GZA GeoEnvironmental
of New York

Engineers and Scientists

March 22, 2007
File No. 21.0056196.20

Eugene W. Melnyk, P.E.
Remediation Engineer
New York State Department of
Environmental Conservation
Division of Environmental Remediation
NYSDEC Region 9
270 Michigan Avenue
Buffalo, New York 14203

Re: Remedial Investigation/Feasibility Study Work Plan
Special Metals Corporation
100 Willowbrook Avenue
Dunkirk, New York

364 Nagel Drive
Buffalo
New York
14225
716-685-2300
Fax: 716-685-3629
www.gza.com

Dear Mr. Melnyk:

Under cover of this letter, GZA GeoEnvironmental of New York (GZA), on behalf of Special Metals Corporation (SMC), is providing a copy of the set of documents that make up the Remedial Investigation/Feasibility Study (RI/FS) Work Plan, which is required under ¶ II.B.1 (a) of the Order on Consent (# B9-0737-07-02; Site #907031) between SMC and the New York State Department of Environmental Conservation (NYSDEC).

The referenced paragraph in the Order also requires the submittal of an IRM Work Plan. GZA provided your office with a copy of the IRM Work Plan under cover of its letter dated February 22, 2007. It is that IRM Work Plan that is currently a subject of the public comment period that will expire on March 28, 2007.

The RI/FS Work Plan consists of the following documents:

- Appendix A - Records Search Report. This is the report that is required under paragraph I of the Order.
- Appendix B - Field Activities Plan
- Appendix C - Site-Specific Health and Safety Plan
- Appendix D - Site-Specific Quality Assurance Plan
- Appendix E – Feasibility Study Plan

In addition to the foregoing documents, the following tables and figures which are referenced in the documents are also attached.

- Table 1 – Electric Trench & Trench Stockpile Soil Analytical Testing Results Summary
- Table 2 – Proposed Analytical Testing Program Summary
- Table 3 – Summary of Container, Preservation & Holding Time Requirements

- Figure 1 – Locus Plan
- Figure 2 – Overall Site Plan and Area of Concern
- Figure 3 – Field Screen vs. Lab Analysis Plan
- Figure 4 – PCB Soil Remediation Excavation Plan
- Figure 5 – Remedial Investigation Exploration Plan
- Figure 6 – Proposed Monitoring Well Installation Plan

Please do not hesitate to contact the undersigned if you have any questions or require any additional information.

As you know, we are making plans to start the IRM work on April 9, and to prepare for that, have set up a pre-construction site meeting on March 27 at 10 AM, which you are welcome to attend.

We would like to start the RI work right after the IRM field work is completed and ask for your assistance in meeting this tentative schedule.

Sincerely,

GZA GEOENVIRONMENTAL OF NEW YORK

Christopher Boron
Project Manager

Ernest R. Hanna, P.E.
Principal

Attachments: Appendix A - Record Search Report
Appendix B - Field Activities Plan
Appendix C - Site-Specific Health and Safety Plan
Appendix D - Site-Specific Quality Assurance Plan
Appendix E – Feasibility Study Plan
Tables (1 through 3)
Figures (1 through 6)

cc: Mr. Martin Doster (NYSDEC)
Mr. Joseph J. Hausbeck, Esq. (NYSDEC)
Mr. Gary Litwin (NYSDOH)
Mr. Dave Murry (PCC) – electronic version
Mr. Robert DiFondi (SMC) – electronic version
Mr. Barry Kogut, Esq. (BS&K) – electronic version

APPENDIX A

RECORDS SEARCH REPORT

RECORDS SEARCH REPORT
REMEDIAL INVESTIGATION/ FEASIBILITY STUDY
SPECIAL METALS CORPORATION
100 WILLOWBROOK AVENUE
DUNKIRK, NEW YORK
SITE # 907031

PREPARED FOR:
Special Metals Corporation
100 Willowbrook Avenue
Dunkirk, New York

PREPARED BY:
GZA GeoEnvironmental of New York
Buffalo, New York

March 2007
File No. 21.0056196.20

SPECIAL METALS CORPORATION
RECORDS SEARCH REPORT
REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN
DUNKIRK, NEW YORK

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LIST OF ATTACHMENTS

INTRODUCTION

This Records Search Report (RSR) has been prepared by GZA GeoEnvironmental of New York, on behalf of Special Metals Corporation (SMC), to address paragraph I of the Order on Consent[1] (Index# B9-0737-07-02; Site# 907031) between the New York State Department of Environmental Conservation (NYSDEC) and SMC. The referenced Order identifies an Area of Concern (AOC) or "Site" that is located at the SMC manufacturing facility in Dunkirk, New York ("SMC facility").

