

## **2.0 Project Activities**

### **2.1 Mobilization and Set-up**

Shaw initiated mobilization to the site on 19 September 2005. Site set-up evolved and was adjusted as the work progressed. A support zone containing the site trailer, generator, support equipment/frac tanks and clean-storage area was established and maintained at the top of the hill, due east of the targeted areas of concern as outlined in the Former Bivouac Area/Commander's Landfill Area of Concern #2 Work Plan (Shaw, August 2005). Please see the Work Plan for a detailed site description and relevant background information on the 5917 Depot Road, Voorheesville, NY site location.

### **2.2 Erosion Control and Storm Water Management**

Prior to any intrusive activities, erosion control measures consistent with Stormwater Pollution Prevention Plan (**Appendix C** of the approved work plan) were implemented. These measures consisted primarily of minimization of the areas of disturbed soils along with silt fencing and/or hay bale berms along primary drainage pathways in the general proximity of the targeted excavation areas.

As with the site set-up/lay-out, erosion control measures evolved as the work progressed. Stormwater management activities included the deployment of various pumps and holding tanks to manage incidental rainfall that contacted open excavation areas. See Section 7 below for a more detailed discussion of stormwater collection and disposal efforts.

Inspections of erosion control measures were performed after each significant rain event and repairs made as needed to ensure acceptable control measures. As hay bales and/or silt fencing deteriorated over time, they were replaced with new hay bales/fencing.

### **2.3 Access Road Construction**

Access to the work zones for heavy trucks was accomplished by the construction of an improved access roadway. The new access roadway consisted of imported crushed stone (6" thick) over 5 oz woven geotextile extending from the house area, past the barn and up into the support zone. As the work progressed, the access roadway was extended first into the waste storage areas and eventually down the hill to provide reliable access to Area F. This was required when the existing/original pathway deteriorated due to the heavy rains and the road could no longer support the project needs.

See **Figure 2-1** for the access road configuration and the general site layout.

## **2.4 Excavation and Staging of Wastes**

As per the project work plan, the wastes targeted for excavation and removal were located in four definitive locations (Areas B, C, D and F) as defined/identified in the EE/CA governing the work (see figure 2-1). Each excavation area is individually discussed below. Generally the depth of excavation ranged from 4-8 feet below original grade and in the same general areas, albeit at larger aerial extent, as outlined in the work plan and EE/CA.

Upon completion of the installation of the sediment/erosion control measures, the targeted areas were cleared of vegetation/trees. Clearing was accomplished using a chain saw and heavy equipment on an as needed basis. Smaller vegetation was chipped using a 6" power chipper and larger trees/logs were sized for re-use as weights for waste pile covers or hauled offsite. With the exception of the stumps and the wood that came into contact with the waste materials, the bulk of the wood was recycled by an independent fire wood supplier who hauled the material away at no cost to the project/client.

### **2.4.1 Area F**

Given that this area is located at the lowest elevation in the project site area, it was targeted as the first area for excavation, i.e. during the initial period of dry weather. The initial waste excavations in this area proceeded as envisioned in the work plan and yielded numerous intact glass containers of the red/white solvents as previously identified during the site investigation phase of work. Intact containers were over-packed into drums and broken containers and visibly stained soils were excavated and staged on poly-sheeting in Area A (adjacent to areas B, C, and D) while awaiting waste profiling and off-site disposal.

The initial post-excavation soil samples obtained on 23 September 2005. were all within the NYSDEC Recommended Soil Clean-up Objectives (RSCOs) for VOCs, SVOCs, chlorinated pesticides, chlorinated herbicides, and PCBs. Six of the thirteen samples collected contained concentrations of inorganics (barium, nickel, zinc) which exceeded the NYSDEC's RSCOs; including those for Eastern United States Background. Each of the samples, EX-F-1, EX-F-2, EX-F-4, EX-F-5, EX-F-6, and EX-F-8, as illustrated in **Figure 2-2**, lies within the central and northern areas of the original excavation.

