtotal Direct Salary Costs and Indirect Costs							*$1,471*	*$1,471*
4. Travel								
5. Other Non-Salary Costs								
6. Subtotal Direct Non-Salary Costs								
7. Subcontractors								
8. Total WA Cost							*$1,471*	*$1,471*
9. Fixed Fee (15%)							*$221*	*$221*
10. Total Work Price							*$1,692*	*$1,692*

Project Manager (Engineer) _____

DATE: _____

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22
All Tasks
Complete %

Date Prepared
Billing Period

Schedule 2.11(g) - Supplemental

Cost Control Report for Subcontract

Subcontract Name	A Subcontract Cost Claimed this Application Incl. Resubmittals	B Subcontract Costs Approved For Paym on Previous Applica	C Total Subcontrac Costs to Date (A plus B)	D Subcontract Approved Budget	E Management Fee Budget	F Management Fee Paid	G Total Cost to Date (C plus F)
1 Monitoring Well Installation				$2,634			
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12 TOTALS				$2,634			

Project Manager (Engineer)_____ DATE:_____

Schedule 2.11(g)

Monthly Cost Control Report
Summary of Fiscal Information

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22
All Tasks
Complete %

*Page_1_ of _6_*
Date Prepared 09/07/00
Billing Period

Expenditure Category Category	*A* *Costs Claimed This Period*	*B* *Paid to Date*	*C* *Total Disallowed to Date*	*D* *Total Costs Incurred to Date (A+B+C)*	*E* *Estimated Costs to Completion*	*F* *Estimated Total Work Assignment Price (A+B+E)*	*G* *Approval Budget*	*H* *Estimated Over/Under (G-F)*
1. Direct Salary Costs							*$15,791*	*$15,791*
2. Indirect Costs (1.21%)							*$18,475*	*$18,475*
3. Subtotal Direct Salary Costs and Indirect Costs							*$34,266*	*$34,266*
4. Travel							*$2,455*	*$2,455*
5. Other Non-Salary Costs							*$4,704*	*$4,704*
6. Subtotal Direct Non-Salary Costs							*$7,159*	*$7,159*
7. Subcontractors								
8. Total WA Cost							*$44,060*	*$44,060*
9. Fixed Fee (15%)							*$5,140*	*$5,140*
10. Total Work Price							*$49,200*	*$49,200*

*Project Manager (Engineer)*_____ *DATE:*_____

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22

Schedule 2.11 (f)

Unit Price Subcontracts

Name of Contractor	*Services to be Performed*	*Subcontract Price*	*Management Fee*
A. NOTHNAGLE DRILLING	Well Installation/Development	**$2,634**	**$0**
Scottsville, NY			

Item	*Max. Reimbursement Rate (Specify Unit)*		*Est. No. Of Units*	*Total Est. Cost*
Mobilization/Demobilization	$400.00	each	1	$400.00
6.25-inch Hollow Stem Auger	$14.00	feet	12	$168.00
5-7/8-inch Roller bit	$26.00	feet	12	$312.00
Split-spoon sampling	$12.00	each	6	$72.00
PVC Well Screen - 4" Sched. 40	$18.00	feet	15	$270.00
PVC Riser - 4" Sched. 40 (Graded)	$15.00	feet	12	$180.00
Well Screen Sand	$6.00	feet	17	$102.00
Seal for 4" Well in 6.25" Auger	$25.00	feet	2	$50.00
6-inch Steel Temporary Casing	$10.00	feet	10	$100.00
6-inch Protective Casing	$150.00	each	1	$150.00
55-gallon Drums	$30.00	each	2	$60.00
Fill/Stage Drums	$150.00	hour	1	$150.00
Equipment Decontamination	$130.00	hour	2	$260.00
Steam Cleaner Rental w/Water Tank	$50.00	day	2	$100.00
Well Development	$130.00	hour	2	$260.00

Subtotal Subcontract Price	**$2,634**
Subcontract Management Fee	**$0**
TOTAL	**$2,634**

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22

Schedule 2.11(d) 5

Consumable Supplies

Item	Estimated Quantity	Unit Costs ($)	Total Budgeted Cost (Col. 2 x 3) ($)
Health and Safety	30	$18	$540
Cartridge Filters	24	$25	$600
		TOTAL:	$1,140.00

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22

Schedule 2.11(d) 3

Maximum Reimbursement Rate for Vendor Rented Equipment

Item	Max. Reimbursement Rate ($)*	Est. Usage (Unit of Time)	Est. Rental Cost ($) (Col. 2 x 3)
Photoionization Meter	$45.00		
Waterra Pump	$16.00	4	$64
		TOTAL:	$64

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22

SCHEDULE 2.11(c)

Direct Non-Salary Costs
Work Assigment Number

Item	Max Reimbursement Rate (Specify Unit)	Est. No. of Units	Total Estimated Cost ($)
A) SAMPLE ANALYSIS RATE			
NONE			
B) MISCELLANEOUS			
1 MILEAGE	0.31 /MILE	7920	$2,455
2 PER DIEM	118 /DAY		
3 SUPPLIES w/recpt (grease, oil, plowing, tolls, etc.)	500 /MONTH	7	$3,500
Total Direct Non-Salary Costs			$5,955

*See Schedule 2.10(b) for rates.

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22

Date 09/07/00

Schedule 2.11(b-1)

Direct Administrative Labor Hours Budgeted

Labor Classification	*IX*	*VIII*	*VII*	*VI*	*V*	*IV*	*III*	*II*	*I*	*Total No. of Direct Labor Hr*
Task 1 - Scoping/Work Plan	0	4		0	0	0	0	0	0	4
Task 2 - O&M / Reporting	0	6	0	0	0	0	0	0	0	6
Task 3 - Baseline Sampling	2	1	0	0	0	0	0	0	0	3
Total Hours	2	11	0	0	0	0	0	0	0	13

Contract/Project administrative hours would include but not necessarily be limited to the following activities

1) Work Plan Development
   - Conflict of Interest Check
   - Develope budget schedules and supporting documentation
2) Review Work Assignment (WA) Progress
   - Conduct progress reviews
   - Prepare monthly project report
   - Update WA progress schedule
   - Prepare monthly M/MBE Utilization Report
3) Review Work Assignment Costs
   - Prepare monthly cost control report
   -Cost Control reviews
4) CAP Preparation
   - Oversee and prepare monthly CAP
   - Respond to payment issues/disallowances
   - NSPE list updates
   - Equipment Inventory
5) Manage subcontracts
6) Implement and manage program management and staffing plans
7) Conduct Health and Safety Reviews
8) Report editing

Contract/Project administrative hour would not include activities such as:

1) QA/QC reviews
2) Technical oversight by management
3) Develop subcontracts
4) Work Plan Development (other than COI and budget preparation)
5) Review of deliverables

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22

SCHEDULE 2.11(backup)

DIRECT LABOR COSTS BUDGETED

Labor Classification	IX	VIII	VII	VI	V	IV	III	II	I	TOTALS
*Av. Salary Rate ($; Year 1998)	--	42	36	30	--	25	22.5	17.5	15	
Task 1 - Scoping/Work Plan	$0	$462	$216	$0	$0	$0	$0	$0	$0	$678
Task 2 - O&M / Reporting	$0	$4,536	$0	$0	$0	$0	$0	$8,225	$0	$12,761
Task 3 - Baseline Sampling	$0	$630	$0	$0	$0	$0	$0	$700	$0	$1,330
Task 4 - Monitoring Well Installation	$0	$672	$0	$0	$0	$0	$0	$350	$0	$1,022
Total Hours	$0	$6,300	$216	$0	$0	$0	$0	$9,275	$0	$15,791

IYER ENVIRONMENTAL GROUP PLLC
HAIGHT FARM SITE REMEDIAL ACTION
NYSDEC-E&E W/A D003493-22

Date 09/07/00

Schedule 2.11(b)

Direct Labor Hours Budgeted

Labor Classification	***IX***	***VIII***	***VII***	***VI***	***V***	***IV***	***III***	***II***	***I***	***Total Direct Labor Hrs.***
*Av. Salary Rate ($; Year 1998)	--	$42.00	$36.00	$30.00	--	$25.00	$22.50	$17.50	$15.00	
Task 1 - Scoping/Work Plan		11	6	0		0	0	0	0	17
Task 2 - O&M / Reporting		108	0	0		0	0	470	0	578
Task 3 - Baseline Sampling		15	0	0		0	0	40	0	55
Task 4 - Monitoring Well Installation		16	0	0		0	0	20	0	36
Total Hours		150	6	0	0	0	0	530	0	686
Total Direct Labor Cost ($)	$0	$6,300	$216	$0	$0	$0	$0	$9,275	$0	$15,791

*For multiple years use one average salary reate row for each year and each years subtotal Labor Cost.

A

Health and Safety Plan

Revision 2
July 2000

ecology and environment, inc.

SITE-SPECIFIC
HEALTH AND SAFETY PLAN

Project: HAIGHT FARM SITE

Project No.: 000699. Q P02

TDD/PAN No.: —

Project Location: TOWN OF CLARENDON, ORLEANS Co, NY

Proposed Date of Field Activities: 10/1/00 - 4/30/00

Project Director: DAVID ALBERS

Project Manager: MIKE MORGANTE

Prepared by: MIKE MORGANTE Date Prepared: 9/6/00

Approved by: [signature] Date Approved: 9/8/00

1. INTRODUCTION

1.1 POLICY

It is E & E's policy to ensure the health and safety of its employees, the public, and the environment during the performance of work it conducts. This site-specific health and safety plan (SHASP) establishes the procedures and requirements to ensure the health and safety of E & E employees for the above-named project. E & E's overall safety and health program is described in *Corporate Health and Safety Program for Toxic and Hazardous Substances* (CHSP). After reading this plan, applicable E & E employees shall read and sign E & E's Site-Specific Health and Safety Plan Acceptance form.

This SHASP has been developed for the sole use of E & E employees and is not intended for use by firms not participating in E & E's training and health and safety programs. Subcontractors are responsible for developing and providing their own safety plans.

This SHASP has been prepared to meet the following applicable regulatory requirements and guidance:

Applicable Regulation/Guidance
29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER)
Other: NA

1.2 SCOPE OF WORK

Description of Work: Operations & Maintenance activities at a groundwater treatment system (dual vapor extraction with carbon absorption) including sampling; drilling to install one monitoring well.

Equipment/Supplies: Attachment 1 contains a checklist of equipment and supplies that will be needed for this work.

The following is a description of each numbered task:

Task Number	Task Description
1	O+M activities at treatment system
2	Monitoring well sampling
3	Monitoring well installation

1.3 SITE DESCRIPTION

Site Map: A site map or sketch is attached at the end of this plan. See attachment A

Site History/Description (see project work plan for detailed description): See attachment B

Is the site currently in operation? ☐ Yes ☒ No

Locations of Contaminants/Wastes: The Haight farm site is an approximately 2-acre residential property located on Upper Hoiley Rd. in Clarendon, NY.

Types and Characteristics of Contaminants/Wastes:

☑ Liquid	☐ Solid	☐ Sludge	☐ Gas/Vapor
☐ Flammable/Ignitable	☑ Volatile	☐ Corrosive	☐ Acutely Toxic
☐ Explosive	☐ Reactive	☐ Carcinogenic	☐ Radioactive
☐ Medical/Pathogenic	Other:		

2. ORGANIZATION AND RESPONSIBILITIES

E & E team personnel shall have on-site responsibilities as described in E & E's standard operating procedure (SOP) for Site Entry Procedures (GENTECH 2.2) The project team, including qualified alternates, is identified below.

Name	Site Role/Responsibility
Mike Morgante	Project/Task Manager
Rick Labocetta	Site Safety Officer

3. TRAINING

Prior to work, E & E team personnel shall have received training as indicated below. As applicable, personnel shall have read the project work plan, sampling and analysis plan, and/or quality assurance project plan prior to project work.

Training	Required
40-Hour OSHA HAZWOPER Initial Training and Annual Refresher (29 CFR 1910.120)	X
Annual First Aid/CPR	X
Hazard Communication (29 CFR 1910.1200)	X

Training	Required
40-Hour Radiation Protection Procedures and Investigative Methods	n/a
8-Hour General Radiation Health and Safety	n/a
Radiation Refresher	n/a
DOT and Biannual Refresher	X
Other:	

4. MEDICAL SURVEILLANCE

4.1 MEDICAL SURVEILLANCE PROGRAM

E & E field personnel shall actively participate in E & E's medical surveillance program as described in the CHSP and shall have received, within the past year, an appropriate physical examination and health rating.

E & E's health and safety record (HSR) form will be maintained on site by each E & E employee for the duration of his or her work. E & E employees should inform the site safety officer (SSO) of any allergies, medical conditions, or similar situations that are relevant to the safe conduct of the work to which this SHASP applies.

Is there a concern for radiation at the site? ☐ Yes ☒ No
If no, go to 5.1.

4.2 RADIATION EXPOSURE

4.2.1 External Dosimetry

Thermoluminescent Dosimeter (TLD) Badges: TLD badges are to be worn by all E & E field personnel on certain required sites.

Pocket Dosimeters: n/a

Other: _____

4.2.2 Internal Dosimetry

☐ Whole body count ☐ Bioassay ☐ Other

Requirements: n/a

4.2.3 Radiation Dose

Dose Limits: E & E's radiation dose limits are stated in the CHSP. Implementation of these dose limits may be designated on a site-specific basis.

Site-Specific Dose Limits: n/a

ALARA Policy: Radiation doses to E & E personnel shall be maintained as low as reasonably achievable (ALARA), taking into account the work objective, state of technology available, economics of improvements in dose reduction with respect to overall health and safety, and other societal and socioeconomic considerations.

5. SITE CONTROL

5.1 SITE LAYOUT AND WORK ZONES

Site Work Zones: Refer to the map or site sketch, attached at the end of this plan, for designated work zones.
See Attachment A (Site Map)

Site Access Requirements and Special Considerations: n/a

Illumination Requirements: Daylight for outdoor work (well drilling + sampling)

Sanitary Facilities (e.g., toilet, shower, potable water):

On-Site Communications: n/a

Other Site-Control Requirements: n/a

5.2 SAFE WORK PRACTICES

Daily Safety Meeting: A daily safety meeting will be conducted for all E & E personnel and documented on the Daily Safety Meeting Record form or in the field logbook. The information and data obtained from applicable site characterization and analysis will be addressed in the safety meetings and also used to update this SHASP, as necessary.

Work Limitations: Work shall be limited to a maximum of 12 hours per day. If 12 consecutive days are worked, at least one day off shall be provided before work is resumed. Work will be conducted in daylight hours unless prior approval is obtained and the illumination requirements in 29 CFR 1910.120(m) are satisfied.

Weather Limitations: Work shall not be conducted during electrical storms. Work conducted in other inclement weather (e.g., rain, snow) will be approved by project management and the regional safety coordinator or designee.

Other Work Limitations: n/a

Buddy System: Field work will be conducted in pairs of team members according to the buddy system.

Line of Sight: Each field team member shall remain in the line of sight and within verbal communication of at least one other team member.

Eating, Drinking, and Smoking: Eating, drinking, smoking, and the use of tobacco products shall be prohibited in the exclusion and contamination reduction areas, at a minimum, and shall only be permitted in designated areas.

Contamination Avoidance: Field personnel shall avoid unnecessary contamination of personnel, equipment, and materials to the extent practicable.

Sample Handling: Protective gloves of a type designated in Section 7 will be worn when containerized samples are handled for labeling, packaging, transportation, and other purposes.

Vermiculite Handling: Respiratory protection (i.e., high-efficiency particulate air filtration) is recommended when vermiculite is used to package samples into shipping containers (some vermiculite contains low concentrations of asbestos).

Other Safe Work Practices: n/a

6. HAZARD EVALUATION AND CONTROL

6.1 PHYSICAL HAZARD EVALUATION AND CONTROL

Potential physical hazards and their applicable control measures are described in the following table for each task.

Hazard	Task Number	Hazard Control Measures
Biological (flora, fauna, etc.)		• Potential hazard: _____ • Establish site-specific procedures for working around identified hazards. • Other: _____
Cold Stress	2, 3	• Provide warm break area and adequate breaks. • Provide warm noncaffeinated beverages. • Promote cold stress awareness. • See *Cold Stress Prevention and Treatment* (attached at the end of this plan if cold stress is a potential hazard).
Compressed Gas Cylinders		• Use caution when moving or storing cylinders. • A cylinder is a projectile hazard if it is damaged or its neck is broken. • Store cylinders upright and secure them by chains or other means. • Other: _____
Confined Space		• Ensure compliance with 29 CFR 1910.146. • See SOP for Confined Space Entry. Additional documentation is required. • Other: _____
Drilling (subcontractor) drilling,	3	• See SOP for Health and Safety on Drilling Rig Operations. Additional documentation may be required. • Landfill caps will not be penetrated without prior discussions with corporate health and safety staff. • Other: install one monitoring well
Drums and Containers		• Ensure compliance with 29 CFR 1910.120(j). • Consider unlabeled drums or containers to contain hazardous substances and handle accordingly until the contents are identified. • Inspect drums or containers and assure integrity prior to handling. • Move drums or containers only as necessary; use caution and warn nearby personnel of potential hazards. • Open, sample, and/or move drums or containers in accordance with established procedures; use approved drum/container-handling equipment.

Hazard	Task Number	Hazard Control Measures
		• Other: _____
Electrical (drilling Subcontractor)	3	• Ensure compliance with 29 CFR 1910 Subparts J and S. • Locate and mark energized lines. • De-energize lines as necessary. • Ground all electrical circuits. • Guard or isolate temporary wiring to prevent accidental contact. • Evaluate potential areas of high moisture or standing water and define special electrical needs. • Other: _____
Excavation and Trenching		• Ensure that excavations comply with and personnel are informed of the requirements of 29 CFR 1926 Subpart P. • Ensure that any required sloping or shoring systems are approved as per 29 CFR 1926 Subpart P. • Identify special personal protective equipment (PPE) (see Section 7) and monitoring (see Section 8) needs if personnel are required to enter approved excavated areas or trenches. • Maintain line of sight between equipment operators and personnel in excavations/trenches. Such personnel are prohibited from working in close proximity to operating machinery. • Suspend or shut down operations at signs of cave in, excessive water, defective shoring, changing weather, or unacceptable monitoring results. • Other: _____ • Other: _____
Fire and Explosion		• Inform personnel of the location(s) of potential fire/explosion hazards. • Establish site-specific procedures for working around flammables. • Ensure that appropriate fire suppression equipment and systems are available and in good working order. • Define requirements for intrinsically safe equipment. • Identify special monitoring needs (see Section 8). • Remove ignition sources from flammable atmospheres. • Coordinate with local fire-fighting groups regarding potential fire/explosion situations. • Establish contingency plans and review daily with team members. • Other: _____
Heat Stress	1,2,3	• Provide cool break area and adequate breaks. • Provide cool noncaffeinated beverages. • Promote heat stress awareness. • Use active cooling devices (e.g., cooling vests) where specified. • See *Heat Stress Prevention and Treatment* (attached at the end of this plan if heat stress is a potential hazard).
Heavy Equipment Operation (drilling subcontractor)	3	• Define equipment routes, traffic patterns, and site-specific safety measures. • Ensure that operators are properly trained and equipment has been properly inspected and maintained. Verify back-up alarms. • Ensure that ground spotters are assigned and informed of proper hand signals and communication protocols.