The SMC manufacturing facility consists of an approximate 8-acre industrial property in Dunkirk, New York (see Figure 1) located at 100 Willowbrook Avenue that is used for the manufacture of alloys for the aerospace industry (the "SMC facility"). The facility is bordered by the former Al-Tech Specialty Steel site, which is currently listed on the New York State Registry of Inactive Hazardous Waste Disposal Sites (Registry Site # 907022) ("Al-Tech Site")

The headings used in the RSR are derived from Exhibit F of the Order on Consent and are as follows.

1. ENVIRONMENTAL DATA AND INFORMATION
2. COMPREHENSIVE LIST OF EXISTING RELEVANT REPORTS
3(i) SITE HISTORY, DESCRIPTION AND NATURE OF OPERATIONS
3(ii) INFORMATION REGARDING HAZARDOUS WASTE GENERATION AT THE SMC FACILITY
3(iii) DESCRIPTION OF SITE SECURITY
3(iv) PERSONNEL RESPONSIBLE FOR DISPOSAL OF HAZARDOUS WASTE

1. ENVIRONMENTAL DATA AND INFORMATION

Data

Environmental data which is known to exist in the area of the Site is from recent work conducted from June 2006 through December 2006 and summarized below. SMC representatives interviewed by GZA for this Report are not aware of any other

[1] This paragraph of the Order provides as follows:

I. Initial Submittal

Within thirty (30) Days after the effective date of this Order, Respondent shall submit to the Department a Records Search Report in accordance with the requirements of Exhibit "F" attached hereto. The Records Search Report can be limited if the Department notifies Respondent that prior submissions satisfy specific items required for the Records Search Report. Such Records Search Report shall be submitted in a format acceptable to the Department.

environmental data which exists for the area defined as the "Site" under the Order prior to June 2006.

- Soil analytical data from environmental samples were collected and tested from geotechnical soil borings done for a building expansion in June 2006. This soil data was provided to NYSDEC in the "Soils and Site Management Plan, Special Metals Corporation, 100 Willowbrook Avenue, Dunkirk, New York" dated July 2006.

- SMC reported three (3) petroleum product spills to NYSDEC, which were encountered during construction of its calendar year (CY) 2006 facility expansion. Each spill report was issued a separate spill number as noted below.

    (i) Spill No. 0650719 was reported on July 28, 2006 for oil observed at the interior excavation floor about 17 feet below ground surface (bgs). Fingerprinting analysis of the oil product identified it as lubricating oil.

    (ii) Spill No. 0606195 was reported on August 29, 2006 for a closed-in place diesel underground storage tank (UST) that was encountered during the excavation along the former western exterior wall, just north of an existing overhead door.

    (iii) Spill No. 0606199 was reported on August 29, 2006 when approximately 3 gallons of an oil/water mixture were encountered while excavating outside of the overhead door on the west side of the SMC facility.

  Based on a review of the NYSDEC spill database, it appears that the three reported spills have been consolidated into one spill number (0650719). Spill numbers 0606195 and 0606199 were both listed as closed on August 30, 2006.

  The November 2006 Closure Report prepared by GZA (Closure Report, NYSDEC Spill #0650719, Special Metals Corporation, Dunkirk, New York" dated November 2006) details the detections of polychlorinated biphenyls (PCBs) and oil in the soil and water samples taken at the SMC facility.

- Soil analytical samples were collected and tested as part of a delineation effort regarding PCB contamination identified in soils in the area of the Site. This work was summarized in the Interim Remedial Work Plan (IRM) submitted to NYSDEC, "Interim Remedial Measures Work Plan, PCB Contaminated Soil Excavation and Removal, Special Metals Corporation, 100 Willowbrook Avenue, Dunkirk, New York, Site #907031" dated February 2007, which was prepared under Order on Consent (Index# B9-0737-07-02; Site # 907031).

- Up until approximately 1988, SMC utilized water for cooling purposes that originated from a cooling water pond that is located at the former Al-Tech Specialty Steel site to the west of the SMC manufacturing facility. After being informed of the presence of PCBs in the pond water, SMC made alternative arrangements for cooling water. SMC now operates a closed cycle cooling system with an on-site cooling tower. However, the former cooling water lines remain on the SMC facility.

  One of the lines (a 16 inch line) runs underground below the AOC albeit at a depth not expected to be reached in the course of the proposed IRM activities. This line is shown as the southernmost line on the attached map prepared by Environmental Field Services (Attachment A-1).

- Residual PCB contamination was detected in the fall of 2006 in the course of the cleanup of catch basins located near the identified AOC. Copies of this analytical data and an associated map are attached to this report as Attachment A-2.

- In approximately 2002, SMC installed a pump lift station which diverts roof water runoff formerly discharged to the pond to a drainage swale located along Willowbrook Avenue. The 6" discharge line from the pump station that directs this storm water to Willowbrook Avenue runs through the AOC.

Information

The SMC facility has the following permits:

(a) NYSDEC Air Facility Registration (Facility DEC ID: 9-0634-00024; Registration ID: 9-0634-00024/00006) for 20 emission points. Two points are for small particulate emissions from ingot surface grinders and the remaining 18 are for venting combustion gases. Natural gas is the source for all combustion. The facility is subject to the cap by rule requirements of 6 NYCRR Section 201-7.3(h) and (l).