On 30 September 2005, as directed by USACE approximately 1-2 feet of additional soils were removed from the Central/Northern portion of Area F and the excavated area was sampled for metals via a multi-grab composite, identified as "Area F-North Comp". Since the composite sample was above the RSCO for zinc, USACE directed additional excavation to occur. During this subsequent excavation effort, drums and drum remnants were encountered. Exploratory

efforts indicated these materials existed at depths not previously anticipated, i.e. below the water table and two samples of waste/soils encountered (EX-F-Supp1 and EX-F-Supp2) collected on 7 October contained high concentrations of zinc. In consultation with USACE a decision was reached to secure the area using a partial backfill to isolate the new waste materials and to prevent erosion while additional equipment was deployed to facilitate excavation below the water table and to manage the previously unanticipated drums in Area F.

On or about 2 November 2005, excavation in Area F was resumed. Numerous drum husks and shells with a blue-gray paint like material were removed. As the work progressed to remove these drums/drum fragments and contaminated soils, and as additional materials were encountered, a decision was reached to temporarily halt further excavation and to perform a geophysical survey to obtain a definitive understanding of the extent of the wastes in Area F. See the separate discussion below (section 2.11) concerning the geophysical investigations.

During the additional excavation, monitoring well MW 06 was removed since it was located in the middle of the area where drums were removed. The casing was pulled and the remaining portion of the well was filled with bentonite per NYSDEC requirements.

On 9 November 2005, nine post excavation samples, illustrated in **Figure 2-2** were obtained from the portions of the Area F excavation to date where a visual inspection indicated no further waste materials and or soil staining. All except one of the results met the RSCOs for metals. Sample EX-F-15 contained zinc above the RSCO. This sample was collected from the center of the western sidewall of the excavation and was bordered by two samples which passed the criteria from opposite ends of the same sidewall. All other samples for VOC, SVOC, pesticides, herbicides, and PCBs met RSCO requirements. **Table 2** through **Table 5** details the confirmation analytical results for Area F.

On November 16, 2005 a Summary Memo (**Appendix A**) was written and provided to USACE and NYSDEC representatives. This memo included a drawing of the current status of Area F illustrating both the assumed extent of additional wastes and the location of the failing sidewall sample. The memo also proposed to protect the western sidewall with visqueen and temporarily backfill the area to secure it for the winter, pending further waste removal actions. Upon approval of NYSDEC and at USACE's direction based on the 16 Nov 2005 summary, Area F was backfilled in its entirety to secure the area for the winter without removal of the remaining waste materials present in the expanded Area F footprint identified by the geophysical investigation.

The expected limits of the remaining drums were determined on the east side of Area F by digging test pits. However, the area to the north was not yet fully delineated at the end of 2005 since test pits in this area only located small cans and no drums. The area to the northwest had not been investigated and the presence of drums in this area was unclear. The drums present were estimated to be approximately 4-6 feet below the ground surface. In addition, the western edge of Area F in the location of sample EX-F-15 was scheduled for excavation when work continued in 2006. These activities are discussed in section 2.14

#### **2.4.2 Area C**

The waste materials from Area C (see **Figure 2-1**) consisted primarily of small “hockey puck” sized pieces (approximately 2” thick and 4” diameter metallic/fiberboard containers) of congealed/solid bright green paint-like materials along with miscellaneous stained soils. The nature and extent of the materials generally matched the targeted area outlined in the EE/CA. The initial post excavation samples were obtained from Area C on 28 September.

A total of thirteen floor and sidewall samples were collected, see **Figure 2-3**. **Table 6** through **Table 9** details the confirmation sample results from Area C. All of the samples were within the NYSDEC RSCOs for VOCs, SVOCs, chlorinated pesticides/herbicides, and PCBs. Twelve of the thirteen contained concentrations of nickel above the RSCO and six of these samples also contained mercury above the RSCO. Additionally, several of these samples also contained lead and/or chromium at concentrations above RSCO. The nickel results were consistent among all of the samples and after discussions with USACE and NYSDEC representatives assumed it to be background. This was later confirmed via statistical evaluation and comparative relationships to common mineral element concentrations in a detailed memo written by Dr. John Carson, a Shaw Senior Statistician. This memo and the accompanying data, charts, and tables are included in **Appendix B** of this report.