Hazard	Task Number	Hazard Control Measures
		• Identify special PPE (Section 7) and monitoring (Section 8) needs.
		• Ensure that field personnel do not work in close proximity to operating equipment.
		• Ensure that lifting capacities, load limits, etc., are not exceeded. • Other: _____
Heights (Scaffolding, Ladders, etc.)		• Ensure compliance with applicable subparts of 29 CFR 1910. • Identify special PPE needs (e.g., lanyards, safety nets, etc.) • Other: _____
Noise	1,3	• Establish noise level standards for on-site equipment/operations. • Inform personnel of hearing protection requirements (Section 7). • Define site-specific requirements for noise monitoring (Section 8). • Other: _____
Overhead Obstructions	3	• Wear hard hat. • Other: heavy equipment - - drilling
Power Tools		• Ensure compliance with 29 CFR 1910 Subpart P. • Other: _____
Sunburn		• Apply sunscreen. • Wear hats/caps and long sleeves. • Other: _____
Utility Lines	3	• Identify/locate existing utilities prior to work. • Ensure that overhead utility lines are at least 25 feet away from project activities. • Contact utilities to confirm locations, as necessary. • Other: _____
Weather Extremes	2,3	• Potential hazards: _____ • Establish site-specific contingencies for severe weather situations. • Provide for frequent weather broadcasts. • Weatherize safety gear, as necessary (e.g., ensure eye wash units cannot freeze, etc.). • Identify special PPE (Section 7) needs. • Discontinue work during severe weather. • Other: _____
Other:		• n/a • _____
Other:		• n/a • _____

6.2 CHEMICAL HAZARD EVALUATION AND CONTROL

6.2.1 Chemical Hazard Evaluation

Potential chemical hazards are described by task number in Table 6-1. Hazard Evaluation Sheets for major known contaminants are attached at the end of this plan.

Table 6-1

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA) PEL	REL	TLV	Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	FID/PID Relative Response	FID/PID Ioniz. Poten. (eV)
1, 2, 3	TCE	~~200~~ 100 ppm	~~50~~ 25 ppm	~~65~~ 50 ppm	Y	inhalation ingestion skin/eye contact	Vertigo, tremors, nausea, vomiting, irritated eyes, pares, dermal irritation	Chloroform-like odor		9.45 eV

Note: Use an asterisk (*) to indicate known or suspected carcinogens.

6.2.2 Chemical Hazard Control

An appropriate combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below published exposure levels (see Section 6.2.1).

Applicable Engineering/Administrative Control Measures: Level D PPE

E+E will observe condition and calibration of Subcontractor air monitoring instruments prior to beginning work.

PPE: See Section 7.

6.3 RADIOLOGICAL HAZARD EVALUATION AND CONTROL

6.3.1 Radiological Hazard Evaluation

Potential radiological hazards are described below by task number. Hazard Evaluation Sheets for major known contaminants are attached at the end of this plan.

Task Number	Radionuclide	DAC (µCi/ml)	Route(s) of Exposure	Major Radiation(s)	Energy(s) (MeV)	Half-Life
		N/A				

6.3.2 Radiological Hazard Control

Engineering/administrative controls and work practices shall be instituted to reduce and maintain employee exposures to a level at or below the permissible exposure/dose limits (see sections 4.2.3 and 6.3.1). Whenever engineering/administrative controls and work practices are not feasible or effective, any reasonable combination of engineering/administrative controls, work practices, and PPE shall be used to reduce and maintain employee exposures to a level at or below permissible exposure/dose limits.

Applicable Engineering/Administrative Control Measures: N/A

PPE: See Section 7.

7. LEVEL OF PROTECTION AND PERSONAL PROTECTIVE EQUIPMENT

7.1 LEVEL OF PROTECTION

The following levels of protection (LOPs) have been selected for each work task based on an evaluation of the potential or known hazards, the routes of potential hazard, and the performance specifications of the PPE. On-site monitoring results and other information obtained from on-site activities will be used to modify these LOPs and the PPE, as necessary, to ensure sufficient personnel protection. The authorized LOP and PPE shall only be changed with the approval of the regional safety coordinator or designee. Level A is not included below because Level A activities, which are performed infrequently, will require special planning and addenda to this SHASP.

Task Number	B	C	D	Modifications Allowed
1			X	
2		(X)	X	
3		(X)	X	

Note: Use "X" for initial levels of protection. Use "(X)" to indicate levels of protection that may be used as site conditions warrant.

7.2 PERSONAL PROTECTIVE EQUIPMENT

The PPE selected for each task is indicated below. E & E's PPE program complies with 29 CFR 1910.120 and 29 CFR 1910 Subpart I and is described in detail in the CHSP. Refer to 29 CFR 1910 for the minimum PPE required for each LOP.

PPE	Task Number/LOP					
	1	2	3			
Full-face APR						
PAPR						
Cartridges:						
H						
GMC-H, GMC-P100						
GME-H, GME-P100						
Other:						
Positive-pressure, full-face SCBA						
Spare air tanks (Grade D air)						
Positive-pressure, full-face, supplied-air system						
Cascade system (Grade D air)						
Manifold system						
5-Minute escape mask						
Safety glasses	✓	✓	✓			
Monogoggles						
Coveralls/clothing	✓	✓	✓			

PPE	Task Number/LOP					
	1	2	3			
Protective clothing:						
Tyvek						
Saranex						
Other:						
Splash apron						
Inner gloves:						
Cotton						
Nitrile						
Latex	✓	✓	✓			
Other:						
Outer gloves:						
Viton						
Rubber	✓	✓	✓			
Neoprene						
Nitrile						
Other:						
Work gloves						
Safety boots (as per ANSI Z41)	✓	✓	✓			
Neoprene safety boots (as per ANSI Z41)						
Boot covers (type:)						
Hearing protection (type: ___)	✓		✓			
Hard hat			✓			
Face shield						
Other:						
Other:						

8. HEALTH AND SAFETY MONITORING

Health and safety monitoring will be conducted to ensure proper selection of engineering/administrative controls, work practices, and/or PPE so that employees are not exposed to hazardous substances at levels that exceed permissible exposure/dose limits or published exposure levels. Health and safety monitoring will be conducted using the instruments, frequency, and action levels described in Table 8-1. Health and safety monitoring instruments shall have been appropriately calibrated and/or performance-checked prior to use.

Table 8-1

HEALTH AND SAFETY MONITORING

Instrument	Task Number	Contaminant(s)	Monitoring Location	Monitoring Frequency	Action Levels[a]	
☐ PID (e.g., HNu IS-101) ☑ FID (e.g., OVA 128-GC) (subcontractor)	2, 3	Volatile organics	Borehole Breathing zone	Continuous	**Unknown Vapors** Background to 1 ppm: Level D 1 to 5 ppm above background: Level C 5 to 500 ppm above background: Level B >500 ppm above background: Level A	**Contaminant-Specific**
Oxygen Meter/Explosimeter (drilling sub)	3	Explosive vapor	Borehole	continuous	**Oxygen** <19.5% or >22.0%: Evacuate area; eliminate ignition sources; reassess conditions. 19.5 to 22.0%: Continue work in accordance with action levels for other instruments.	**Explosivity** ≤10% LEL: Continue work in accordance with action levels for other instruments; monitor continuously for combustible atmospheres. >10% LEL: Evacuate area; eliminate ignition sources; reassess conditions.
Radiation Alert Monitor (Rad-mini or RAM-4)					<0.1 mR/hr: Continue work in accordance with action levels for other instruments. ≥0.1 mR/hr: Evacuate area; reassess work plan and contact radiation safety specialist.	
Mini-Ram Particulate Monitor (drilling sub)	3	airborne Particulate	Breathing zone + ambient air	continuous	**General/Unknown** Evaluate health and safety measures when dust levels exceed 2.5 milligrams per cubic meter.	**Contaminant-Specific**
HCN/H_2S (Monitox)					≥4 ppm: Leave area and consult with SSO.	
Draeger Colorimetric Tubes					**Tube** **Action Level** **Action**	
Air Monitor/Sampler Type:_____ Sampling medium: _____					**Action Level**	**Action**

Table 8-1

HEALTH AND SAFETY MONITORING

Instrument	Task Number	Contaminant(s)	Monitoring Location	Monitoring Frequency	Action Levels[a]
Personal Sampling Pump Type:_____ Sampling medium: _____					**Action Level** **Action**
Micro R Meter					<2 mR/hr: Continue work in accordance with action levels for other instruments. 2 to 5 mR/hr: In conjunction with a radiation safety specialist, continue work and perform stay-time calculations to ensure compliance with dose limits and ALARA policy. >5 mR/hr: Evacuate area to reassess work plan and evaluate options to maintain personnel exposures ALARA and within dose limits.
Ion Chamber					See micro R meter action levels above.
Radiation Survey Ratemeter/Scaler with External Detector(s)					**Detector** **Action Level** **Action**
Noise Dosimeter (Sound Level Meter)					≤85 decibels as measured using the A-weighed network (dBa): Use hearing protection if exposure will be sustained throughout work shift. >85 dBA: Use hearing protection. >120 dBA: Leave area and consult with safety personnel.
Other:					
Other:					

[a] Unless stated otherwise, airborne contaminant concentrations are measured as a time-weighted average in the worker's breathing zone. Acceptable concentrations for known airborne contaminants will be determined based on OSHA/NIOSH/ACGIH and/or NRC exposure limits. As a guideline, 1/2 the PEL/REL/TLV, whichever is lower should be used.

9. DECONTAMINATION PROCEDURES

All equipment, materials, and personnel will be evaluated for contamination upon leaving the exclusion area. Equipment and materials will be decontaminated and/or disposed and personnel will be decontaminated, as necessary. Decontamination will be performed in the contamination reduction area or any designated area such that the exposure of uncontaminated employees, equipment, and materials will be minimized. Specific procedures are described below.

Equipment/Material Decontamination Procedures (specified by work plan): provided by drilling subcontractor

Ventilation: All decontamination procedures will be conducted in a well-ventilated area. drilling subcontractor

Personnel Decontamination Procedures: disposal PPE

PPE Requirements for Personnel Performing Decontamination: n/a

Personnel Decontamination in General: Following appropriate decontamination procedures, all field personnel will wash their hands and face with soap and potable water. Personnel should shower at the end of each work shift.

Disposition of Disposable PPE: Disposable PPE must be rendered unusable and disposed as indicated in the work plan.

Disposition of Decontamination Wastes (e.g., dry wastes, decontamination fluids, etc.): drill cuttings

10. EMERGENCY RESPONSE

This section contains additional information pertaining to on-site emergency response and does not duplicate pertinent emergency response information contained in earlier sections of this plan (e.g., site layout, monitoring equipment, etc.). Emergency response procedures will be rehearsed regularly, as applicable, during project activities.

10.1 EMERGENCY RESPONSIBILITIES

All Personnel: All personnel shall be alert to the possibility of an on-site emergency; report potential or actual emergency situations to the team leader and SSO; and notify appropriate emergency resources, as necessary.

Team Leader: The team leader will determine the emergency actions to be performed by E & E personnel and will direct these actions. The team leader also will ensure that applicable incidents are reported to appropriate E & E and client project personnel and government agencies.

SSO: The SSO will recommend health/safety and protective measures appropriate to the emergency.

Other: _____

_____

10.2 LOCAL AND SITE RESOURCES (including phone numbers)

Ambulance: 911

Hospital: Lakeside Memorial Hospital (see Item c)

Directions to Hospital (map attached at the end of this plan): From the site: take Upper Holley Road (north) to Route 31A, turn right. Take Route 31A to Route 19 (north), turn left. Take Route 19 to West Avenue, Hospital is on the left.

Poison Control: 911 or 1-800/336-6997

Police Department: 911

Fire Department: 911

Client Contact: David Chiusano, NYSDEC PM 518-457-7878

Site Contact: n/a

On-Site Telephone Number: telephone in treatment trailer. Number to be provided at start of work.

Cellular Telephone Number: n/a

Radios Available: n/a

Other: —

10.3 E & E EMERGENCY CONTACTS

E & E Emergency Response Center (24 Hours):	716/684-8940
Corporate Health and Safety Director, Dr. Paul Jonmaire:	716/684-8060 (office) 716/655-1260 (home)
Regional Office Contact:	_____ (office)
	n/a (home)
Other:	_____ (office)
a. E & E Emergency Response Center:	716/684-8940
b. Corporate Health and Safety Director, Dr. Paul Jonmaire:	716/684-8060 (office) 716/655-1260 (home)
c. Corporate Safety Officer, Tom Siener	716/684-8060 (office) 716/662-4740 (home)

10.4 OTHER EMERGENCY RESPONSE PROCEDURES

On-Site Evacuation Signal/Alarm (must be audible and perceptible above ambient noise and light levels): _____

_____

On-Site Assembly Area: Office Trailer Area

Emergency Egress Route to Get Off Site: Go through intersection of state route 31A and state route 237. Take first left onto Upper Holley Rd. to site (# 4879).

Off-Site Assembly Area: n/a

Preferred Means of Reporting Emergencies: 911

Site Security and Control: In an emergency situation, personnel will attempt to secure the affected area and control site access.

Emergency Decontamination Procedures:

PPE: Personnel will don appropriate PPE when responding to an emergency situation. The SSO and Section 7 of this plan will provide guidance regarding appropriate PPE.

Emergency Equipment: Appropriate emergency equipment is listed in Attachment 1. Adequate supplies of this equipment shall be maintained in the support area or other approved work location.

Incident Reporting Procedures: provide incident report to DEC representative

ATTACHMENT 1
EQUIPMENT/SUPPLIES CHECKLIST

INSTRUMENTATION	No.	EMERGENCY EQUIPMENT	No.
OVA		First aid kit	
Thermal desorber		Stretcher	
O_2/explosimeter w/cal. kit		Portable eye wash	
Photovac tip		Blood pressure monitor	
HNu (probe: _____eV)		Fire blanket	
Magnetometer		Fire extinguisher	
Pipe locator		Thermometer (medical)	
Weather station		Spill kit	
Draeger tube kit (tubes: _____)			
Brunton compass			
Real-time cyanide monitor			
Real-time H_2S monitor			
Heat stress monitor			
Noise equipment		**DECONTAMINATION EQUIPMENT**	
Personal sampling pumps and supplies		Wash tubs	
MiniRam dust monitor		Buckets	
Mercury monitor		Scrub brushes	
Spare batteries (type: _____)		Pressurized sprayer	
		Spray bottle	
		Detergent (type: _____)	
RADIATION EQUIPMENT/SUPPLIES		Solvent (type: _____)	
Documentation forms		Plastic sheeting	
Portable ratemeter		Tarps and poles	
Scaler/ratemeter		Trash bags	
1" NaI gamma probe		Trash cans	
2" NaI gamma probe		Masking tape	
ZnS alpha probe		Duct tape	
GM pancake probe		Paper towels	
Tungsten-shielded GM probe		Face mask	
Micro R meter		Face mask sanitizer	
Ion chamber		Step ladders	
Alert monitor		Distilled water	
Pocket dosimeter		Deionized water	
Dosimeter charger			
Radiation warning tape			
Radiation decon supplies			
Spare batteries (type: _____)			
SAMPLING EQUIPMENT		**MISCELLANEOUS (Cont.)**	

Provided by Subcontractors as needed

Provided by Subcontractors as needed

n/a

Provided by subcontractors as needed

ATTACHMENT 1 EQUIPMENT/SUPPLIES CHECKLIST			
8-oz. bottles		Gatorade or equivalent	
Half-gallon bottles		Tables	
VOA bottles		Chairs	
String		Weather radio	
Hand bailers		Two-way radios	
Thieving rods with bulbs		Binoculars	
Spoons		Megaphone	
Knives		Cooling vest	
Filter paper			
Bottle labels			
		SHIPPING EQUIPMENT	
		Coolers	
MISCELLANEOUS		Paint cans with lids, 7 clips each	
Pump		Vermiculite	
Surveyor's tape		Shipping labels	
100' Fiberglass tape		DOT labels:	
300' Nylon rope		"Up"	
Nylon string		"Danger"	
Surveying flags		"Inside Container Complies ..."	
Camera		Hazard Group	
Film		Strapping tape	
Bung wrench		Baggies	
Soil auger		Custody seals	
Pick		Chain-of-custody forms	
Shovel		Federal Express forms	
Catalytic heater		Clear packing tape	
Propane gas		Permanent markers	
Banner tape			
Surveying meter stick			
Chaining pins and ring			
Logbooks (_____ large, _____ small)			
Required MSDSs			
Intrinsically safe flashlight			
Potable water			

provided by subcontractor as needed

n/a

provided by subcontractor as needed

A

Site Location Map and Directions:

From the New York State Thruway:

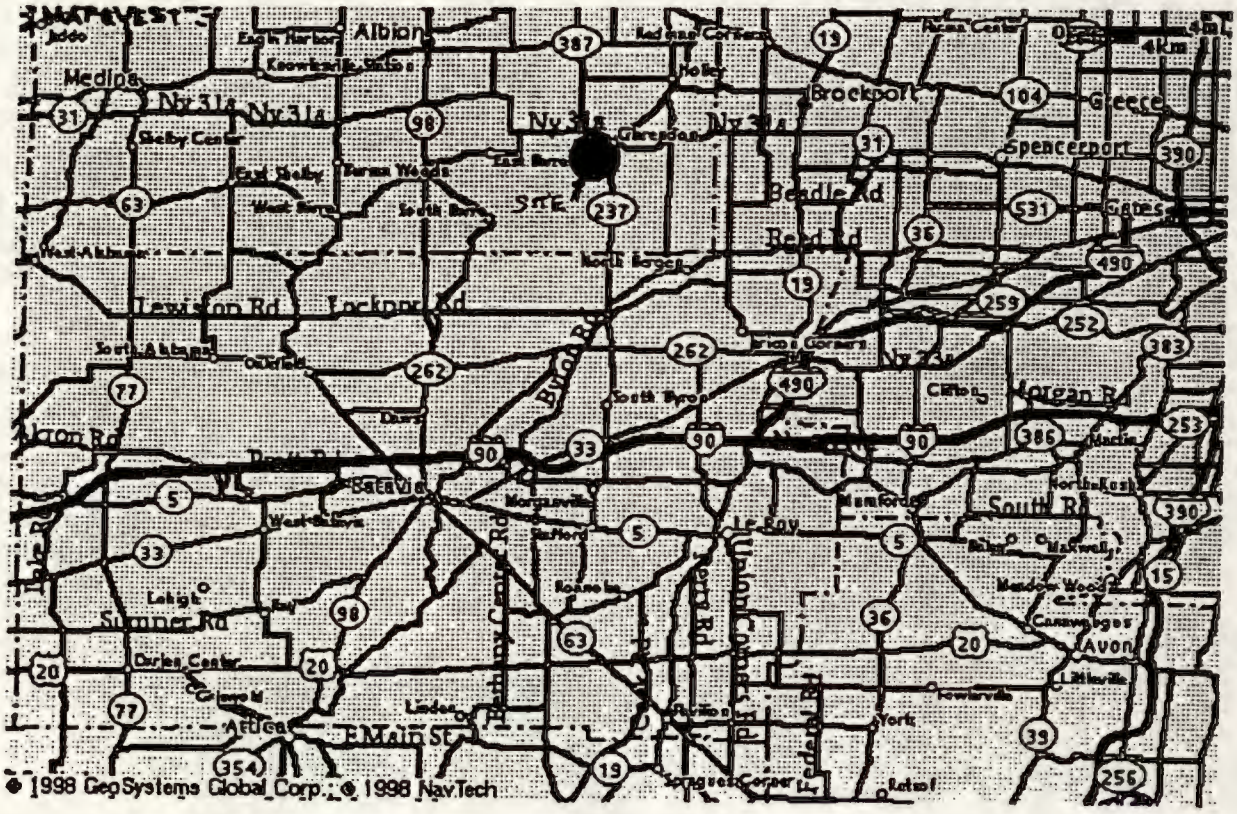
1) Take the " Leroy " exit (exit 47) to State Route 19

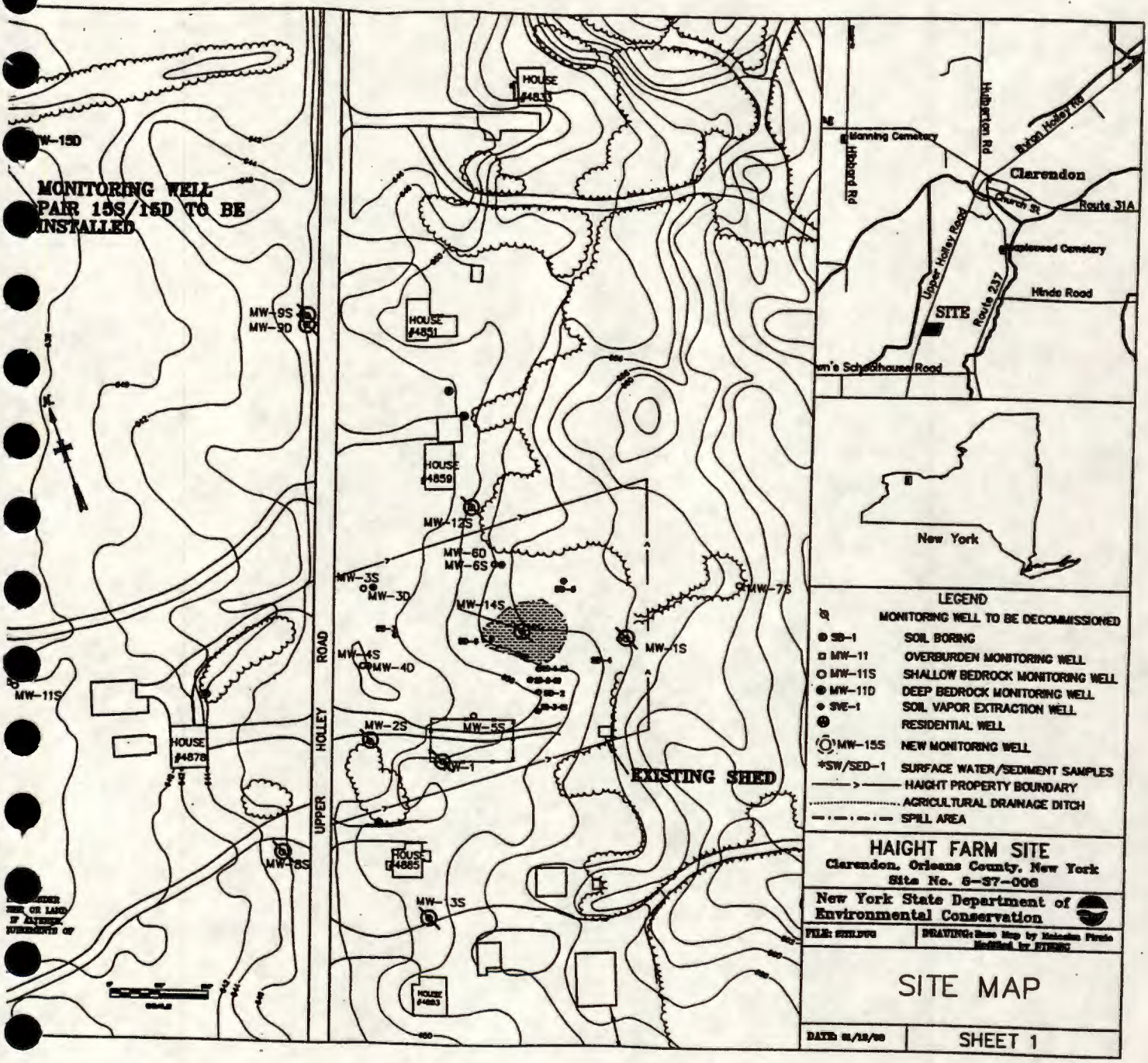
2) Go north on State Route 19 to State Route 31 (approximately 14 miles)

3) Go west onto State Route 31 to State Route 31A (approximately 1 mile)

4) Go west onto State Route 31A into Clarendon (approximately 3 miles)

5) Go thru intersection of State Route 31A and State Route 237. Take first left onto Upper Holley Road to site (# 4879)




MONITORING WELL PAIR 15S/15D TO BE INSTALLED
MW-15D
MW-9S
MW-9D
MW-11S
MW-8S
MW-12S
MW-6D
MW-6S
MW-3S
MW-3D
MW-14S
MW-7S
MW-1S
MW-4S
MW-4D
MW-2S
MW-5S
MW-1
MW-13S
HOUSE #4878
HOUSE #4851
HOUSE #4859
HOUSE #4885
HOUSE #4883
UPPER HOLLEY ROAD
EXISTING SHED
Manning Cemetery
Harper Rd
Halberton Rd
Bryan Holley Rd
Clarendon
Church St
Route 31A
Maplewood Cemetery
Upper Holley Road
Route 237
Hinde Road
SITE
New York
LEGEND
MONITORING WELL TO BE DECOMMISSIONED
SB-1 SOIL BORING
MW-11 OVERBURDEN MONITORING WELL
MW-11S SHALLOW BEDROCK MONITORING WELL
MW-11D DEEP BEDROCK MONITORING WELL
SVE-1 SOIL VAPOR EXTRACTION WELL
RESIDENTIAL WELL
MW-15S NEW MONITORING WELL
*SW/SED-1 SURFACE WATER/SEDIMENT SAMPLES
HAIGHT PROPERTY BOUNDARY
AGRICULTURAL DRAINAGE DITCH
SPILL AREA
HAIGHT FARM SITE
Clarendon, Orleans County, New York
Site No. 8-37-006
New York State Department of Environmental Conservation
SITE MAP
SHEET 1

B

SECTION 01010

SUMMARY OF WORK

1. GENERAL SPECIFICATION

1.1 General/Location

The Haight Farm Site is an approximately 2-acre residential property located on Upper Holley Road in the Town of Clarendon, Orleans County, New York. The site, which is located in a rural area, is bordered to the north and south by residential properties, on the west by Upper Holley Road (with a residence directly across the road), and to the east by woodlands. The eastern side of the site is approximately ten feet higher in elevation than the western side. The northeast portion of the property was cleared of brush and small trees during the Phase II Remedial Investigation (RI). (See Sheet 1.)

1.2 Site History

The property comprising the site was purchased by the Earl Haight family in 1953 and was used as their primary residence. Approximately 40 drums of used cutting oils were stored on the property by Mr. Haight from some time in 1969 through 1984. The drums came from Erdle Perforating Company, in the nearby town of Holley. In 1984 while the drums were being moved, the contents of several drums, estimated at 200 gallons, were spilled. The New York State Department of Environmental Conservation (NYSDEC) was contacted by the New York State Police, and conducted an emergency drum removal. Under the New York State Superfund Emergency Drum Removal Program, thirty barrels of liquid waste (approximately 1000 gallons) were repacked and removed, along with an additional 13 empty drums. In addition to the drums which spilled, other drums were corroded and showed signs of leakage. Sample results showed that the drums contained the degreasing solvent trichloroethene (TCE), at concentrations of up to 65%.

Following the spill, TCE contamination was identified in three residential water wells, including two on properties adjacent to the site (4878 and 4885 Upper Holley Road), and the Haight residence well. The NYSDEC currently maintains water treatment systems on the two residential wells still in use (the Haight residence was demolished by the Town in 1995), and the NYSDOH and the Orleans County Health Department continue to monitor residential wells in the vicinity of the site. A municipal water line has been installed along Upper Holley Road, and the affected properties will be connected as part of this contract.

In 1990-1991, the identified Potential Responsible Parties (PRPs), Erdle Perforating Company and Earl M. Haight, conducted a Phase I RI. In 1995-1996 the NYSDEC performed a Phase II RI, to further define contamination on site and to characterize the off-site groundwater contamination. Results from the RI indicate soil contamination in the spill area on site and groundwater contamination both on and off site, as summarized in the Limited Site Data document (attached). The primary contaminant of concern is trichloroethene (TCE). Other contaminants include lower concentrations of 1,2-dichloroethene (1,2-DCE), which is a breakdown product of TCE, as well as the chlorinated solvents trichloroethane (TCA) and tetrachloroethane (PCE), and the petroleum hydrocarbons benzene, toluene, and xylene. These compounds are only found where TCE is present.

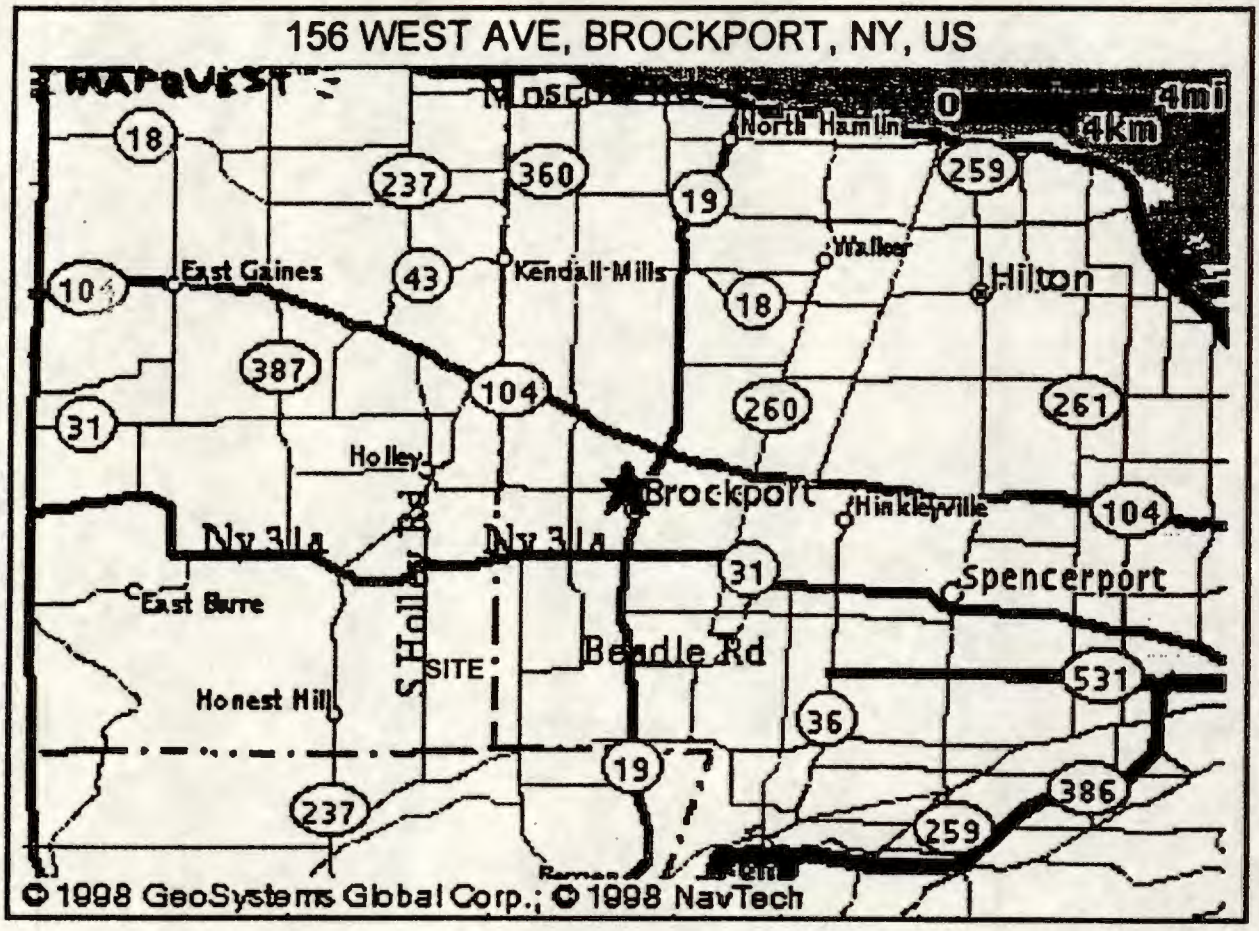
A Feasibility Study was completed by the NYSDEC in February 1998. A Record of Decision (ROD) was signed by the NYSDEC in March 1998, which identifies the following remedy: excavation and off-site disposal of contaminated soil, and on-site treatment of contaminated shallow groundwater beneath the spill area by the use of Dual Phase Vapor Extraction (DVE) technology.

1.3 Selected Remedy

The NYSDEC selected remedy for the Haight Farm Site consists of the following:

1. Connection of two (2) residents to the public water supply line on Upper Holley Road.
2. Excavation of contaminated soils from the spill area for off-site disposal.
3. Backfilling and compaction of the excavation with clean fill.
4. Design and installation of a Dual Phase Vacuum Extraction treatment system to treat the shallow groundwater and unsaturated fractured bedrock beneath the spill area.
5. Performance of a six-week DVE system startup, to optimize the unit operation for site conditions.
6. Installation of a monitoring well pair west of Upper Holley Road.
7. Decommissioning selected wells.
8. Operation and maintenance of the DVE system for five months.

FIGURE 1
Map to Hospital



FROM SITE: Take Upper Holley Road (North) to Route 31A, Turn Right. Take Route 31A to Route 19 (North), Turn Left. Take Route 19 to West Avenue, Turn Left. Hospital is on the left at 156 West Avenue, Brockport, NY.

C.1


Sandy Creek
272
19
237
104
East Branch Sandy Creek
West Creek
Brockville
387
Hulberton
Erie Canal
Fancher
E Branch Sandy Creek
104
Redman Corners
19
Clarks
31
Holley
104
Lakeside Memo
31
Brockport
Erie Canal
Manning
Clarendon
237
East Branch Sandy Creek
31A
Barnetts Corners
19
31A
PROJECT LOCATION
Sweden Center
Salmon Creek
E Branch Sandy Creek
237
Honest Hill
West Sweden
19
Lidke Hill
North Bergen
© 1997 DeLorme. Street Atlas USA

ecology and environment, inc.

Job No: XA602-

HAZARD EVALUATION OF CHEMICALS

PREPARATION DATE: 4/11/95

CHEMICAL NAME: Trichloroethylene*

CAS NUMBER: 79-01-6 DOT NAME/ID NO: UN 1710

SYNONYMS: ETHYLENE TRICHLORIDE, TCE, TRICHLOROETHENE

CHEMICAL AND PHYSICAL PROPERTIES:

CHEMICAL FORMULA: C2HCL3 MOLECULAR WEIGHT: 131.4 SPG/D: 1.47 SOLUBILITY: Slightly soluble

PHYSICAL STATE: Colorless liquid with a sweet odor.

FLAMMABLE LIMITS: UPPER-(77F) 10.5%; LOWER-(77F) 8%

VAPOR PRESSURE: 58 mm Hg at 68F FREEZING POINT: -99F FLASH POINT:

ODOR CHARACTERISTIC: Sweet Incompatabilities: CHEMICALLY ACTIVE METALS, STRONG BASES,STRONG OXIDIZING AGENTS. BOILING POINT: 87 C (189 F)

BIOLOGICAL PROPERTIES:

IDLH: TLV-TWA : 50 ppm PEL - TWA: ~~50~~ 100 ppm ODOR THRESHOLD: 50 ppm

HUMAN (LCLO): RAT/MOUSE (LC50): LD50 (ORAL-RAT)(MG/KG)-7193;

CARCINOGEN: Yes TERATOGEN: Yes AQUATIC:

ROUTE OF EXPOSURE: Inh, Ing, Eye, Skin

HANDLING RECOMMENDATIONS (PERSONAL PROTECTIVE MEASURES):

Personal protection: Avoid skin contact with Trichloroethylene. Wear protective gloves and clothing.Eye Protection.Respiratory Protection.