Based upon the non-nickel results, the areas represented by samples with concentrations of metals other than nickel were over-excavated (approximately 1-2 ft removal) and re-sampled on 13 October 2005. A total of six samples were collected from the areas previously represented by samples EX-C-1, EX-C-2, EX-C-7, EX-C-8, EX-C-9, and EX-C-10. Each was designated with an “RE” suffix to indicate that they represented additional post over-excavation samples. Three samples (EX-C-1RE, EX-C-7RE, and EX-C-8RE) once again failed for mercury. The entire sidewall represented by EX-C-7RE and EX-C-8RE was eventually completely removed during the excavation of Area D. A final lift (1-2 ft) was removed from the EX-C-1RE area and the over-excavated areas were re-sampled on 27 October. This sample EX-C-1RE2 passed the

applicable NYSDEC RSCO for mercury and the excavation was deemed complete and backfilled based on post excavation data.

The analytical summary memo for Area C is included in **Appendix A**.

### **2.4.3 Area B**

Area B excavation was initiated on 24 September 2005. The nature and extent of the waste materials closely mirrored the EE/CA and work plan expectations. The excavation yielded numerous small (less than 5 gallon estimated volume) metallic containers and visibly stained soils. The buckets/containers of the high viscosity tar like waste materials were initially loaded into Roll-off's. These roll-offs were later emptied and added to the waste stockpile of Area B materials. Area B materials were staged on poly sheeting in Area A while awaiting profiling and transportation off-site for disposal.

The initial post excavation samples were obtained on 4 October 2005. A total of sixteen samples were collected from the floor and sidewalls, see **Figure 2-3**. **Table 10** through **Table 13** details the confirmation sample results for Area B. Nickel, though above RSCO, was assumed to be background. This was later demonstrated in the 27 October Memo. Lead was found to be above RSCO in one sample (EX-B-15) and two samples (EX-B-1 and EX-B-5) contained mercury at concentrations above the RSCO. Additional excavation and sampling was performed on 13 October. Two of the samples, (EX-B-1RE and EX-B-5RE) still failed for mercury. Since the access roadway to Area F ran through/over this portion of the Area B excavation, re-excavation and re-sampling of these areas did not occur until after the Area F activities were halted on 6 December 2005. The resulting samples passed the NYSDEC RSCOs and the Area B excavation was deemed complete and backfilled.

The analytical summary memo for Area B is included in **Appendix A**.

### **2.4.4 Area D**

Area D waste excavation was initiated on 29 September and completed on 21 November. During the initial efforts, drums with intact recoverable contents were immediately encountered and over-packing operations were initiated. As this initial effort proceeded it became apparent that the extent of the recoverable drums was greater than originally anticipated. This was confirmed through careful removal of the overburden soils while awaiting deployment of additional men/equipment and over-packing materials.

The majority of the 55 gallon steel drums encountered were in poor physical condition and were leaking/spilling out as they were removed from the low-permeability native clay soils that had,

presumably surrounded them since the time of their placement. As much material as possible was removed from individual drums to the extent feasible using hand operated drum pumps, scoops and other means before the drum was removed from the excavation. These drums/drum husks were placed into roll-off containers while the contaminated soils were placed in the waste stockpile in Area A. A total of two 20 yard roll-offs were utilized to stage the drum remnants. A total of 53 drum over-packs were generated from Area D. All contaminated soils associated with the drums was excavated and staged on poly sheeting in Area A. Level C personnel protective equipment was utilized during the drum removal portions of the work in Area D.

Post excavation samples were obtained on 2 November. A total of twenty-two samples were collected from the floor and sidewalls, see **Figure 2-4. Table 14** through **Table 17** details the confirmation sample analytical results for Area D. All twenty-two samples were within the RSCOs for SVOCs, chlorinated pesticides, chlorinated herbicides, and PCBs. Six of the samples (EX-D-12, EX-D-17, EX-D-19, EX-D-20, EX-D-21, and EX-D-22) contained VOCs at concentrations above the NYSDEC RSCOs and two samples (EX-D-15 and EX-D-20) contained elevated concentrations of mercury. Additional excavation work was performed in the failing areas and a total of six samples (**Figure 2-5**), were collected on 21 November 2005. The results for VOCs and metals met RSCOs for all of these samples and excavation efforts for the area were deemed completed. Area D was then backfilled on December 19, 2005.