Gloves:

E = Excellent (> 8 hours); VG = Very Good (4 - 8 hrs); G = Good (1 - 4 hours); P = Poor (< 1 hour)

MONITORING RECOMMENDATIONS:

Monitoring:

HEALTH HAZARDS:

Acute Symptoms: Flushed skin, confusion, dizziness, headache,irritate the eyes, nose, throat, and lungs,lightheadedness, dizziness, visual disturbances, an excited feeling, nausea and vomiting.

Chronic Symptoms: Skin allergy,liver and kidneys damage,blistering, roughening, and cracking of the exposed skin,paralysis of the fingers.

FIRST AID:

FIRST AID-INHAL: Remove the person from exposure. Begin rescue breathing if breathing has stopped and CPR if heart action has stopped.Transfer promptly to a medical facility.

FIRST AID-EYE: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids. Seek medical attention immediately.

FIRST AID-SKIN: Quickly remove contaminated clothing. Immediately wash area with large amounts of soap and water. Seek medical attention immediately.

DISPOSAL/WASTE TREATMENT:

DISPOSAL OF WASTE: DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL

HEALTH & SAFETY PLAN

for

HAIGHT FARM SITE OPERATIONS & MAINTENANCE
Town of Clarendon, Orleans County, New York

SEPTEMBER 2000

PREPARED FOR:

ECOLOGY & ENVIRONMENT ENGINEERING, INC.
368 Pleasantview Drive
Lancaster, NY 14086

and

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
50 Wolf Road, Albany, NY 12233-7010

IEG

by
IYER ENVIRONMENTAL GROUP, PLLC

HEALTH & SAFETY PLAN
HAIGHT FARM SITE OPERATIONS & MAINTENANCE

TABLE OF CONTENTS

HEALTH & SAFETY PLAN
HAIGHT FARM SITE OPERATIONS & MAINTENANCE

TABLE OF CONTENTS
(Continued)

TABLES

FIGURES

TABLE 1
EMERGENCY NOTIFICATION TABLE

Agency	Contact	Phone Number
Police	Emergency	911
Fire & First Aid	Emergency	911
Ambulance	Emergency	911
Hospital/ Emergency Care Facility	Lakeside Memorial Hospital 156 West Avenue Brockport, NY 14420	(716) 637-3131
Poison Control Center	---	(800) 336-6997
Chemical Emergency Advise	CHEMTREC	(800) 424-9300
Department of Health	New York State - Albany	(518) 458-6306 (800) 458-1158 - Message
	Orleans County	(716) 589-7004
NYSDEC	Albany Office	(518) 457-7878 - Work Hrs. (800) 342-9296 - After Hrs.
	Avon Office	(716) 226-2466
	Spill Hotline	(800) 457-7362
CONSULTANTS:	Dharma Iyer, Project Manager Iyer Environmental Group, PLLC	(716) 662-4157 (716) 445-9684 - cell
	Fred Smith, H&S Officer Iyer Environmental Group, PLLC	(716)297-5305 (716) 830-5350 - cell
	Dave Albers, Project Manager Ecology & Environment Eng., Inc.	(716) 684-8060
DIRECTIONS TO HOSPITAL (EMERGENCY ROUTE) *See Attached Map*	Lakeside Memorial is located approximately 10 miles from the site at 156 West Avenue, Brockport, New York. FROM THE SITE: Take Upper Holley Road (North) to Route 31A, Turn Right. Take Route 31A to Route 19, Turn Left. Take Route 19 to West Ave., Turn Left. Hospital is on the left at 156 West Avenue, Brockport, NY	

SECTION 1.0

Project Description

1.0 INTRODUCTION

The health and safety protocol established in this plan are based on site conditions and chemical hazards known and/or anticipated to be present from available site data. The following site Health and Safety (HASP) is intended solely for use during the operations and maintenance of the dual vapor extraction and treatment (DVE) system at the Haight Farm site in the Town of Clarendon, Orleans County, New York.

All operations and equipment used in association with the referenced remedial O & M project will, at a minimum, comply with:

- 29 CFR 1910, General Industry, Occupational Safety and Health (OSHA) Safety and Health Standards;
- 29 CFR 1926, Construction Industry, OSHA Safety and Health Standards;
- 40 CFR 262, Standards Applicable to Generators of Hazardous Waste, Current Edition;
- 40 CFR 178, Shipping Container Specification, Current Edition;
- NIOSH 85-115, NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, October 1985;
- EPA 9285.1-03, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH, OSHA, USCF, and EPA), 1992;
- "Threshold Limit Values for Chemical and Physical Agents and Biological Exposure Indices," American Conference of Government Industrial Hygienists, Cincinnati, Ohio, Current Edition;
- "Guide to Occupational Exposure Values," American Conference of Governmental Industrial Hygienists, Cincinnati, Ohio, Current Edition;
- "Community Air Monitoring Plan," 93118PR00149, NYSDEC;
- NYSDOL 28.876, Article 28, Section 876 of NYS Labor Law (Right-to-Know Law), 1980;
- Other applicable Federal, State, and Local regulations; and
- Specification Section 01450 (Health and Safety) of the Construction Contract Documents.

1.2 SITE DESCRIPTION AND BACKGROUND

1.2.1 General Location

The Haight Farm Site is an approximately two acre residential property located (see Figure 1) on Upper Holley Road in the Town of Clarendon, Orleans County, New York (NYSDEC Region 8). Due to past operations and the presence of hazardous wastes at the site, it has been listed as a Class 2 Inactive Hazardous Waste Site (Code No.8-37-006) on the NYSDEC registry of inactive hazardous waste sites.

The site, which is located in a rural area, is bordered to the north and south by residential properties, on the west by upper Holley Road (with residence directly across the road), and to the east by woodlands. The

eastern side of the site is approximately ten feet higher in elevation than the western side. The northeast portion of the property has been cleared of brush and small trees.

1.1.2 Site History

The property comprising the site was purchased by the Earl Haight family in 1953 and was used as their primary residence. Approximately 40 drums of used cutting oils were stored on the property by Mr. Haight from some time in 1969 through 1984. The drums came from Erdle Perforating Company, Inc. in the nearby town of Holley. In 1984 while the drums were being moved, the contents of several drums, estimated at 200 gallons, were spilled. NYSDEC was contacted by the New York State Police, and conducted an emergency drum removal. Under the New York State Superfund Emergency Drum Removal Program, 30 barrels of liquid waste (approximately 1000 gallons) were repacked and removed.

In 1990-1991, the identified Potential Responsible Parties (PRPs), Erdle Perforating Company and Earl M. Haight, conducted a Phase I Remedial Investigation (RI). In 1995-1996, NYSDEC performed a Phase II RI to further define contamination on the site and to characterize the off-site groundwater contamination. Results from the RI indicate soil contamination in the spill area on the site and groundwater contamination both on- and off-site. The primary contaminant of concern is TCE. Other contaminants include lower concentrations of 1,2-dichloroethene (1,2-DCE), which is a breakdown product of TCE, as well as the chlorinated solvents trichloroethane (TCA) and tetrachloroethane (PCE), and the petroleum hydrocarbons benzene, toluene, and xylene. These compounds are only found were TCE was present.

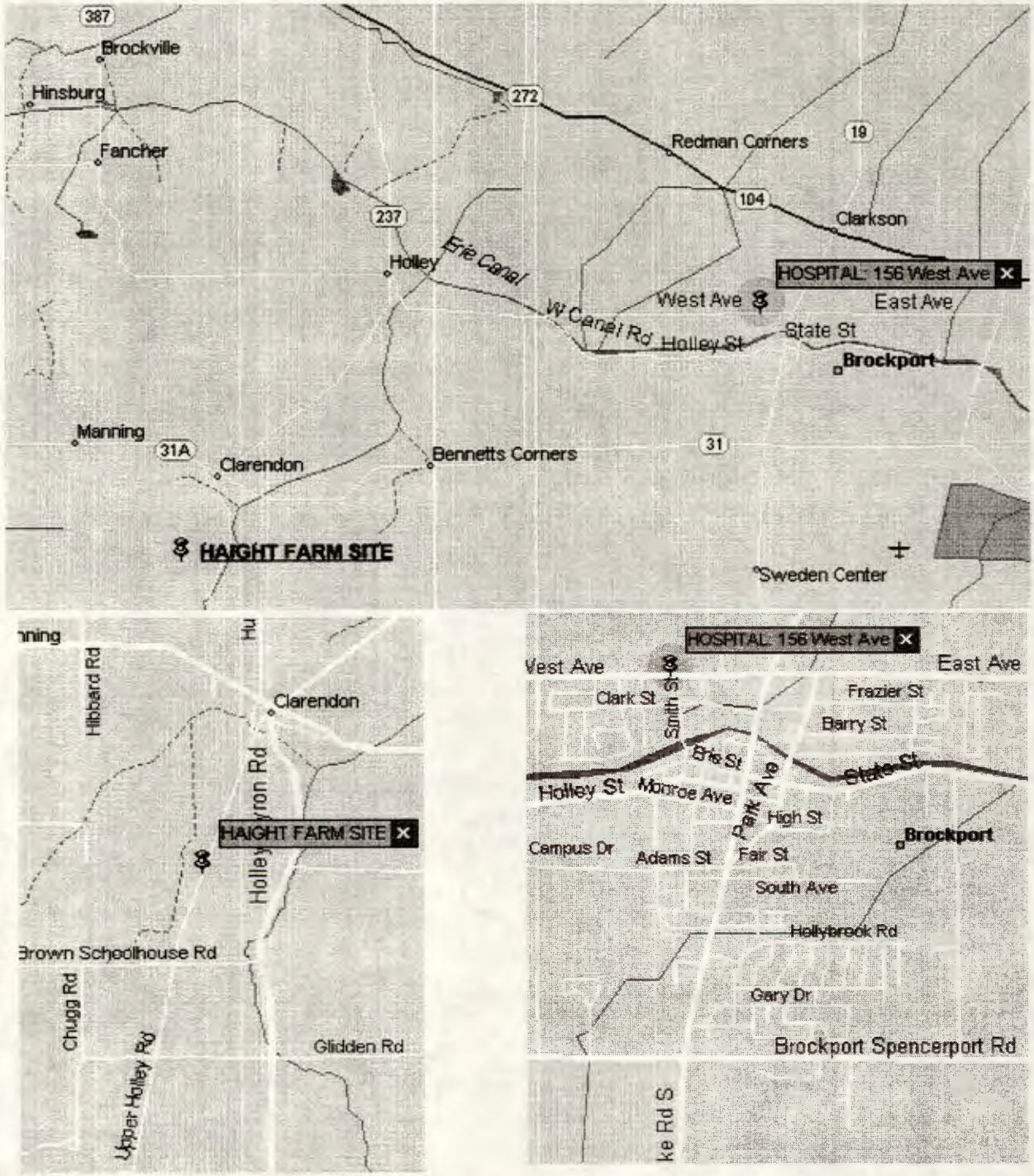
A Feasibility Study was completed by NYSDEC in February 1998. A Record of Decision (ROD) for the contracted remedial SOW was signed by NYSDEC in March 1998. In 1999, Ontario Specialty Services was contracted by the NYSDEC to remediate the site in accordance with the ROD and Construction Contract Specifications. This was a design-build construction project providing for the installation and 6-month O&M of the selected remedy for the site. The remedial technologies included excavation and off-site disposal of contaminated soil, and on-site treatment of contaminated shallow groundwater beneath the spill area using Dual Phase Vapor Extraction and Treatment (DVE). The DVE system consists of a set of wells to simultaneously extract air and entrained groundwater, followed by a phase separator and parallel treatment of the air and groundwater using granular activated carbon adsorption.

At the end of the six months O&M, the system was turned over to the NYSDEC. The NYSDEC subsequently issued a work assignment to E & E to continue the operations and maintenance of the DVE system for another six months. IEG will be providing engineering services related to this O&M including operations, maintenance and reporting as a subconsultant to E & E.

1.3 GENERAL SUMMARY OF WORK

1. Perform clearing of the site as necessary to access the wells and treatment system
2. Re-start DVE System.
3. Operate, monitor and maintain the DVE system for six months.
4. Install one monitoring well
5. Perform one baseline groundwater monitoring event

Figure 1
SITE MAP/MAP TO HOSPITAL



FROM SITE: Take Upper Holley Road (North) to Route 31A, Turn Right.
Take Route 31A to Route 19, Turn Left.
Take Route 19 to West Ave., Turn Left.
Hospital is on the left at 156 West Avenue, Brockport, NY

SECTION 2.0
Hazard Assessment & Risk Analysis

An assessment and analysis of chemical, physical, and biological hazards associated with this project is presented in the subsections that follow. A task-by-task risk analysis of the potential exposure to the identified hazards is provided below and in Table 3 at the end of this section.

TASK	POTENTIAL EXPOSURE RISK
Site Clearing	Low
Operation	Moderate
Maintenance	Slight
Sampling	Moderately High
Well Installation	Moderately High

Anticipated Exposure Risk Definitions:

LOW =	Non-Intrusive Work--No Chance of Exposure.
SLIGHT =	Non-Intrusive Work, Possible Safety Hazards with Tools-Little to No Chance of Exposure.
MODERATE =	Non-Intrusive Work, Possible Safety Hazards with Powered Tools, Heavy Equipment, and/or work near or in water. No Possible Exposure to Contaminants.
MODERATELY HIGH =	Intrusive Work, Possible Safety Hazards with Equipment--Exposure to Contaminants. Possible.
HIGH =	Intrusive Work, Possible Safety Hazards with Equipment--Exposure to Contaminants Probable.

2.1 CHEMICAL HAZARDS

The primary chemical hazard substances known or suspected to exist on-site are volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPHC) associated with the contamination of the bedrock aquifer. The hazards associated with these chemical substances are discussed in Table 2 at the end of this section.

The levels of personal protective equipment (PPE) identified in Section 6.0 of this HASP have been assigned by task, known/anticipated chemical toxicity, and potential exposure risks. Action levels for PPE upgrade (see Section 7.0) have been set conservatively to minimize the risk of exposure to field personnel.

2.2 GENERAL/PHYSICAL HAZARDS

The following general, physical, and ergonomic hazards may be associated with this project:

1. **Potential Hazard:** Dermal and inhalation hazards resulting from potential exposure to the chemical compounds identified in Table 2.

   Procedure(s) to Mitigate Hazard: Don PPE identified in Section 6.0 of this HASP. The levels of PPE identified in Section 6.0 of this HASP have been assigned by task, known/anticipated chemical toxicity, and potential exposure risks. Other means of minimizing or eliminating risk of exposure include: practicing contamination prevention including a thorough washing of hands and face when exiting the exclusion zone and prohibiting use of contact lenses during field activities.

2. **Potential Hazard:** Slips, Trips, and Falls.

Procedure(s) to Mitigate Hazard: (1) Exercise extreme caution in all work areas. (2) Be sure of footing during equipment access/egress and when moving through the work area. (3) Avoid stepping or standing on uneven or unsteady surfaces. (4) Clearly delineate open pits, wells, and other fall hazards with orange safety fencing. Securely cover as appropriate.

3. **Potential Hazard:** Exposure to inclement weather.

Procedure(s) to Mitigate Hazard: (1) Follow the procedures for the prevention and/or treatment of heat or cold stress (if ambient air temperatures exceed 70°F or drop below 40°F) described in Section 5.5 of this HASP. (2) Adhere to the emergency response procedures provided in Section 10.3 of this HASP.

4. **Potential Hazard:** Housekeeping

Procedure(s) to Mitigate Hazard: (1) Store equipment property. (2) Remove rubbish/scrap material from work area.

5. **Potential Hazard:** Vehicle Traffic

Procedure(s) to Mitigate Hazard: Utilize warning signs and flagman(men) as appropriate to direct traffic away from work area.

6. **Potential Hazard:** Hazardous Material Storage

Procedure(s) to Mitigate Hazard: (1) Segregate flammable/combustible liquid from ignition sources. (2) Store in approved containers. (3) Keep solvent waste, oily rags, and liquids in fire resistant containers.

7. **Potential Hazard:** Electrical

Procedure(s) to Mitigate Hazard: (1) Utilize approved grounding and bonding procedures. (2) Guard and maintain electrical lines/cords. (3) Tag/remove damaged equipment from service.

8. **Potential Hazard:** Tools

Procedure(s) to Mitigate Hazard: (1) Tag and remove defective tools from service. (2) Maintain and inspect per manufacturer's recommendations. (3) Utilize proper eye protection.

9. **Potential Hazard:** Above and/or Underground Utilities within Work Area(s)

Procedure(s) to Mitigate Hazard: (1) Obtain a site utility plan or markout and ensure that electrical lines (if any) are not energized. (2) Adhere to SOP provided in Attachment B, Part 2.17, Page B-15.

2.3 BIOLOGICAL HAZARDS

Biological hazards which on-site personnel may encounter are considered minimal, but include animal bites or stings, contact with plants, and exposure to microbes.

Animal bites or stings are usually nuisances (localized swelling, itching, and minor pain) that can be handled by first aid treatment. The bites of certain snakes, lizards, and spiders contain sufficient poison to warrant medical attention. There also are diseases that can be transmitted by animal bites which will require

professional medical attention. Examples are rabies (mainly from dogs, skunks, raccoons, and foxes), Lyme Disease (from ticks [see discussion below]), and encephalitis (from mosquitos).

The biggest hazard and most common cause of fatalities from animal bites and stings (particularly bees, wasps, and spiders) is a sensitivity reaction. Anaphylactic shock due to stings can lead to severe reactions to the circulatory, respiratory, and central nervous system, and it can also result in death. Therefore, workers with known insect allergies must notify the site health and safety officer of his/her condition prior to engaging in remedial operations.

Workers who are bitten by an animal or stung by an insect must immediately notify the site safety and health officer.

Lyme Disease is caused by an infectious agent, Borrelia burgdorferi. This agent is a spirochete transmitted to animals or humans via ticks. The early symptoms and signs, with one exception, are non-specific and easily attributed to other illnesses, such as the flu. They include fever, nausea, vomiting, fatigue, headache, photophobia (sensitivity to light), and, in approximately 75 percent of the cases, a rash. Over several days it enlarges, sometimes reaching a diameter of 20 centimeters. The border of the enlarging rash is red, slightly warm, but flat. Often, the center of the rash clears somewhat, so that it looks like an irregular ring. In about half of the persons with a rash, more than one circular eruption is present. The rash termed, erythema migrans, is essentially diagnostic of Lyme disease, and therefore is a very important finding.