During the excavation activities within Area D, a monitoring well (identification number unknown) was removed since it was located in the area where drums were removed on the north edge of the excavation. The casing was pulled and the remaining portion of the well was filled with bentonite per NYSDEC requirements.

The analytical summary memo for Area D is included in **Appendix A**.

## **2.5 Confirmation Sampling and Analysis**

As per the approved Work Plan, as each excavation area achieved the anticipated extent of contamination removal (primarily determined by a visual and instrument inspection of the excavation in question as identified in the EE/CA), the post excavation confirmation sampling program was executed. The data from each sampling event was reviewed against the NYSDEC's TAGM 4046 Recommended Soil Clean-up Objectives (RSCOs) and the comparison provided to the USACE. Based on that review, additional excavation was undertaken or approval to initiate backfilling was received. In those areas where additional excavation was directed, re-excavation confirmation samples were obtained. This process continued until acceptable results were achieved and receipt of approval to backfill was obtained.

All sampling and analysis was conducted in general accordance with the approved work plans. Confirmation samples were analyzed at two NELAP and State of New York certified laboratories. At first, confirmation samples were submitted to GPL Laboratories, LLP (GPL), in Frederick, MD. As the extent of contamination and other issues required additional removal and faster decision making, a local laboratory, Adirondack Environmental Laboratories (AEL) of Albany, NY was utilized at first to provide rapid pre-confirmation analysis of samples following targeted over-excavation, after which, final confirmation samples were collected and sent to GPL. Eventually with USACE approval, AEL was utilized for all remaining confirmation sample analyses and was required to submit reviewable Level II reports. Copies of the sampling chain of custody and laboratory data packages are included in **Appendix C**.

Throughout the confirmation sampling efforts Field Duplicate samples were collected and analyzed at the frequency outlined in the approved plan. The data for a total of seven duplicate pairs shows that overall precision was within criteria in most instances and that in no case did a duplicate/sample pair provide conflicting results in comparison to action-levels.

## **2.6 Disposal Sampling and Analysis**

As contaminated soils and wastes were excavated from each of the target areas, they were temporarily staged in former Area A to await waste profiling and ultimate removal to an appropriate offsite facility. With the exception of the last materials excavated from Area F, all soil staging occurred in Area A. Due to space limitations in Area A, the soils removed during the latter stage of the Area F work performed in 2005 was placed on poly-sheeting in the clear area to the north of the support zone. Additional clearing due south of Area A extending towards the overhead power lines was required to stage the over-pack drums from Areas F and D.

All disposal sampling and analysis was conducted in general accordance with the Chemical Sampling and Analysis Plan for Soil Removal activities at the Former Schenectady Army Depot AOC #2 (Shaw, July 2005) and in a manner consistent with the intent of the approved work plan. **Table 18** through **Table 21** details the analytical results for the disposal samples collected for Areas F, B, C, and D in 2005. Upon receipt of the various waste characterization data, Shaw worked with permitted facilities to establish waste disposal profiles. Upon receipt of USACE approvals, all excavated and over-packed materials were shipped off-site for disposal.

## **2.7 Storm Water Collection and Disposal**

Over the course of the work, incidental rainfall that entered the excavations and/or contacted uncovered waste materials was collected and staged in two frac tanks in the support zone. A variety of gasoline and diesel powered pumps and hoses were used to convey the stormwater to

the frac tanks. The initial stormwater collected was tested and the data from that used to secure permission from the town of Guilderland to utilize their Nott Road publicly owned treatment works (POTW) for disposal and treatment of the collected stormwater. **Table 22** includes the results of the testing performed on the collected storm water.

Shaw utilized local subcontractors on an as-needed basis for the transport of the stormwater. As each tank would become filled, a Part 364 permitted hauler would be scheduled to empty the tank(s) and dispose of the fluids at the POTW headworks. Over the course of this phase of the work, 68 truck loads totaling an estimated 204,000 gallons of stormwater was handled in this manner.

## **2.8 Radiological Screening Surveying**

On 09 December 2005, a radiological survey (Sodium Iodine 2\*2 detector coupled with a Ludlum 2222 rate meter) of the AOC was undertaken by a subcontractor, Environmental Dimensions, Inc. The barn/house area was surveyed and the data obtained was utilized as the background radiological level for the site. The Area of Concern was surveyed and the data obtained compared to the barn/house area. No appreciable differences were observed in the areas of concern when compared to the data from the barn/house area. EDI's letter report and supporting data are included in **Appendix D**.

## **2.9 Backfill of Excavated Areas**

All backfill materials placed during the 2005 phase of the work were supplied from Carver Sand and Gravel's permitted/approved NYSDEC and NYS Department of Transportation borrow sources. Carver's certificate of approval and mine permit are included in **Appendix E**.

During this phase of work, backfill and roadway materials totaling 4,508 tons (2,590 tons of run of bank (ROB) unprocessed sand and gravel and 1,918 tons of crushed stone) were imported and placed. Compaction was performed by multiple passes with a JD 750 Dozer and or tamping with the excavator bucket for deeper placement.

The crusher run and ballast stone was utilized for access roadways. All of Areas B, C and D utilized unprocessed run of bank sand and gravel from the Carver Halfmoon borrow pit. A small amount (less than 150 cy ds) of silty-clay soils were deployed to Area F during the initial backfilling at that location. Subsequently, Area F backfill consisted of ROB sand and gravel due to wet conditions at Area F during final backfill activities in 2005. The last backfill effort was associated with extension of the access roadway over the backfilled portions of Area F to facilitate the remaining waste excavation.



## **2.10 Transportation and Disposal**

For the transportation and disposal of the soils, several subcontractors and permitted facilities were utilized depending on the specifics of the waste materials. Prior to any waste shipments, USACE secured a site specific EPA Generator Identification number for the specific address of AOC#2: 5917 Depot Road (#NYR000135020). All RCRA materials shipped offsite were done so under that ID.

The non-hazardous contaminated soils were shipped via Environmental Products & Services of Vermont (EPS) to the Albany City Rapp Road landfill. Soil shipments to the Albany Landfill began on 15 November and concluded on 12 December 2005. Landfill scale tickets totaled 1,896 tons or an estimated 1,458 cy ds (assuming a 100 pcf soil density).

On 14 November 2005, Dart Trucking Inc., removed the drum overpack containers (61 individual containers consisting of 43 Steel and 18 polyethylene over-packs) generated from Areas F and D. These over-packs were delivered to the Von Roll of America, Inc.'s East Liverpool, Ohio TSDF.

A single 20 yd roll-off of non-RCRA solid wastes (primarily drum husks/remnants from Area F) was transported by Freehold Carting Inc., to the Hi-Acres landfill in Fairport NY on 29 December 2005.

40 cy ds of RCRA regulated drum husk/remnants from Area D were shipped via Freehold Carting (in two individual roll-off containers) to Clean Harbours' TSDF in Mississauga, Ontario on 27 December 2005.

Waste profiles, manifests, and shipping documentation for the 2005 disposal effort are included in **Appendix F**.

## **2.11 Geophysical Survey/AOI Investigation**

A Geophysical survey was performed at the site on November 18 and 19, 2005. The objective of this survey was to delineate the lateral extents of potential buried drums, primarily in Area F. Other areas of interest (AOI) were also investigated during the geophysical survey. A Shaw memorandum dated 29 Nov 2005 entitled "Shaw Geophysics performed at the former Schenectady Army Depot" is included in **Appendix G**.

During this phase of work, the following Areas of Interest (See **Figure 2-1**), as generally identified during the geophysical survey efforts were explored via test pit excavation. Typically the test pit extended until a definable metallic object was encountered or a depth of 4' below

original grade was reached. All test pits excavated in this manner were backfilled with their respective original materials and tamped down to minimize erosion/soil subsidence.

AOI #3: At this location a 2-3" diameter metal fence post approximately 5' in length was identified as the source of the metallic anomaly. There was no evidence of soil staining.

AOI#4: At this locations innumerable pill bottles as previously identified during the site investigation EE/CA phase were encountered. No significant metal objects or stained soils were encountered.

AOI #5: No metallic objects were encountered here. Due to the presence of discolored soils and high Organic Vapor Analyzer (OVA) response, a soil sample was obtained at this location. Analysis indicated inorganics and volatiles (total xylenes) above the NYSDEC's RSCOs. Based on the results, it was decided that future excavation of soils in this area would be required during the 2006 work.