Undiagnosed/untreated Lyme disease can lead to severe, sometimes life-threatening medical problems. The principal targets include the skin, the nervous system, the heart, and the joints. Early treatment is highly desirable since, in most cases, it prevents progression of the disease and is a less prolonged, less intense affair.

Preventative measures include protective clothing (see Section 6.0); head/hair protection; and the use of insect repellant containing DEET on all exposed areas and coveralls. Workers should check their bodies thoroughly for ticks and should bathe soon after returning home. Remove any ticks carefully, using a gentle, firm, tugging motion with fine tweezers. Do not kill the tick before it has been removed. Workers should save the ticks and monitor their bites, checking for a rash and other symptoms (up to about eight weeks after the bite).

Toxic effects from plants are generally due to ingestion. Of more concern to on-site personnel are certain plants, including poison ivy, poison oak, and poison sumac, which produce adverse effects from direct contact. The usual effect is dermatitis inflammation of the skin. The protective clothing and decontamination procedures used for chemicals also reduce the exposure risk from the plant toxins. Cleaning the skin thoroughly with soap and water after contact will reduce the risk.

TABLE 2
Chemical Hazard/Exposure Data Summary
HAIGHT FARM SITE OPERATIONS & MAINTENANCE
Town of Clarendon, Orleans County, New York

Chemical of Concern	Maximum Concentration (If Known)	Potentially Contaminated Media	OSHA PEL/ ACGIH TLV/ NIOSH IDLH	Routes of Exposure	Exposure Symptoms/ Primary Hazards
Chlorinated solvents Trichloroethene (TCE) 1,2-dichloroethene trichloroethane	Refer to O & M Reports and other Site Data	Soil Groundwater	PEL: 10 ppm TLV: 10 ppm IDLH: NE	Inhalation Adsorption	Overexposure can cause unconsciousness and death. It can also cause the heart to beat irregularly or to stop. High or repeated lower exposures can damage the liver and kidneys. Long term skin contact can cause thickening and cracking of the skin. Never use near combustion sources like furnaces or welding; highly toxic gases are formed (including Hydrogen Chloride and Phosgene).
Petroleum Hydrocarbons Benzene, Xylene, Toluene, Ethyl benzene	Refer to O & M Reports and other Site Data	Soil Groundwater (found where TCE is present)	PEL: 100 ppm TLV: 100 ppm IDLH: 100 PPM	Inhalation Absorption	FLAMMABLE LIQUIDS/FIRE HAZARD May damage the developing fetus. They can irritate the eyes, nose and throat. High levels can cause dizziness, passing out and death. Repeated exposure may damage bone marrow causing low blood cell count. May also damage the eyes, and cause stomach problems. May cause problems with memory and concentration.

NOTES:

OSHA PEL = Occupational Safety & Health Administration's Final Rule Limits Permissible Exposure Limit for an 8-hour, time-weighted average (TWA) from CFR 1910.1000, Tables Z-1A, Z-2, and Z-3.

ACGIH TLV = American Conference of Governmental Industrial Hygienists' Threshold Limit Value for an 8-hour, TWA.

NIOSH IDLH = National Institute of Occupational Safety and Health Level Immediately Dangerous to Life and Health.

TABLE 3
Task & Risk Analysis Table
HAIGHT FARM SITE OPERATIONS & MAINTENANCE
Town of Clarendon, Orleans County, New York

Task	Sub-Tasks	Activity	Hazard	Protective Measures
Clearing	Removal of Brush and Other Growth.	Use of heavy equipment, chainsaws, pruning shears, manual movement of brush & debris	Potential exposure to particulates, work around heavy equipment and use of dangerous tools.	Engineering controls such as water for particulate control, proper work practices including proper heavy equipment operation, and use of PPE.
Sampling	Water and air sampling	Use of hand tools, augers, direct read instruments or other equipment to gather samples for analysis	Potential chemical exposure	Use of proper techniques and PPE
Decontamination of Equipment and personnel	Cleaning soils and contaminants off equipment and personnel;	Use of power-washing equipment and hand tools to remove contaminants	Potential chemical exposure, thermal burns	Proper operation of power washer and use of proper PPE
General O & M	DVE System operation and maintenance	use of heavy equipment, power tools, and hand tools	Falls, cuts, injury from falling objects, release of kinetic or stored energy, electrical hazards.	Use of proper working practices and PPE

SECTION 3.0
Project Organization & Personnel Responsibilities

The following IEG managerial personnel are assigned to this project and will assume the job functions listed below:

- **Project Manager** - Dharmarajan R. Iyer, Ph.D., PE;
- **Health & Safety Officer (HSO)** - Fred Smith, CIH

3.1 PERSONNEL RESPONSIBILITIES

The Project Manager will be responsible for overall administration of the project and will assume corporate QA/QC requirements. The Project Manager will be responsible for overseeing submittal development, negotiating/securing subcontracts; scheduling; personnel management; cost tracking and reporting; etc.

The HSO will be responsible for field implementation of this HASP and for insuring the project team's compliance to the site-specific health and safety protocol established herein. The HSO will be responsible for the following:

- Implementation, enforcement, and monitoring of the HASP;
- Preconstruction indoctrination and periodic training of all on-site personnel with regard to this safety plan and other safety requirements to be observed during construction including:
  - ✓ Potential hazards.
  - ✓ Personal hygiene principles,
  - ✓ Personal protective equipment (PPE),
  - ✓ Respiratory protection equipment usage and fit testing,
  - ✓ Emergency procedures dealing with fire and medical situations, and
  - ✓ Conduct daily update meetings in regard to health and safety;
- Evaluating monitoring data to make field decisions regarding safety and health;
- Informing project personnel of the New York State Labor Law Section 876 (Right-to-Know Law); and
- Maintaining separation of Exclusion Zone (dirty) from the Support Zone (clean) areas as described hereafter.

The HSO will have the authority to:

- Enforce this HASP and stop operations if personnel safety and health may be jeopardized; and
- Effect evacuation of the site if necessary.

3.2 SURVEILLANCE & INTERNAL AUDITING RESPONSIBILITIES

The HSO will monitor job-site safety via inspection and review of records. Any safety violations will be corrected and reported to IEG management. All observed safety violations will be immediately corrected, explained to the perpetrator, and reviewed at the next safety meeting. Excessive violations of the site safety rules will be grounds for disciplinary action which could lead to termination or expulsion.

SECTION 4.0
Site Personnel Training Requirements

All personnel assigned to the site will be in compliance with the training requirements of 29 CFR 1910 and 1926 as listed below. Site personnel will have met one of the following requirements prior to the start of operations at the site:

- A 40 hour minimum hazardous materials safety and health corse, as stipulated in 29 CFR 1926.65 e(3); and

- An eight (8) hour minimum refresher course per year after the 40 hour minimum training has occurred (29 CFR 1926.65.e[8]).

On-site managers and supervisors must be in compliance with the additional supervisory training requirements of 29 CFR 1926.65.e(4). Emergency responders must be in compliance with the additional training requirements of 29 CFR 1926.65.e(7). Personnel involved in confined space entry will have completed training in accordance with OSHA requirements.

As stipulated in 29 CFR 1910.120, all IEG and its subcontractor personnel assigned to this project also will receive site-specific training in:

- Provisions of OSHA regulations and legislation under OSHA Standards 1910 and 1926;
- Provisions of NYSDOL 28.876;
- Medical monitoring per Section 5.0 of this HASP;
- Hazards of the work place (chemical/physical/biological/ergonomic);
- Standard safety operation procedures (see Attachment B);
- Decontamination procedures;
- Work zones;
- Emergency procedures and contingency plans;
- Respirator equipment training, qualitative fit testing and respirator maintenance;
- Emergency first aid procedures, blood borne pathogen program, and CPR;
- On-site communication procedures;
- Air monitoring techniques and sample taking;
- Hazardous material recognition;
- Importance of "Buddy System";
- Toxicology and basic chemistry;
- Site entry; and
- Use of emergency escape packs.

Copies of applicable training certificates (i.e., 40 hour training records, 8 hour training records, 8 hour supervisor training records, medical monitoring documentation, respirator fit test results, first aid/CPR certificates, asbestos handlers cards, confined space entry training certificates, etc.) for all site personnel will be retained by the HSO.

4.1 VISITORS

Only those persons who have (1) completed the same level of training as the workers for the portion of the site they wish to enter, in addition to having received the site orientation currently outlined in this HASP, and (2) signed the Visitor's Entry Log will be permitted to enter established work areas. The HSO will establish, on a case-by-case basis, a safe location from which visitors can observe the site activity of interest.

4.2 SAFETY MEETINGS

All personnel who work on the site are required to attend Pre-Entry Site Briefing as and when it is held. It will include a review of the requirements of this HASP. On-site safety meetings will occur regularly and ***all on-site personnel will be required to attend***. Attending personnel must sign an attendance sheet. Any personnel who miss the on-site safety meetings will be required to attend a review by the HSO before he/she will be allowed to work at the discretion of the HSO. Items to be considered at the safety meetings may include, but are not limited to:

- Review of relevant site data that may relate to the potential for worker exposure;
- Delegation of responsibility (i.e., field technicians, equipment operators, emergency backup personnel, competent persons, logistical and support requirements);
- Type and frequency of environmental and personal monitoring to be performed;
- Mobilization of support and decontamination equipment;
- Initial levels of protection required and the anticipated potential for upgrading;
- Decontamination requirements;
- Emergency procedures;
- Functional and interpretive problems that may have been encountered while using monitoring instrumentation, personal protective or other support equipment;
- Personal hygiene;
- Fire prevention;
- Heavy equipment operation; and
- Discussion of on-going and planned work activities.

4.3 EMERGENCY RESPONSE TRAINING

Training in site-specific emergency procedures will be provided by the site health and safety officer before work begins on-site. This training will include, but is not limited to, the following;

- Emergency chain-of-command;
- Communication methods and signals;
- Location of phones and emergency numbers;
- Use of emergency equipment;
- Evacuation and emergency procedures;
- Off-site support;
- Site-specific hazards;
- Decontamination procedures;
- Standard operating procedures; and
- Location and use of first aid equipment.

SECTION 5.0
Medical Surveillance

Medical monitoring is required by OSHA as a means of monitoring worker exposure to certain toxic substances. IEG will implement a Medical Surveillance Program (MSP) for employees engaged in on-site operations which is consistent with the requirements of 29CFR.1926.65(b). All medical records and personnel exposure monitoring data generated from IEG's MSP will be retained per 29 CFR 1910.1020.

A baseline medical surveillance examination will be given not more than one year prior to a 40-Hour OSHA-Trained worker reporting to the job site to work in contaminated areas. Copies of the physician's statement certifying each employee's ability to work at task-specific operations, as well as their suitability for wearing respirators will be maintained by the HSO for review by involved regulatory personnel upon request. The baseline Medical Surveillance Exam will meet the requirements of 29CFR.1926.65 (b).

5.1 EPISODIC EXAMINATIONS

Non-scheduled medical examinations may be required upon acute exposure, at the discretion of the HSO, or upon receipt of a request for a medical examination from any employee with symptoms of exposure to hazardous substances, or following injuries, etc. Episodic examinations will be provided, if required, by that person's direct employer through their Medical Surveillance Program.

5.2 ANNUAL AND/OR TERMINATION EXAMINATIONS

All personnel participating in the medical monitoring program (i.e., those personnel who are 40-Hour, OSHA-Trained) will have annual re-examinations and follow-up examinations upon completion of the work. Biological monitoring for blood lead levels will be conducted as part of these examinations in accordance with 29 CFR 1926.62. Employees will be notified of their blood lead levels within five working days of receipt of biological monitoring results.

The annual and termination exams will be complementary in scope with the baseline exams to the dégree sufficient to allow comparison of individual biologic parameters. Additional testing for the purpose to further diagnose occupationally induced or significant abnormalities will be at the discretion of the examining physician.

5.3 AUDIOMETRIC TESTING

In addition to the baseline physical exam, all personnel will receive an annual audiogram. This annual audiogram will be reviewed against the baseline or most current audiogram by a certified audiologist to determine if noise-induced hearing loss has occurred. If a noise-induced hearing loss is noted during the evaluation, the employee will be notified, in writing, within 21 days of the determination. This testing is performed in compliance with 29 CFR 1210.95.

5.4 ABNORMAL MEDICAL SURVEILLANCE RESULTS

In general, whenever any medical test which is of significance yields abnormal results, the test will be repeated. Whenever abnormal results are substantiated, the worker may be restricted or excluded from areas which are potentially contaminated or thought to compromise his/her safety. Employees exhibiting elevated blood lead levels will be removed from exposures. The decision of worker disposition will rest with the examining physician.

5.5 HEAT/COLD STRESS MONITORING

The following program will be implemented when the ambient air temperatures exceed 70°F (heat stress monitoring) or drop below 40°F (cold stress monitoring).

5.5.1 Heat Stress Monitoring

Site personnel who wear protective clothing allow body heat to be accumulated with an elevation of the body temperature. Heat cramps, heat exhaustion, and heat stroke can be experienced, which, if not remedied, can threaten life or health. Therefore, an American Red Cross Standard -First Aid book (current edition) or equivalent will be maintained on site at all times so that the HSO and site personnel will be able to recognize symptoms of heat emergencies and be capable of controlling the problem.

When protective clothing is worn (especially Levels A, B, and C) the suggested guidelines for ambient temperature and maximum wearing time per excursion are:

Ambient Temperature (°F)	**Maximum Wearing Time Per Excursion (Minutes)**
Above 90	15
85 to 90	30
80 to 85	60
70 to 80	90
60 to 70	120
50 to 60	180

Monitoring the heart rate is one method of measuring the effectiveness of employees' rest-recovery regime:

- During a 3-minute period, count the pulse rate for the last 30 seconds of the first minute, the last 30 seconds of the second minute, and the last 30 seconds of the third minute.
- Double the count.

If the recovery pulse rate during the last 30 seconds of the first minute is at 110 beats/minute or less and the deceleration between the first, second, and third minutes is at least 10 beats/minute, the work-recovery regime is acceptable. If the employee's rate is above that specified, a longer rest period is required, accompanied by an increased intake of fluids.

In the case of heat cramps or heat exhaustion, "Gatorade" or its equivalent is suggested as part of the treatment regime. The reason for this type of liquid refreshment is that such beverages will return much-needed electrolytes to the system. Without these electrolytes, body systems cannot function properly, thereby increasing the represented health hazard. NOTE: The HSO or HSTs may weigh workers before and after entry to determine if there is excessive loss of fluid.

This liquid refreshment will be stored in a cooler at the edge of the decontamination zone in plastic squeeze bottles. The plastic bottles will be marked with individual's names. Disposable cups with lids and straws may be used in place of the squeeze bottles. Prior to drinking within the decontamination zone, the project personnel will follow the following decontamination procedures:

A. Personnel will wash and rinse their outer gloves and remove them.

B. Personnel will remove their hard hats and respirators and place on table.

C. Personnel will remove their inner gloves and place them on table.

D. Personnel will wash and rinse their face and hands.

E. Personnel will carefully remove their personal bottle or cup from the cooler to ensure that their outer clothes do not touch any bottles, cups, etc. Personnel also must ensure that their hands to not touch their outer clothes.

F. The used bottle or cups will not be returned to the cooler, but will be placed in a receptacle or container to be cleaned or disposed of.

G. Personnel will replace their respirators, hard hats, gloves and tape gloves prior to re-entering the hazardous zone.

When personnel are working in situations where the ambient temperatures and humidity are high-and especially in situations where protection Levels A, B, and C are required the HSO must:

- Assure that all employees drink plenty of fluids ("Gatorade" or its equivalent);
- Assure that frequent breaks are scheduled so overheating does not occur; and
- Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 1:00 p.m., and 6:00 p.m. to nightfall).

5.5.2 Cold Stress Monitoring

Whole-body protection will be provided to all site personnel that have prolonged exposure to cold air. The right kind of protective clothing will be provided to site personnel to prevent cold stress. The following dry clothing will be provided by IEG as deemed necessary by the HSO:

- Appropriate underclothing (wool or other);
- Outer coats that repel wind and moisture;
- Face, head, and ear coverings;
- Extra pair of socks;
- Insulated safety boots; and
- Glove liners (wool) or wind- and water-repellant gloves.

The HSO will use the equivalent chill temperature when determining the combined cooling effect of wind and low temperatures on exposed skin or when determining clothing insulation requirements.

Site personnel working continuously in the cold are required to warm themselves on a regular basis in the on-site hygiene facility. Warm, sweet drinks will also be provided to site personnel to prevent dehydration. The HSO will follow the work practices and recommendations for cold stress threshold limit values as stated by the latest edition of the Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices by the American Conference of Governmental Industrial Hygienists or equivalent cold stress prevention methods.

SECTION 6.0
Personal Protective Equipment

Based on an evaluation of potential hazards (see Section 2.0), the following levels of personal protective equipment are assigned for this project.

PLANNED WORK ACTIVITY	PLANNED LEVEL OF PROTECTION	ACTION LEVEL FOR PPE UPGRADE/DOWNGRADE
Clearing and Grubbing	Level D	Upgrade to Level C if Sustained Readings[A] of 50%PEL are recorded or if an IDLH Condition is Probable..
DVE System Operation	Level D	Upgrade to Level C if Sustained Readings[A] of 2.5 x Background and 150 µg/m^3 are recorded or if an IDLH Condition is Probable..
Monitoring Well Installation	Modified Level D PPE	Upgrade to Level C if Sustained Readings[A] of 2.5 x Background and 150 µg/m^3 are recorded or if an IDLH Condition is Probable..
Decontamination of Equipment & Vehicles	Modified Level D PPE	Upgrade to Level C if Sustained Readings[A] of 2.5 x Background and 150 µg/m^3 are recorded or if an IDLH Condition is Probable..

NOTES:

A. For the purposes of this discussion, a *sustained reading* is defined as a consistent reading on a real-time monitoring instrument which does not vary substantially from a peak or a result which is averaged over a period of time (i.e., 5 minutes). Sustained is called out in order to avoid downgrading PPE based on a single "hit" or "miss" instead of the average concentration present. Unless a chemical has a ceiling value, the TWA and STEL values are averages for exposure over 8-hours or 15 minutes and not single peaks. The values for the above action levels are based on TWA and STEL values.