AOI #6: At this location, approximately ten feet of 3/8" wire rope was encountered and determined to be the source of the anomaly. There was no evidence of soil staining or impact.

AOI # 10: At this location a test trench approximately 4' wide and 10' long was excavated to a depth of approximately 6' without encountering anything beyond what visually appeared to be undisturbed native soils.

AOI #9: At this location (inside Excavation footprint for Area D) no metallic objects or stained soils were encountered.

AOI #2: This location was investigated while a diversion channel around the Area F expansion was installed. No metallic objects or stained soils were encountered.

AOI #1 was located inside the remaining Area F target zone, consisting of known additional drums/drum remnants and was identified as requiring excavation in future phases of the work.

In addition to the above AOIs identified during the geophysical survey work, an area located between AOI #6 and the Area F staging area in the original access roadway was also investigated, due to the presence of a white viscous material. The USACE was consulted and directed that the area be sampled. A sample, labeled "Haul Road Unknown" was obtained on 7 November 2005. The volatile organics data associated with the "Haul Road Unknown" sample was found to exceed the NYSDEC RSCO's for Acetone, Xylene, Toluene and Benzene. The

area was marked with a stake and a section of geotextile fabric, and was addressed during the 2006 work at this site.

### **2.12 Surface and Groundwater Monitoring**

No surface water or groundwater monitoring occurred during this phase (2005) of the work. Surface water and groundwater sampling is anticipated in the final phase of the project.

### **2.13 Site Restoration:**

No permanent site restoration activities were completed at the end of the 2005 season . Temporary measures performed included regrading disturbed areas and backfilled areas to promote positive drainage and to re-establish pre-work drainage patterns. Additionally, straw-hay was distributed across the work areas along with placement of strategic check dams (hay-bales) to control run-off. Placement of seed, mulch, topsoil and grading to promote secure drainage is expected to be completed in the follow-on phase of work in the Summer of 2006.

### **2.14 2006 Activities**

After several visits to the site in early 2006 to assess the site conditions, Shaw mobilized personnel back to the site on September 6, 2006 to complete the remaining work. A small office trailer was again set at the site and connected to a generator to supply power. The required heavy equipment was also mobilized to the site along with the necessary supplies.

Based on the previous year's activities, the intended scope to be performed during this period was to complete the excavation of the remaining drums in Area F and to investigate and excavate any impacted Areas of Interest (AOIs) that were previously not fully investigated.

#### **2.14.1 Area F Excavation**

The excavation in area F began with the removal of the west sidewall where it was thought that a drum existed. The excavated area was approximately 3 feet to the west of the previously excavated area, three feet deep and about 10 feet long. One drum carcass was removed from this area. The next area excavated was to the north of the previously excavated area and several drum carcasses were removed along with the soils. The removal continued around to the east and south underneath the haul road that was placed during the 2005 activities. All the drum carcasses and adjacent soils were removed and hauled to the staging area for future off site disposal. The sidewalls of the excavated areas were scraped to ensure that all contaminated soils had been removed prior to confirmation sample collection. **Figure 2-6** details the excavation limits and confirmation sample locations of this phase of the work.

Prior to exiting Area F, test pits were dug along the outer limits of the excavation to ensure that no pockets of drums remained. No additional drums or stained soils were identified during this effort.

Confirmation samples were collected (section 2.14.3) and analyzed for metals and VOCs for comparison to the NYSDEC's RSCO's. While none of the samples failed the VOC criteria, several metal parameters did not fall within the RSCO's or background criteria. The areas that were identified to be above the clean-up criteria were excavated to remove additional soil and sampled again. These second round of samples were only analyzed for metals. Upon the receipt of the results, all samples were within the acceptable RSCO or background concentration ranges. The memo discussing the sampling results is included in **Appendix A**.

**Table 23** and **Table 24** provide a summary of the confirmation sample results for Area F collected after the 2006 excavation.

#### **2.14.2 AOI Investigation and Excavation**

The areas of interest that were identified during the 2005 geophysical investigation were investigated to determine if any debris or contamination was present. Many of these were previously investigated during last year's activities, however several remained.

AOI #7 and #8: These locations are located adjacent to the haul road leading to Area F. Each of these areas was excavated and no signs of any foreign material were encountered. The areas were backfilled after the investigation was complete.