B The action levels given are based on the potential for exposure to the chemicals listed in the contract documents. These action levels may be changed based on further chemical-specific sampling.

C. The levels of PPE identified have been assigned by task (Table 3), known/anticipated chemical toxicity (Table 2), and potential exposure risks (Table 3). Action levels for PPE upgrade have been set conservatively to minimize the risk of physical injury and/or exposure to field personnel.

D. Respiratory protection will conform to OSHA 1910.134. Personnel assigned to work in the Exclusion Zone or Contamination Reduction Zone must have passed a Respirator Fit Test in accordance with OSHA 3079. Fit tests will be administered by the HSO. Respirators will be maintained and operated per the SOP set forth in Attachment D of this HASP.

E. The HSO will be responsible for determining the need for PPE upgrade or downgrade based on actual conditions encountered in the field.

PPE levels are defined in Table 4 at the end of this section. Project-specific PPE requirements are summarized below.

- The **Level D PPE ensemble** will include work clothing as dictated by weather (sleeved shirts and long pants required); a hard hat; safety glasses; and steel-toe work boots. Hearing and fall protection will be utilized as directed by the HSO or HSTs.

- The **Modified Level D PPE ensemble** will include work clothing as dictated by weather; disposable Tyvek coveralls or equivalent; disposable nitrile (NRC) or neoprene outer gloves (worn over optional inner latex or surgical gloves); a hard hat; safety glasses; steel-toe work boots; and neoprene or butyl rubber overboots. Hearing and fall protection will be utilized as directed by the HSO or HSTs.

- The **Level C PPE ensemble** will include full face air purifying respirator (MSHA/NIOSH approved) with combination organic vapor, acid gas and high efficiency particulate cartridge/filter; Saranax-laminated Tyvek or equivalent coverall; chemical-resistant outer and inner gloves; a hard hat; safety glasses; steel-toe work boots; neoprene or butyl rubber overboots; long cotton underwear (optional); and an escape air mask (readily available). Hearing and fall protection will be utilized as directed by the HSO or HSTs.

- **Level B PPE** will be worn when confined space entry is required (i.e., during tank cleaning). The Level B PPE ensemble will include a positive-pressure SCBA (MSHA/NIOSH approved) or positive-pressure air line respirator with escape bottle for IDLH or potential IDLH atmosphere (MSHA/NIOSH approved); chemical-resistant clothing (Saranax-laminated Tyvek or equivalent coverall); long cotton underwear (optional); outer and inner chemical-resistant gloves; steel-toe work boots; disposable chemical-resistant overboots; and hard hat (face shield optional). Hearing or fall protection will be utilized as directed by the HSO or HSTs.

Taping will be used between suit and gloves, and suit and boots for Levels B, C, and Modified D PPE.

The base levels of protection identified are to be considered preliminary and may change based on air monitoring information collected by the HSO or HSTs during project work. No Changes to the specified levels of protection will be made without the approval of the HSO.

TABLE 4
DESCRIPTION OF PPE LEVELS

LEVEL OF PROTECTION	EQUIPMENT	PROTECTION PROVIDED	SHOULD BE USED WHEN:	LIMITING CRITERIA
A	**Recommended** ▸ Pressure-demand, full-facepiece SCBA or pressure-demand supplied-air respirator with escape SCBA. ▸ Full-encapsulating, chemical-resistant suit. ▸ Inner chemical-resistant gloves. ▸ Chemical-resistant safety boots/shoes. ▸ Two-way radio communications. **Optional** ▸ Cooling Unit. ▸ Coveralls. ▸ Long cotton underwear. ▸ Hard hat. ▸ Disposable gloves and boot covers.	The highest available level of respiratory, skin, and eye protection.	▸ The chemical substance has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on either: – measured (or potential for) high concentration of atmospheric vapors, gases, or particulates or – site operations and work functions involving a high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates of materials that are harmful to skin or capable of being absorbed through the intact skin. ▸ Substances with a high degree of hazard to the skin are known or suspected to be present, and skin contact is possible. ▸ Operations must be conducted in confined, poorly ventilated areas until the absence of conditions requiring Level A protection is determined.	▸ Fully-encapsu-lating suit material must be compatible with the sub-stances involved.

TABLE 4
DESCRIPTION OF PPE LEVELS

LEVEL OF PROTECTION	EQUIPMENT	PROTECTION PROVIDED	SHOULD BE USED WHEN:	LIMITING CRITERIA
B	**Recommended** ▸ Pressure-demand, full-facepiece SCBA or pressure-demand supplied-air respirator with escape SCBA. ▸ Chemical-resistant clothing (overalls and long-sleeved jacket; hooded, one- or two-piece chemical splash suit; disposable chemical resistant one-piece suit). ▸ Inner and outer chemical-resistant gloves. ▸ Chemical-resistant safety boots/shoes. ▸ Hard hat. ▸ Two-way radio communications. **Optional** ▸ Coveralls. ▸ Disposable boot covers. ▸ Face shield. ▸ Long cotton underwear.	The same level of respiratory protection but less skin protection than Level A. It is the minimum level recommended for initial site entries until the hazards have been further identified.	▸ The type and atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection. This involves atmospheres: → with IDLH concentrations of specific substances that do not represent a sever skin hazard; or → that do not meet the criteria for use of air-purifying respirators. ▸ Atmosphere contains less than 19.5 percent oxygen. ▸ Presence of incompletely identified vapors or gases is indicated by direct-reading organic vapor detection instrument, but vapors and gases are not suspected of containing high levels of chemicals harmful to skin or capable of being absorbed through the skin.	▸ Use only when the vapor of gases present are not suspected of containing high concentrations of chemicals that are harmful to skin or capable of being absorbed through the intact skin. ▸ Use only when it is highly unlikely that the work being done will generate either high concentrations of vapors, gases, or particulates or splashes of material that will affect exposed skin.

TABLE 4
DESCRIPTION OF PPE LEVELS

LEVEL OF PROTECTION	EQUIPMENT	PROTECTION PROVIDED	SHOULD BE USED WHEN:	LIMITING CRITERIA
C	**Recommended** ▸ Full-facepiece, air-purifying, canister-equipped respirator. ▸ Chemical-resistant clothing (overalls and long-sleeved jacket; hooded, one- or two-piece chemical splash suit; disposable chemical-resistant one-piece suit). ▸ Inner and outer chemical-resistant gloves. ▸ Chemical-resistant safety boots/shoes. ▸ Hard hat. ▸ Two-way radio communications. **Optional** ▸ Coveralls. ▸ Disposable boot covers. ▸ Face shield. ▸ Escape mask. ▸ Long cotton underwear.	The same level of skin protection as Level B, but a lower level of respiratory protection.	▸ The atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any exposed skin. ▸ The types of air contaminants have been identified, concentrations measured, and a canister is available that can remove the contaminant. ▸ All criteria for the use of air-purifying respirators are met.	▸ Atmospheric con-centration of chemicals must not exceed IDLH levels. ▸ The atmosphere must contain at least 19.5 percent oxygen.

TABLE 4
DESCRIPTION OF PPE LEVELS

LEVEL OF PROTECTION	EQUIPMENT	PROTECTION PROVIDED	SHOULD BE USED WHEN:	LIMITING CRITERIA
D	**Recommended** ▸ Coveralls. ▸ Safety boots/shoes. ▸ Safety glasses or chemical splash goggles. ▸ Hard hat. **Optional** ▸ Gloves. ▸ Escape mask. ▸ Face shield.	No respiratory protection. Minimal skin protection.	▸ The atmosphere contains no known hazard. ▸ Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous levels of any chemical.	▸ This level should not be worn in the Exclusion Zone. ▸ The atmosphere must contain at least 19.5 percent oxygen.

SECTION 7.0
Air Monitoring Program

7.1 GENERAL

Personnel, work area, and perimeter monitoring strategies have been devised to ensure that the identification of areas for which PPE, engineering, and administrative controls are required. Monitoring and documentation will be conducted as necessary by the HSO or a designated field technician to confirm that the levels of PPE, engineering, and administrative controls are adequate to protect the workers, general public, and environment.

The Project Manager and HSO will ensure that an adequate supply of the appropriate monitoring equipment is available prior to commencing work at the site. The instruments will be operated only by persons with appropriate training in the care, calibration, operation, and limitations of the equipment. All instruments will be inspected regularly and field calibrated to determine background concentrations prior to use.

Sampling will be performed and samples will be analyzed using published methodologies that have been validated by OSHA or NIOSH.

Action level contaminant concentrations are based on 50 percent of the OSHA PEL or ACGIH TLV for each contaminant (see Table 2). If air samples indicate that personal exposures are greater than the action levels, then personal protection, engineering, and administrative controls will be reviewed according to the procedures outlined below.

7.2 AIR MONITORING PROCEDURE

Air monitoring, if required, will be conducted in accordance with Table 5 and as follows:

1. Check and record calibration before and after use each day. All instruments will be calibrated and operated in accordance with manufacturer's specifications. Equipment manuals for all monitoring instruments will be present on-site during all operations.

2. Note weather conditions.

3. Collect and record a background reading on each air monitoring instrument to be used at day's start in an area free of site-generated airborne contaminants. This area will be located upwind of the work area.

4. Prior to initiation of operations, determine and record ambient levels within the contaminated work area(s).

5. Report ambient conditions periodically.

6. Check and record breathing zone levels during remediation and/or abatement activities.

7. Check and record levels at the perimeter of the work zone if elevated concentrations are detected in the worker's breathing zone.

8. Check and record levels following completion of any intrusive work. Monitor one (1) upwind and three (3) downwind locations at the edge of the work zone.

9. Check and record airborne particulate levels periodically. Monitor one (1) upwind and three (3) downwind locations at the edge of the work zone.

10. Check and record daily (pre/post-work) outside exclusion zone ambient air readings. Monitor one (1) upwind and three (3) downwind locations at the edge of the work zone.

TABLE 5
Summary of Air Monitoring Plan* with Action Levels
Haight Farm Site Operations & Maintenance
Town of Clarendon, Orleans County, New York

Instrument	Sampling Location	Monitoring Frequency	Action Level[A]	Response Action[B]
Real Time Monitoring				
Photovac TIP (OVA)	At Work Zone	During drilling and sampling	50% PEL of Measured Contaminants	Work ceases until mitigated Evaluate Need for PPE Upgrade.

NOTES:

A. The toxicity action levels given above are based on established OSHA PELs for the chemical compounds known and/or anticipated to be present on-site (see Table 2 of this HASP).

B. The HSO is responsible for collecting air monitoring data and notifying site personnel of required response actions (i.e., implementation of engineering controls, upgrade/downgrade to PPE, stop work orders).

SECTION 8.0
Decontamination Procedures

Personnel and equipment decontamination procedures to be employed when exiting contaminated work areas at this project site are detailed in the following subsections.

8.1 PERSONNEL DECONTAMINATION

All personnel will be made aware of any personal habit that may allow contaminants into or onto the body. All personnel will check that regularly worn PPE (e.g., hard hats and liners, eye protection, etc.) is clean and in good condition. Any products for personal consumption or application are prohibited in any work area. Break area(s) will be limited to specific areas where eating, drinking, smoking, etc. and the storage of these materials will be allowed.

No PPE will be removed from a designated work area without proper decontamination or disposal. All personnel leaving the work area will pass through a contamination reduction zone where they will remove their PPE and thoroughly wash/rinse exposed skin with water and biodegradable soap before leaving the project site per the following seven step decontamination SOP.

Step 1: Place equipment and/or samples in area(s) designated in the Equipment Drop-Off Station.

Step 2: Scrape gross contamination from boots and outer gloves, wash using soap in water solution, and rinse with water.

Step 3: Remove tape from around boots and gloves and place in plastic bag or drum provided. Remove overboots and outer gloves and place in plastic bags.

Step 4: Remove respiratory cartridges (if used) and place in plastic bag or drum provided.

Step 5: Remove disposable coveralls and place in plastic bag or drum. Remove boots and store in appropriate location. Remove disposable inner gloves (if worn) and place in plastic bag. Remove hard hat and safety glasses: decontaminate as necessary (wash with sanitizing solution [MSA sanitizing solution or equivalent], rinse with potable water, and allow to dry at the end of each day).

Step 6: Remove respirator (if used) and deposit in plastic bag or drum provided. Avoid touching face with fingers. Respirators will be washed in a sanitizing solution (MSA sanitizer or equivalent), rinsed with potable water, and allowed to air dry at the end of each day.

Step 7: Thoroughly wash/rinse exposed skin with water and biodegradable soap (i.e., trisodium phosphate). Shower and launder personal clothing as soon as possible upon completing daily activities.

Portable decontamination stations (a.k.a., "boot wash" facilities) will be set up in the CRZ adjacent to each hazardous work zone requiring decontamination for personnel. The Boot Wash facilities will be constructed to contain spent wash water, contain a reservoir of clean wash water, a power supply to operate a pump for the wash water, a separate entrance and exit to the decontamination platform with equipment being mobile, allowing easy transport for one hazardous work zone to the next. Personnel will be required to dress down and drum their used PPE in the decontamination area in accordance with the above seven step procedure.

A fixed decontamination trailer equipped with shower facilities will be located in the CRZ near the to the support zone. All personnel will be required to shower before leaving the site.

All materials generated during decontamination will be drummed for disposal in accordance with applicable local, state, and federal regulations.

8.2 EQUIPMENT DECONTAMINATION

Equipment which may have been contaminated during the course of remedial operations will be decontaminated prior to removal from the site. Generally, equipment decontamination will be performed as follows:

1. Conduct gross removal of solids at point of use (i.e., manually scrape off dirt/soil from tires, bucket, etc.).

2. Move to the temporary equipment decontamination pad in the CRZ for decontamination via pressure washing. The self-contained high pressure unit will be capable of heating wash waters to 180°F and providing a nozzle pressure of 150 psi.

3. Perform complete detergent rinse (if necessary) using an environmentally-safe solvent (MSDSs will be provided for any materials brought on-site and will be maintained in the Contractor's field trailer).

4. Perform a final steam rinse.

The HSO will be responsible for inspecting decontaminated equipment before releasing it from the project site. The HSO will certify in writing that each piece of equipment utilized in the "dirty" area has been properly decontaminated prior to removal from the site.

SECTION 9.0
Site Standard Operating Procedures

Site personnel will observe the following Standard Operating Safety Procedures when working at the site.

1. Ensure that all safety equipment and protective clothing is kept clean and well maintained.
2. Ensure that all prescription eyeglasses in use on this project are safety glasses and are compatible with respirators. No contact lenses will be allowed on site.
3. Ensure that all disposable or reusable gloves worn on the site are approved by the HSO.
4. Change respirator filters during periods of prolonged respirator usage in contaminated areas, upon breakthrough. Respirator filters will always be changed daily.
5. Cover footwear used on site by rubber overboots or booties when entering or working in the Exclusion Zone area or CRZ. Boots or booties will be washed with water and detergents to remove dirt and contaminated sediment before leaving the Exclusion Zone or CRZ.
6. Decontaminate or dispose of all PPE used on site at the end of the work day. The HSO will be responsible for ensuring decontamination of PPE before reuse.
7. Individually assign all respirators and do not interchange them between workers without cleaning and sanitizing. Contractor, Subcontractor, and service personnel unable to pass a fit test as a result of facial hair or facial configuration will not enter or work in an area that requires respiratory protection.
8. Ensure that all project personnel have vision or corrected vision to at least 20/40 in one eye.
9. On-site personnel found to disregard any provision of this HASP may be barred from the project.
10. Do not reuse disposable outerwear such as coveralls, gloves, and boots. Used disposable outerwear will be removed upon leaving the hazardous work zone and will be placed inside disposable containers provided for that purpose. These containers will be stored at the site at the designated staging area and the Contractor will be responsible for proper disposal of these materials at the completion of the project.
11. Immediately replace protective coveralls that become torn or badly soiled.
12. Prohibit eating, drinking, chewing gum or tobacco, and smoking in the Exclusion Zone and CRZ.
13. All personnel will thoroughly cleanse their hands, face, and forearms and other exposed areas prior to eating, smoking, or drinking.
14. Workers who have worked in an Exclusion Zone will shower in the on-site decontamination trailer at the completion of the work day.
15. All personnel will wash their hands, face, and forearms before using toilet facilities.
16. Do not allow alcohol, firearms, or drugs (without prescriptions) on site at any time.
17. All personnel who are on medication should report it to the HSO who will make a determination whether or not the individual will be allowed to work and in what capacity. The HSO may require a letter from the individual's personal physician stating what limitations (if any) the medication may impose on the individual.

SECTION 10.0
Emergency Response & Contingency Plan

The following Emergency Response Plan (ERP) considers and recommends:

- Preventative Measures;
- Personnel training and regular safety meetings conducted to reduce the likelihood of accidents;
- Mitigative measures to limit the scope of any accident; and
- Contingency actions to respond to and remedy the effects of accidents.

10.1 PRE-PLANNING

All work will be coordinated with the NYSDEC, E&E, IEG, and other involved regulatory personnel. In addition, local police and fire departments, local hospital(s), and local ambulance services will be contacted by the HSO prior to initiation of site operations to inform them of scheduled remedial activities at the site. Arrangements for emergency communication will be made with these organizations prior to initiating on-site operations.

As discussed in Section 5.0 of this HASP, emergency response procedures will be covered as part of each site personnel's training. Training in site-specific emergency procedures will be provided by the site health and safety officer before work begins on-site. This training will include, but is not limited to, the following;

- Emergency chain-of-command;
- Communication methods and signals;
- Location of phones and emergency numbers;
- Use of emergency equipment;
- Evacuation and emergency procedures;
- Off-site support;
- Site-specific hazards;
- Decontamination procedures;
- Standard operating procedures; and
- Location and use of first aid equipment.

10.2 EMERGENCY CHAIN-OF-COMMAND

Personnel will immediately notify the HSO in the event of an emergency using available communications. The HSO will make a rapid assessment of the situation and take appropriate action which (depending upon emergency circumstances) can include notifying the Engineer of the situation; initiating engineering controls (i.e., dust suppression, ventilation, etc.); ordering the suspension of work; ordering evacuation of the work zone; implementing emergency altering and response procedures; requesting emergency medical treatment; and/or administering first aid.

10.3 COMMUNICATION METHODS AND SIGNALS

For emergency situations when two-way radio communication is not available or practical, oral, hand, and semaphore safety signals have been established to protect project personnel. These signals will be made available to personnel for all phases of operation before going on-site. This will ensure quick communication during adverse or emergency situations.