AOI #5: During the 2005 activities, AOI #5 was excavated and due to a high OVA response, a soil sample was collected and analyzed for comparison to the NYSDEC's RSCO's. Several parameters exceeded the limits and therefore additional excavation was planned to be performed in this area during the 2006 activities. Excavation in this area led to the discovery of many pill bottles coated with a tar-like substance similar to that found in Area D. The excavation proceeded from the west to the east with the removal and staging of the contaminated soils and pill bottles. Toward the east end of the excavation, soils containing larger bottles, labeled as calcium hypochlorite were present. These soils were removed and staged separate from the other soils removed from AOI #5. The initial size of the excavation was approximately 25 ft. x 80 ft. x 4 ft. deep.

Confirmation samples were collected and again compared to the NYSDEC RSCOs for all parameters. **Figure 2-7** identifies the sample locations within AOI #5. Upon receipt of the initial results, two of the sample locations failed for VOCs, one location for pesticides and most of the

sample locations exceeded the criteria for metals. The decision was made to scrape the sidewalls of the entire excavation and resample. On October 6th, additional excavation was performed, removing approximately 6"-12" from each sidewall and floor of the excavation. Samples were again collected from the previous approximate sample locations and analyzed for metals (all locations) and pesticides and VOCs for sample locations 3 and 4. Upon receipt of the results, the pesticide and VOC data was within the RSCO criteria. However, the results indicated that some of the sample locations still exceeded RSCO's and/or the background levels for metals, mainly Nickel.

The decision was made to again scrape the sidewalls and floor of the excavation to attempt to obtain satisfactory metal results. On October 17th, the additional excavation was performed and another round of confirmation samples collected. The results of this sampling effort indicated that all metal parameters were within the NYSDEC RSCOs or background levels. The memo discussing the sample results for AOI 5 is in **Appendix A**.

**Table 25** through **Table 28** provides a summary of the confirmation sample results for AOI #5.

AOI Unknown: The area identified as AOI-unknown at the top of the north haul road during the 2005 activities was excavated and the soils consolidated with the Area F soils. The excavation was approximately 15 foot in diameter and 3 feet deep. Due to the relatively small size of the excavation, the sidewalls were declared visually clean and a sample was collected from the floor for confirmation purposes and analyzed. The results for all parameters were within the RSCO or background levels and the area was backfilled. (Note: the confirmation sample for this area was labeled AOI-6, although it was actually the area identified as AOI-Unknown)

### **2.14.3 Confirmation Sampling and Analysis**

As previously stated in detail in section 2.5 of this report, as each excavation area achieved the anticipated extent of contamination removal, the post excavation confirmation sampling program was executed. The data from each sampling event was reviewed against the NYSDEC's TAGM 4046 Recommended Soil Clean-up Objectives (RSCOs) and the comparison provided to the USACE. Based on that review, additional excavation was undertaken or approval to initiate backfilling was received. In those areas where additional excavation was directed, re-excavation confirmation samples were obtained. This process continued until acceptable results were achieved and receipt of approval to backfill was obtained.

All sampling and analysis was conducted in general accordance with the approved work plans. Confirmation samples for Area F and AOI 5 were analyzed at two NELAP and State of New

York certified laboratories; GPL in Frederick, MD and a local laboratory, AEL of Albany, NY. Copies of the sampling logs, sampling chain of custody and laboratory data packages for the 2006 sampling are included in **Appendix H** of this report.

Throughout the confirmation sampling efforts Field Duplicate samples were again collected and analyzed at the frequency outlined in the approved plan. The data shows that overall precision was within criteria in most instances and that in no case did a duplicate/sample pair provide conflicting results in comparison to action-levels.

#### **2.14.4 Disposal Sampling and Analysis**

As contaminated soils and wastes were excavated from Area F and AOI #5, they were temporarily staged in former Area A to await waste profiling and ultimate removal to an appropriate offsite facility.

As stated in section 2.6, all disposal sampling and analysis was conducted in general accordance with the Chemical Sampling and Analysis Plan and in a manner consistent with the intent of the approved work plan. Upon receipt of the various waste characterization data, Shaw worked with permitted facilities to establish waste disposal profiles.