Examples of established signals and their meanings are provided below.

Signal	Indicates
Hand gripping throat	Out of air, can't breath
Wave hands over head from side-to-side	Attention: stand-by for next signal
Swing hand from direction of person receiving signal to directly overhead and through in a circle	Come here
Pointed finger on extended arm	Look in that direction
Grip partner's wrist or both hands around wrist	Leave the area immediately
Hands on top of head	Need assistance
Thumbs up	OK, I'm alright, I understand
Thumbs down	No, negative

Examples of audio signals include:

Signal	Indicates
Short blast of airhorn	Caution or look here
Four (4) blasts of airhorn	Leave the area

Each field team member will be assigned a buddy. Field personnel will watch for hazards or problems his/her buddy might encounter. Buddies will pre-arrange hand signals or other means of emergency signals for communication when respiratory protection or distance makes communication difficult. Communication between buddies must be maintained at all times. Visual contact must be maintained between buddies. Further, buddies must remain in close proximity to each other in order to assist in case of emergencies.

10.4 EVACUATION

Emergency escape routes will be designated by the HSO for use in situations where rapid egress from the Exclusion Zone is required. The locations of these routes will be posted in prominent location(s) on-site (i.e., personnel change trailer, office trailer, break trailer, etc.) and will be reviewed with site personnel during daily tool-box and weekly safety meetings.

An emergency evacuation alarm (i.e., air horn) will be kept on-site at all times. A series of regularly spaced, repeated blasts (four blasts) will be used to signify that all personnel should evacuate the work area. After exiting the work area, personnel will meet at an upwind location designated by the HSO. The emergency alarm will be sounded in the event of any serious problem or emergency on-site which requires the assistance of site personnel or the evacuation of work zone personnel.

In all situations when an on-site emergency results in evacuation of the Exclusion Zone, personnel will not be permitted to reenter until:

- The conditions resulting in the emergency have been corrected;

- The hazards have been reassessed;
- This HASP has been reviewed; and
- Site personnel have been briefed on any changes in the HASP.

10.5 EMERGENCY SERVICES/EMERGENCY VEHICLE ACCESS

Emergency telephone numbers (see Table 1) will be posted at each project site telephone. Directions to the local hospital (see Figure 1) also will be posted at the site.

In the event that emergency services vehicles (police, fire, ambulance) need access to a location which is blocked by the working crew operations, those operations (equipment, materials, etc.) will be immediately moved to allow those vehicles access.

Emergency crews will be briefed as to site conditions and hazards by the HSO. All vehicles and personnel will be decontaminated prior to leaving the site.

10.6 WEATHER-RELATED HAZARD RESPONSE

Threats to site personnel can arise from natural causes (i.e., lightening, high winds, etc.). In the event that severe weather is imminent, the HSO will notify field team members. As the storm approaches, all work will cease, loose objects will be secured, and site personnel will take shelter at pre-arranged locations. After the severe weather event has passed, the HSO will inspect the work area for safety hazards prior to resuming work.

10.7 SPILL CONTROL & CONTINGENCY PLAN

A site-specific Emergency Spill Response Plan is provided in Section 10.0. Specific procedures for responding to spills associated with planned contract operations can be found in said plan.

10.8 PERSONAL INJURIES

In the event of personal injuries the following procedures will be enacted.

1. ***Initial alarm and first aid.*** Upon observation of an injury, site employees will quickly get the attention of other nearby workers; immediately act to protect the injured person from a life-threatening situation; render appropriate first aid; and warn unsuspecting persons of the potential hazard.

2. ***Notify the HSO and the Project Engineer.*** Utilizing available personal radio communications or other rapid communication methods, the HSO and the Project Engineer will be notified of the situation, the identity of the injured person, the type of injury, and the project site location.

3. ***Ambulance and hospital services.*** The HSO will immediately assess the situation and, if necessary, notify the designated off-site hospital of the emergency situation.

4. ***Follow-up.*** The HSO will determine why the injury occurred, and will take appropriate steps to prevent a similar recurrence. Events associated with the injury will be recorded in the safety officer's logbook.

An Incident Report Form must be completed by the HSO and submitted to the Project Manager within 24 hours of the injury.

10.8.1 Personnel Injury in the Exclusion Zone

Upon notification of any injury in the Exclusion Zone, the designated emergency signal will be sounded. All site personnel will assemble at a pre-arranged location. A rescue team made up of the HSO and other personnel as needed who have received property training (see Section 4.0) will enter the Exclusion Zone (if required) to remove the injured person to the boundary of the Exclusion Zone. The HSO then will evaluate the nature of the injury. The affected person will be decontaminated as necessary to the extent possible prior to movement to the Support Zone. Appropriate first aid will be initiated (see Section 10.12), and the ambulance and designated medical facility (Table 1) will be contacted if required. No persons will reenter the Exclusion Zone until the cause of the injury or symptoms of the illness have been determined.

10.8.2 Personnel Injury in the Support Zone

Upon notification of an injury in the Support Zone, the HSO will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue. The appropriate first aid will be initiated (see Section 10.12) and necessary follow-up as stated in above. If the injury increases the risk to others, the designated emergency signal will be sounded and all site personnel will move a prearranged location for further instructions. Activities on site will stop until the added risk is removed or minimized.

10.9 FIRE/EXPLOSION

The following contingency plan will be implemented in the event of a fire at the project site.

1. ***Initial Alarm.*** Upon observation of any on-site fire, personnel must immediately notify the HSO (or his designated on-site representative) and the Project Engineer. No attempt will be made to extinguish the fire prior to sounding the alarm.

2. ***Control and/or extinguish small fires which can be suppressed promptly with available on-site equipment.*** Without risking personal injury, an attempt will be made to control or extinguish small fire(s) utilizing ABC-type fire extinguishers. Water will not be used except on wood or paper fires.

3. ***Notify local fire company.*** The HSO and the Project Engineer (or their designated on-site representatives) will immediately assess the situation and, if deemed necessary, notify the local Fire Department of the location and type of fire or explosion. If required, the HSO and/or the Project Engineer (or their designated on-site representatives) will immediately order the site evacuated if a fire occurs which cannot be controlled with a portable fire extinguisher.

4. ***Follow-up.*** The HSO will determine why the fire or explosion occurred, and will take appropriate steps to prevent a similar recurrence. Events associated with the fire or explosion will be recorded in the safety officer's logbook.

An Incident Report must be completed by the HSO and submitted to Corporate Management and the Project Engineer within 24 hours of the fire/explosion.

10.10 PERSONAL PROTECTIVE EQUIPMENT FAILURE

If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his/her buddy immediately will leave the Exclusion Zone and notify the HSO. Reentry will not be permitted until the equipment has been replaced or repaired, and the affected areas of the person's body

have been decontaminated if applicable.

10.11 OTHER EQUIPMENT FAILURE

If any on-site equipment other than PPE (see Section 10.10 above) fails to operate properly, the HSO will be notified. The HSO then will determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents the completion of the Work Plan tasks, all personnel will leave the Exclusion Zone until the situation is evaluated and all appropriate actions taken.

10.12 EMERGENCY EQUIPMENT & ON-SITE FIRST AID

Emergency and first aid equipment to be maintained on-site includes:

- The active work area will be provided with approved, portable emergency eye wash and shower units in accordance with ANSI Standard Z358.1 and minimum rating 2A-10 B:C type dry chemical fire extinguishers.
- At least one "industrial" first aid kit and stretcher will be provided and maintained fully stocked at an easily accessible, uncontaminated location to be determined on-site by the HSO. Additional first aid kits will be provided in the event active work areas are so isolated or separated as to make use of the one first aid station impractical.
- First aid/CPR kit locations will be specifically marked by the HSO and provided with adequate water and other supplies necessary to cleanse and decontaminate burns, wounds, or lesions. First aid stations will be supplied with a buffer solution for testing acid and caustic burns. NOTE: CPR should only be started if the worker is trained in CPR and the victim's heart has stopped beating.
- At least two (2) First Aid Technicians certified by the American Red Cross or other approved agency will be on-site at all times.
- 2A-10 B:C type dry chemical fire extinguishers will be provided at all site locations where flammable materials present a fire risk.
- A minimum of two self-contained breathing apparatus (SCBAs) or lower level of protection as site conditions allow will be maintained in contaminated work areas.

Agencies and medical facilities to be contacted in the event of an on-site emergency are identified in Table 1 of this HASP. The Emergency Response Notification Table also includes the route to the nearest hospital. The table (and corresponding map) will be posted in a prominent location(s) on-site.

If a site worker becomes injured or ill, Red Cross first aid procedures and the blood borne pathogens program provided in this HASP will be followed. First aid or other appropriate initial actions will be provided by the trained first aid responders closest to the incident. NOTE: When protective clothing has been grossly contaminated during an accident/injury, contaminants may be transferred to treatment personnel or the wearer and cause injuries. Unless severe medical problems have occurred simultaneously with splashes, protective clothing should be washed off as rapidly as possible and removed. If the worker is ambulatory or can be moved, he/she will be taken to the personnel decontamination station where decontamination procedures, additional first aid, or preparation for transport to the hospital will be accomplished. In the event that the victim could not be decontaminated, the rescue service provider must be notified of that situation.

If the injury to the worker is chemical in nature, the following first aid procedures are to be instituted:

- ***Eye Exposure.*** If contaminated solids or liquids get into the eyes, wash eyes immediately at the emergency eyewash station using large amounts of water and lifting the lower and upper lids occasionally. Wash for at least 15 minutes. Obtain medical attention.

- ***Skin Exposure.*** If contaminated solids or liquids get on the skin, promptly wash the contaminated skin using soap and water. Obtain medical attention immediately when exposed to concentrated solids or liquids.

- ***Respiratory Exposure.*** Move victim to fresh air at once and begin CPR. Phone 911 to obtain immediate medical attention.

- ***Ingestion Exposure.*** For swallowed contaminants, identify the item swallowed. Follow appropriate procedures and obtain medical attention as soon as possible.

NOTE: Any person transported to the hospital for treatment related to an exposure injury will take with them the appropriate information (see Table 2) about the chemical(s) to which he/she has been exposed. MSDSs for chemicals known or suspected to exist on-site will be maintained in the Contractor's field office by the HSO.

SECTION 11.0
Community Protection Plan

The following Community Protection Plan (CPP) has been developed to outline those steps to be implemented to protect the health and safety of surrounding human population and the environment.

11.1 AIR MONITORING

As part of its Air Monitoring Program (see Section 7.0) and if necessary, IEG will use real-time monitoring and documentation sampling to determine if off-site emissions, as a result of site work, poses a threat to the surrounding community. All readings will be recorded and be available for State (DEC & DOH) personnel to review.

11.2 VAPOR EMISSION RESPONSE

If the ambient air concentration of organic vapors exceeds 5 ppm above background in the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities may resume but more frequent intervals of monitoring, as directed by the HSO, will be conducted..

SECTION 12.0
Logs, Reports, & Record Keeping

The following health and safety reports will be prepared and submitted as needed and as indicated below.

Daily Safety Report
Employee Meeting Record
Exclusion Zone Log
Site Log
Confined Space Entry Permit
Air Monitoring Report
Accident/Incident Report
Health & Safety Inspection Report
Spill Report
Equipment Decontamination Verification Form

B

Drilling Scope and Quotes

IYER ENVIRONMENTAL GROUP, PLLC
CONSULTING ENGINEERS & SCIENTISTS

44 Rolling Hills Drive
Orchard Park, NY 14127
e-mail: iegpllc@aol.com
Phone: (716) 662-4157
Fax: (716) 662-2118

September 7, 2000

Mr. Dave Albers, PE
Ecology & Environment Engineering, Inc.
368 Pleasantview Drive
Lancaster, NY 14086

Subject: Haight Farm Site O & M (No. 8-37-006)
Subcontract for Monitoring Well Installation/Development

Dear Mr. Albers:

As per our discussions, IEG solicited quotes from the following four firms for subcontract drilling, well installation and well development at the Haight Farm site as part of the NYSDEC's O & M work assignment issued to E&E:

American Auger, Constantia (WBE)
SJB Services, Buffalo, NY
Nothnagle Drilling, Scottsville, NY
Marcor, Rochester, NY

IEG received quotes from the first three firms listed above which are tabulated in the attached table. Based on these quotes, IEG requests that Nothnagle Drilling be approved for use by IEG as a subcontractor for the above referenced services. Actual quotes and the RFQ are attached to facilitate E & E and NYSDEC's review and approval.

If you have any questions regarding the enclosed material, please call me at (716)662-4157 or 445-9684

Sincerely,
IYER ENVIRONMENTAL GROUP, PLLC

Dharmarajan R. Iyer, Ph.D., PE

PROCEDURE FOR
MONITORING WELL INSTALLATION/DEVELOPMENT
HAIGHT FARM SITE O & M
CLARENDON (T), ORLEANS COUNTY, NEW YORK

The purpose of this effort is to install and develop monitoring wells which will be used for baseline contaminant monitoring and to determine the limits of the contaminant plume. One (1) shallow monitoring well will be installed between MW-15S and the DVE wells to a depth of about 23 feet. Depth to bedrock is expected to be around 9 feet.

Well Installation/Development

A drilling subcontractor will be utilized to furnish all labor, tools, materials, equipment, and incidentals to provide all work necessary to install and develop a monitoring well

A. Drilling:

1. The monitoring well boring will be drilled with a drill rig suitable for the work. Boreholes will be advanced using hollow stem auger and roller bit/core drill equipment.

2. Prior to drilling at each location, the drill rig will be leveled. Each well will be installed plumb and true.

3. All equipment placed into the well borings will be properly decontaminated prior to the work, and between each well installation, by steam cleaning.

4. Drilling muds, air systems, and drilling lubricants will not be used.

5. Overburden shallow well borings will be installed with 6¼-inch ID hollow stem augers (HSA) drilled boreholes.

6. Continuous split-spoon sampling will be done, with the soil classified by E&E's on-site geologist according to the unified classification system, and scanned for volatile organics using a PID or FID.

7. A 6-inch diameter temporary casing will be installed in the borehole to the top of bedrock.

8. The bedrock portion of the borehole will be reamed with a $5^{7}/_{8}$-inch roller bit.

9. A 15-foot well screen will be placed in the well, extending 10 feet into the bedrock to prevent the collapse of the bedrock interval.

B. Well Construction:

1. Solvents, glues, or other adhesives will not be used on casing joints.

2. Well casing and screen will be four (4) inch inner diameter, threaded flush Joint, Schedule 40 PVC. Casing and screen will be steam cleaned prior to installation.

3. The screen will be 0.010" slot Schedule 40 PVC. The bottom plug on the screen will be threaded, not slip on.

4. The sand pack will consist of #I Morie sand.

5. The sand pack will be introduced gradually inside the 6-inch diameter temporary casing, and fill the annular space between the screen and borehole adjacent to the screen, extending one to two feet above the screen. The temporary casing will be withdrawn in increments so that the native formation materials are not allowed to collapse directly against the well casing or screen.

6. A one to two foot thick bentonite pellet seal will be provided above the sand pack. Bentonite will be allowed to hydrate for at least one hour. Cement/bentonite grout will be installed above the bentonite seal to within three feet of ground surface. No organic polymer additives are permitted. The grout will be mixed with a mud pump to a consistency acceptable to NYSDEC. Neat cement or concrete will be used from three feet to the ground surface.

7. An outer protective steel casing will be provided and cemented in place around the riser pipe. The top of the steel casing will extend approximately three feet above the finished grade and two inches above the top of the well casing. Three feet of steel casing will be below ground. A drain hole will be drilled at the base of the casing, and a vent hole will be located at the top of the casing. The cement collar will be tapered away from the well to divert surface runoff from the well.

8. The monitoring well will have a vented and locking cap.

9. All drilling equipment such as augers, casing, bits, and sampling equipment which may come in contact with subsurface materials will be steam cleaned before being brought onto the site. The drilling equipment will be steam cleaned before leaving the site. All PVC materials (screens and risers) will be steam cleaned prior to well installation.

C. Well Development

1. The installed monitoring well will be developed as soon as possible following installation, but not before the well seal and grout have properly set. The entire saturated screened or openhole interval will be developed.

2. The well will be developed using either bailing, manual pumping using a Waterra or equal pump, or powered suction-lift pumping. Well development will be initiated gently, and the degree of agitation then slowly increased to remove fines from the well bottom and sand pack. Water will not be introduced into the well during development.

3. Development will continue until the turbidity in the recovery water is less than 50 NTU's. If the turbidity exceeds 50 NTU after 500 gallons have been removed, development will continue until a field determination is made to terminate the development.

4. All development water will be collected for treatment on site.

COMPARISON OF BIDS FOR MONITORING WELL INSTALLATION

HAIGHT FARM SITE - O & M, Clarendon (T), Orleans County, NY
September 7, 2000

				AMERICAN AUGER		SJB SERVICES		NOTHNAGLE	
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST	UNIT COST	TOTAL COST	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	each	$1,250.00	$1,250.00	$500.00	$500.00	$400.00	$400.00
2	6.25-inch Hollow Stem Auger	12	feet	$17.00	$204.00	$18.00	$216.00	$14.00	$168.00
3	5-7/8-inch Roller bit	12	feet	$21.00	$252.00	$30.00	$360.00	$26.00	$312.00
3	Split-spoon sampling	6	each	$15.00	$90.00	$6.00	$36.00	$12.00	$72.00
4	PVC Well Screen - 4" Sched. 40	15	feet	$10.00	$150.00	$12.00	$180.00	$18.00	$270.00
5	PVC Riser - 4" Sched. 40	12	feet	$15.00	$180.00	$12.00	$144.00	$15.00	$180.00
6	Well Screen Sand	17	feet	$12.00	$204.00	$6.00	$102.00	$6.00	$102.00
7	Seal for 4" Well in 6.25" Auger	2	feet	$17.00	$34.00	$6.00	$12.00	$25.00	$50.00
8	6-inch Steel Casing - temporary	10	feet	$17.00	$170.00	$15.00	$150.00	$10.00	$100.00
9	55-gallon Drums	2	each	$45.00	$90.00	$35.00	$70.00	$30.00	$60.00
10	Fill/Stage Drums	1	hour	$100.00	$100.00	$135.00	$135.00	$150.00	$150.00
11	Equipment Decontamination	2	hour	$95.00	$190.00	$135.00	$270.00	$130.00	$260.00
12	Steam Cleaner Rental w/Water Tank	2	day	$150.00	$300.00	$35.00	$70.00	$50.00	$100.00
13	Well Development	2	hour	$95.00	$190.00	$135.00	$270.00	$130.00	$260.00
14	6" Protective casing	1	each	$150.00	$150.00	$150.00	$150.00	$150.00	$150.00
	TOTAL				$3,554.00		$2,665.00		$2,634.00

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44 Rolling Hills Dr.
Orchard Park, NY 14127
e-mail: iegpllc@aol.com

REQUEST FOR QUOTE NO. 2017-MW

DATE: September 6, 2000

PROJECT NAME: HAIGHT FARM SITE O & M
LOCATION: Clarendon (T), Orleans County, NY Project No. 2017

VENDOR:
Contact: American Auger
Address: 453 Rt 23
Constantia NY 13044
Phone: 315 623 7496
Fax: 7189

FOR:
IYER ENVIRONMENTAL GROUP, PLLC
44 Rolling Hills Dr.
Orchard Park, NY 14127
Attn: Dharma Iyer
Phone: (716)662-4157 | F: 662-2118

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	each	1250.	1250.
2	6.25-inch Hollow Stem Auger	12	feet	17.	204.
3	5-7/8-inch Roller bit	12	feet	21.	252.
3	Split-spoon sampling	6	each	15.	90.
4	PVC Well Screen - 4" Sched. 40	15	feet	10.	150.
5	PVC Riser - 4" Sched. 40 (Grouted)	12	feet	15.	180.
6	Well Screen Sand	17	feet	12.	204.
7	Seal for 4" Well in 6.25" Auger	2	feet	17.	34.
8	6-inch Steel Casing - temp.	10	feet	17.	170.
9	55-gallon Drums	2	each	45.	90.
10	Fill/Stage Drums	1	hour	100.	100.
11	Equipment Decontamination	2	hour	95.	190.
12	Steam Cleaner Rental w/Water Tank	2	day	150.	300.
13	Well Development	2	day hour	95.	190.
14	6" Protective Casing	1	ea.	150.	150.

TERMS AND CONDITIONS

a. Subcontractor will install wells as per attached Scope of Work/Specifications
b. To be responsive, all items listed above shall be priced by Subcontractor
c. Selection of Subcontractor is subject to approval by E&E and NYSDEC
d. Subcontractor shall provide current Certificate of Insurance within 5 business days from selection
e. Payment shall be made by IEG within 15 days after receipt of payment from E&E and NYSDEC
f. Retainage of 5% shall be withheld as per terms of NYSDEC's Standby Contract with E&E
g. Approximate start date is October 16, 2000

TOTAL THIS RFQ $3554.

RFQ Submitted by:
Name: Judy Baye SIGNED: Judy Baye, Pres
Representing: American Auger DATE SIGNED: 9-7-00

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44 Rolling Hills Dr.
Orchard Park, NY 14127
e-mail: iegplic@aol.com

REQUEST FOR QUOTE
NO. 2017-MW
DATE: September 6, 2000

PROJECT NAME: HAIGHT FARM SITE O & M
LOCATION: Clarendon (T), Orleans County, NY **Project No.** 2017

VENDOR: SJB SERVICES INC	FOR:
Contact: JOE GENOVESE	IYER ENVIRONMENTAL GROUP, PLLC
Address: 1451-1 HARLEM TURNPIKE	44 Rolling Hills Dr.
BFLO NY 14218	Orchard Park, NY 14127
Phone: 716 821-5911	Attn: Dharma Iyer
Fax: 716 821-0163	Phone: (716)662-4167 | F: 662-2118

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	each	500	500.00
2	8.25-inch Hollow Stem Auger	12	feet	18	216.00
3	5-7/8-inch Roller bit	12	feet	30	360.00
3	Split-spoon sampling	6	each	6	36.00
4	PVC Well Screen - 4" Sched. 40	15	feet	12	180.00
5	PVC Riser - 4" Sched. 40	12	feet	12	144.00
6	Well Screen Sand	17	feet	6	102.00
7	Seal for 4" Well in 8.25" Auger	2	feet	6	12.00
8	6-inch Steel Casing – temporary + protective	10	feet	30	300.00
9	55-gallon Drums	2	each	35	70.00
10	Fill/Stage Drums	1	hour	135	135.00
11	Equipment Decontamination	2	hour	135	270.00
12	Steam Cleaner Rental w/Water Tank	2	day	35	70.00
13	Well Development Rig	2	~~hour~~ day	~~135~~	~~270.00~~ 270.00

per discussion with Joe G. 9/7/00 BMT

TERMS AND CONDITIONS

a. Subcontractor will install wells as per attached Scope of Work/Specifications
b. To be responsive, all items listed above shall be priced by Subcontractor
c. Selection of Subcontractor is subject to approval by E&E and NYSDEC
d. Subcontractor shall provide current Certificate of Insurance within 5 business days from selection
e. Payment shall be made by IEG within 15 days after receipt of payment from E&E and NYSDEC
f. Retainage of 5% shall be withheld as per terms of NYSDEC's Standby Contract with E&E
g. Approximate start date is October 16, 2000

TOTAL THIS RFQ 2665.00

RFQ Submitted by:
Name: Joseph L. Genovese SIGNED: Joseph L Genovese
Representing: SJB DATE SIGNED: 9/7/00

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44 Rolling Hills Dr.
Orchard Park, NY 14127
e-mail: loggins@aol.com

REQUEST FOR QUOTE
NO. 2017-MW
DATE: September 6, 2000

PROJECT NAME: HAIGHT FARM SITE O & M
LOCATION: Clarendon (T), Orleans County, NY **Project No.** 2017

VENDOR:		FOR:
Contact:	Nothnagle	IYER ENVIRONMENTAL GROUP, PLLC
Address:	1821 Scottsville-Mumford Rd	44 Rolling Hills Dr.
	Scottsville, NY	Orchard Park, NY 14127
Phone:	(716) 538 2328	Attn: Dharma Iyer
Fax:	2357	Phone: (716)662-4167 | F: 662-2118

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	each	400.00	400.00
2	6.25-inch Hollow Stem Auger	12	feet	14.00	168.00
3	6-7/8-inch Roller bit	12	feet	26.00	312.00
3	Split-spoon sampling	6	each	12.00	72.00
4	PVC Well Screen - 4" Sched. 40	15	feet	18.00	270.00
5	PVC Riser - 4" Sched. 40	12	feet	15.00	180.00
6	Well Screen Sand	17	feet	6.00	102.00
7	Seal for 4" Well in 6.25" Auger	2	feet	25.00	50.00
8	6-inch Steel Casing - Temporary	10	feet	10.00	100.00
9	55-gallon Drums	2	each	30.00	60.00
10	Filtrage Drums	1	hour	150.00	150.00
11	Equipment Decontamination	2	hour	130.00	260.00
12	Steam Cleaner Rental w/Water Tank	2	day	50.00	100.00
13	Well Development	2	hour	130.00	260.00
14	6" Protective casing - Permanent	1	each	150.00	150.00

TERMS AND CONDITIONS
a. Subcontractor will install wells as per attached Scope of Work/Specifications
b. To be responsive, all items listed above shall be priced by Subcontractor
c. Selection of Subcontractor is subject to approval by E&E and NYSDEC
d. Subcontractor shall provide current Certificate of Insurance within 5 business days from selection
e. Payment shall be made by IEG within 15 days after receipt of payment from E&E and NYSDEC
f. Retainage of 5% shall be withheld as per terms of NYSDEC's Standby Contract with E&E
g. Approximate start date is October 16, 2000

TOTAL THIS RFQ $ 2634.00

RFQ Submitted by:
Name: Timothy M Nothnagle **SIGNED:** Timothy M Nothnagle
Representing: Nothnagle Drilling **DATE SIGNED:** 9-7-00

D:\Haight Farm\RFQ_2017-MW 090700

IYER ENVIRONMENTAL GROUP, PLLC
CONSULTING/ENGINEERING SERVICES
www.iyerenvironmentalgroup.com
Environmental Compliance/Assessments/Permits
Air/Water/Wastewater Treatment Systems
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Design-Build/Construction Oversight/O&M
Bench/Pilot Scale Treatability Studies

44 Rolling Hills Dr.
Orchard Park, NY 14127
e-mail: iegpllc@aol.com

Ph: (716) 662-4157
Fax: (716) 662-2118
Cell: (716) 445-9684

FACSIMILE

TO: Judy Baye	***From:*** **Dharma Iyer**
Firm: **American Auger & Ditching**	***Firm:*** **IYER ENVIRONMENTAL GROUP, PLLC**
Fax No: (315)623-7189	***Date:*** September 6, 2000

RE: Request for Quote - Monitoring Well Installation/Development

Notes/Comments *No. of Pages:* __5___ ***(incl. cover)***

Hi Judy:

Your firm is invited to submit a bid for this work to perform groundwater monitoring well installation and development at the above-referenced site. This solicitation for bid contains a Bid Response form and Scope of Work. If you feel that the time allotted in Exhibit 1 is inappropriate, please indicate so in your bid.

Site Name:	Haight Farm, Site No. 8-37-006
Site Location:	Town of Clarendon, Orleans County, New York
Services Needed:	Groundwater Monitoring Well Installation/Development
Client:	E&E/New York State DEC
IEG Project No.	2017

Please complete and submit the attached bid form by 9 AM tomorrow (i.e., Thursday, September 7, 2000) to my attention by fax at (716)662-2118, with hard copy by mail to the above address.

If you have any questions regarding the enclosed, please call me at 716/662-4157 or 445-9684

Thank you.

Dharma

cc: _____ _____ _____File:D:\F_RFQ_MW_AA.wpd

IYER ENVIRONMENTAL GROUP, PLLC
CONSULTING ENGINEERS/SCIENTISTS
www.iyerenvironmentalgroup.com
(716) 662-4157 / 662-2118 (F)

44 Rolling Hills Dr.
Orchard Park, NY 14127
e-mail: iegpllc@aol.com

REQUEST FOR QUOTE
NO. 2017-MW
DATE: September 6, 2000

PROJECT NAME: HAIGHT FARM SITE O & M
LOCATION: Clarendon (T), Orleans County, NY **Project No.** 2017

VENDOR:	*FOR:*
Contact:	IYER ENVIRONMENTAL GROUP, PLLC
Address:	44 Rolling Hills Dr.
	Orchard Park, NY 14127
Phone:	Attn: Dharma Iyer
Fax:	Phone: (716)662-4157 | F: 662-2118

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
1	Mobilization/Demobilization	1	each		
2	6.25-inch Hollow Stem Auger	12	feet		
3	5-7/8-inch Roller bit	12	feet		
3	Split-spoon sampling	6	each		
4	PVC Well Screen - 4" Sched. 40	15	feet		
5	PVC Riser - 4" Sched. 40	12	feet		
6	Well Screen Sand	17	feet		
7	Seal for 4" Well in 6.25" Auger	2	feet		
8	6-inch Steel Casing – Temporary	10	feet		
9	55-gallon Drums	2	each		
10	Fill/Stage Drums	1	hour		
11	Equipment Decontamination	2	hour		
12	Steam Cleaner Rental w/Water Tank	2	day		
13	Well Development	2	hour		
14	6" Protective casing – Permanent	1	each		

TERMS AND CONDITIONS

a. Subcontractor will install wells as per attached Scope of Work/Specifications
b. To be responsive, all items listed above shall be priced by Subcontractor
c. Selection of Subcontractor is subject to approval by E&E and NYSDEC
d. Subcontractor shall provide current Certificate of Insurance within 5 business days from selection
e. Payment shall be made by IEG within 15 days after receipt of payment from E&E and NYSDEC
f. Retainage of 5% shall be withheld as per terms of NYSDEC's Standby Contract with E&E
g. Approximate start date is October 16, 2000

TOTAL THIS RFQ

RFQ Submitted by:

Name: _____ **SIGNED:** _____

Representing: _____ **DATE SIGNED:** _____

SCOPE OF WORK
MONITORING WELL INSTALLATION/DEVELOPMENT
HAIGHT FARM SITE O & M
CLARENDON (T), ORLEANS COUNTY, NEW YORK

Project Description
Iyer Environmental Group, PLLC (IEG) is under a subcontract agreement with Ecology & Environment Engineering, Inc. (E&E) to provide engineering services related to the remediation of the Haight Farm Site. E&E has a work assignment for this project under its Standby Contract with the New York State DEC.

The purpose of this effort is to install and develop monitoring wells which will be used for baseline contaminant monitoring. The site is located on Upper Holley Road in the Town of Clarendon, Orleans County, NY. One (1) shallow monitoring well will be installed to a depth of about 23 feet on site under this project. Depth to bedrock is about 9 feet at the proposed monitoring well location.

The subcontractor shall be prepared to be on site at the agreed-upon time and date arranged with IEG at the time of contract awarding. All drilling equipment needed will be on site at this time. Currently, it is anticipated field work will be conducted in October 2000.

Health and Safety
The Subcontractor shall satisfy the requirements of 29 CFR OSHA 1910.120, and shall be responsible for the health and safety of its personnel on site.

The subcontractor should assume that all work will be performed using a minimum of Level D personal protection (including at a minimum hard hat, safety glasses, neoprene gloves, and steel-toed boots and may also include tyvek. If upgrades are required, additional costs may be applicable.

Well Installation/Development

The Subcontractor shall furnish all labor, tools, materials, equipment, and incidentals to provide all work necessary to install and develop a monitoring well.

A. Drilling:

1. Subcontractor shall drill all monitoring well borings with a drill rig suitable for the work. Boreholes shall be advanced using hollow stem auger and roller bit/core drill equipment.

2. Prior to drilling at each location, the drill rig shall be leveled. Each well shall be installed plumb and true.

3. All equipment placed into the well borings must be properly decontaminated prior to the work, and between each well installation, by steam cleaning.

4. Use of drilling muds, air systems, and drilling lubricants is prohibited

5. Overburden shallow well borings shall be installed with 6¼-inch ID hollow stem augers (HSA) drilled boreholes.

6. Continuous split-spoon sampling will be done, with the soil classified by IEG or E&E's on-site geologist according to the unified classification system, and scanned for volatile organics using a PID or FID.

7. A 6-inch diameter temporary casing will be installed in the borehole to the top of bedrock.

8. The bedrock portion of the borehole shall be reamed with a $5^{7}/_{8}$-inch roller bit.

9. A 15-foot well screen shall be placed in the well, extending 10 feet into the bedrock to prevent the collapse of the bedrock interval.

B. <u>Well Construction</u>:

1. Solvents, glues, or other adhesives are prohibited for use on casing joints.

2. Well casing and screen shall be four (4) inch inner diameter, threaded flush Joint, Schedule 40 PVC. Casing and screen shall be steam cleaned prior to installation.

3. The screen shall be 0.010" slot Schedule 40 PVC. The bottom plug on the screen shall be threaded, not slip on.

4. The sand pack shall consist of #I Morie sand (no substitutions).

5. The sand pack will be introduced gradually inside the 6-inch diameter temporary casing, and fill the annular space between the screen and borehole adjacent to the screen, extending one to two feet above the screen. The temporary casing will be withdrawn in increments so that the native formation materials are not allowed to collapse directly against the well casing or screen.

6. A one to two foot thick bentonite pellet seal above the sand pack will be provided by the Subcontractor. Bentonite will be allowed to hydrate for at least one hour. Cement/bentonite grout will be installed above the bentonite

seal to within three feet of ground surface. No organic polymer additives are permitted. The grout will be mixed with a mud pump to a consistency acceptable to IEG. Neat cement or concrete will be used from three feet to the ground surface.

7. An outer protective steel casing will be provided and cemented in place around the riser pipe. The top of the steel casing will extend approximately three feet above the finished grade and two inches above the top of the well casing. Three feet of steel casing will be below ground. A drain hole shall be drilled at the base of the casing, and a vent hole shall be located at the top of the casing. The cement collar will be tapered away from the well to divert surface runoff from the well.

8. The monitoring well will have a vented and locking cap.

9. All drilling equipment such as augers, casing, bits, and sampling equipment which may come in contact with subsurface materials shall be steam cleaned before being brought onto the site. The drilling equipment will be steam cleaned before leaving the site. All PVC materials (screens and risers) will be steam cleaned prior to well installation.

C. **Well Development**

1. The installed monitoring well shall be developed as soon as possible following installation, but not before the well seal and grout have properly set. The entire saturated screened or openhole interval must be developed.

2. The well shall be developed using either bailing, manual pumping using a Waterra or equal pump, or powered suction-lift pumping, as approved by IEG and E&E. Well development shall be initiated gently, and the degree of agitation then slowly increased to remove fines from the well bottom and sand pack. Water must not be introduced into the well during development.

3. Development shall continue until the turbidity in the recovery water is less than 50 NTU's. If the turbidity exceeds 50 NTU after 500 gallons have been removed, development shall continue as determined by IEG.

4. All development water shall be collected for treatment on site by IEG.

C Subconsultant Costs and Forms

SCHEDULE 2.11(a)
Iyer Environmental Group, PLLC
Summary Of Work Assignment Price
Haight farm Site O & M
E&E Work Assignment Number D003493-22

1) Direct Salary Costs (Schedules 2.10(a) and 2.11(b))	$15,791
2) Indirect Costs (Schedule 2.10(g))	$18,475
3) Direct Non-Salary Costs (Schedules 2.10(d)(e)(f) and 2.11(c)(d)	$7,159

Subcontract Costs

Cost-Plus-Fixed-Fee Subcontracts (Schedule 2.10(e) and 2.11(e))

Name of Subcontractor	Services to be Performed	Subcontract Price
None		$0
4) Total Cost-Plus-Fixed-Fee Subcontracts		$0

Unit Cost Subcontracts (Schedule 2.10(f) and 2.11(f)

Name of Subcontractor	Services to be Performed	Subcontract Price
NOTHNAGLE DRILLING	Well Installation/Development	$2,634

5) Total Unit Cost Subcontracts	$2,634
6) Subcontract Management Fee	$0
7) Total Subcontract Costs (lines 4 + 5 + 6)	$2,634
8) Fixed Fee (Schedule 2.10(h))	$5,140
9) Total Work Assignment Price (lines 1 + 2 + 3 + 7 + 8)	$49,200