A sample of the recently excavated Area F soils was collected and shipped for analysis on September 7, 2006. Based on the data obtained, the soils were determined to be non-hazardous. A sample for the characterization of AOI #5 was collected on September 11, 2006 in order to determine the characteristics for disposal.

The disposal sample results for Area F and AOI 5 are included in **Tables 29** and **30**, respectively.

#### **2.14.5 Backfill of Excavated Areas**

Upon receipt of acceptable analytical results for Area F and AOI #5 indicating that all samples were within the acceptable limits, Shaw summarized the results and presented them to the USACE for review and approval to backfill. Upon approval, the backfill of these two areas commenced.

Area F was backfilled utilizing the soils and stone previously placed in the access roadway to facilitate excavation. The road was pushed into the excavated area and graded to match the surrounding grades. Topsoil was imported to cover the top 6" of the disturbed area in order to support future vegetative growth.

AOI #5 was backfilled again using some of the soil and stone placed on the access road to Area F. The material was removed from the road and placed in AOI #5 and track-compacted in place. Due to a lack of sufficient material, run-of-bank sand and gravel was imported to complete the backfill of AOI#5. Once again, topsoil was imported and placed over the top 6” of the disturbed area to facilitate vegetative growth.

#### **2.14.6 IDW wastes from AOC 1 and AOC 2**

Investigative derived wastes (IDW) were staged at AOC 1 by Parsons, Inc, after their investigative work was complete on AOC 1 and AOC 2. The USACE requested that Shaw dispose of this waste during the current work being performed at AOC 2. Parsons provided Shaw the analytical data for the approximate 17 drums of soil and 18 drums of water that were staged.

Based on a review of the analysis data, it was determined that no contaminants were present that would affect the disposal method and that the wastes were non-hazardous. Thus, the decision was made to mix these IDW wastes with the soils from Area F and dispose of accordingly. The drums of wastes were moved from AOC 1 and incorporated into the staged Area F soils pile.

#### **2.14.7 Transportation and Disposal**

Since the soils from Area F were similar to those removed during 2005 and confirmed again to be acceptable for disposal at the Albany County landfill, these soils were loaded and hauled to the landfill during the period from September 15 through September 20, 2006. A total of approximately 895 tons of soils were hauled to the Albany County landfill. A local trucking firm, Carver & Sons, was utilized to transport the soils. Copies of the non-hazardous manifests pertaining to these soils are included in **Appendix I**.

The soils from AOI 5 presented more of a challenge to find a disposal facility that would accept the material. Due to the presence of the small salt-tablet bottles and the calcium hypochlorite jars, the Albany County Landfill would not accept this material as daily cover material. The Colonie landfill, another local landfill, was contacted, presented with a profile and the analytical data for review and approval. Although the landfill had initially accepted the material for disposal at their facility, after several weeks of further review, the facility requested significant additional analytical testing to be performed that made this option non-cost effective.

Waste Management’s High Acres landfill in Fairport, NY accepted the soils for disposal based on the analytical information provided. The soils were transported to this facility utilizing two trucking firms, US Bulk and Silvarole Trucking. These soils were transported during the period

from October 17 through October 21, 2006. A total of approximately 1,072 tons of soils were hauled to the High Acres landfill. Copies of the non-hazardous manifests are included in **Appendix I**.

#### **2.14.8 Site Restoration**

At the conclusion of the soil disposal activities, site restoration activities were performed. Certified clean topsoil was hauled to the site and spread over the disturbed areas. The soil was graded to allow for proper drainage patterns and to blend in to the adjacent areas. A local native grass seed was then spread over the disturbed areas to establish vegetative growth.

Several loads of a pea gravel-type stone were imported to restore the driveway of the residence that was damaged during the work activities. The stone was selected by the homeowner and obtained from a local landscape supply company. The stone was spread and compacted in place.

All the remaining equipment was demobilized from the site and returned to the respective vendors.

#### **2.15 Future Surface and Groundwater Monitoring**

A groundwater and surface water sampling plan will be submitted to the NYSDEC which will detail the proposed future sampling at the site. The preliminary plan calls for the installation of two additional monitoring wells and two sampling events to be conducted over the next year to confirm the success of the removal activities.