(b) City of Dunkirk Industrial Waste Water Permit (No.08010107) for the discharge of process and sanitary wastewater to the City of Dunkirk publicly-owned treatment works (POTW). The permit requires bi-annual discharge sampling for compliance with the permit.

(c) State Pollution Discharge Elimination System (SPDES) General Permit for Storm Water Discharges associated with construction activity that SMC applied for in connection with its recent building expansion. Tolman Engineering prepared the Storm Water Pollution Prevention Plan (SWPPP) that is required under the Permit.

2. COMPREHENSIVE LIST OF EXISTING RELEVANT REPORTS

Some of the information set forth below was taken from sources that SMC believes are confidential and privileged. The disclosure of information from these sources is not intended to constitute a waiver of any privilege or the confidential nature of the document.

Relevant Historical Report for SMC Facility

(a) March 1987, SMC Dunkirk Facility Overview Environmental Audit by Dames & Moore

Pertinent information from this report is provided below.

Dames & Moore visited the facility on March 4, 1987 to perform an Overview Environmental Audit. The report indicated that the SMC facility primarily performs forging operations on superalloy ingots supplied by the SMC New Hartford facility. Some contract work on stainless steel and superalloy material is performed for other companies.

The following Site Conditions were reported.

- Scrap metal equipment, empty drums, etc. were noted to be stored outside the plant on the north and east sides.
- No underground storage tanks are on the Site.
- A 6,000-gallon horizontal steel tank for press oil is located in a gravelly depression. The tank was noted to be fairly old but was drained, cleaned and inspected several times per year. Its location was not provided.
- Two 50,000-gallon (sic) horizontal steel tanks were noted to be situated in a grassy depression. One tank was identified as unused and the other was used to store used hydraulic oil. Their location was not provided.
- A 1,000-gallon hydraulic oil tank was noted as having been removed in 1986. Its location was not provided.
- A 150-gallon fuel oil tank on a skid was located inside the facility. Its location was not further defined.
- A major oil spill was noted to have occurred in 1978 which entered Lake Erie. It was noted that responsibility was attributed to both SMC and Al Tech.

The report stated that the facility operates on City of Dunkirk water and water from the Al Tech cooling pond. There is no treatment of incoming water. Water used in the heat exchanger (no oil contact) is recycled to the cooling pond and water from the quench tank goes to the sanitary sewer.

Hydraulic oil was noted to be stored in one of the 60,000-gallon (sic) horizontal outside storage tanks prior to removal from the facility and 55-gallon drums were

used to store oil-contaminated absorbent material (Speedy Dry) and oily metal scrap. These materials were removed from the facility by BFI in Buffalo, New York.

It was noted that sheared alloy metals, grinding dusts, etc. were shipped to the New Hartford facility for reprocessing.

The facility used solvent emulsion degreasers supplied by Rochester Midland containing petroleum distillates and methyl chloroform.

Three transformers located outside on the south side of the building previously contained PCBs. The units were cleaned and tested by an unspecified Ohio firm in the fall of 1986 and found to contain acceptable but unspecified levels of PCBs.

(b) *July 21, 1988 letter to Mr. Barry Kogut, Esq. (Bond, Schoeneck & King) from O'Brien & Gere regarding a PCB investigation at the SMC Dunkirk Plant*

Pertinent information from this letter is provided below.

O'Brien & Gere personnel toured the SMC Dunkirk facility on June 21, 1988 with plant personnel to review plant processes and identify areas where PCBs may have been used. Hydraulic fluid reservoirs from equipment in the plant which utilize cooling water from the pond were sampled. These reservoirs included the east manipulator, west manipulator, press and firequel.

Water drawn from the pond is used for non-contact cooling of hydraulic fluids and a feed source for the quench tank. Samples were collected from pond water incoming into the plant, in the quench tank and prior to discharge back to the pond. Samples of oil and water were also collected from two 50,000-gallon (sic) waste oil storage tanks.

Data previously generated by SMC personnel was used along with the results of this O'Brien & Gere investigation. The results of the data indicated that PCB contamination is not present at the SMC facility. Data collected by SMC personnel indicated that low levels of PCB contamination is present in the pond water, with contaminant levels decreasing after use at the SMC facility. The low level pond water contamination was not attributed to activities at the SMC facility.

(c) *December 1988, SMC Dunkirk Facility Update Report by Dames & Moore*

Pertinent information from this report is provided below.

Dames and Moore visited the facility on December 7, 1988 to gather information to update a report prepared subsequent to a March 4, 1987 facility visit. This 1988 Update Report indicated that the processes used at the facility and the main

products made (forged nickel, chrome and cobalt) are essentially the same as previously reported.

The following Site Conditions were reported.

- Scrap materials, empty drums, etc. were stored outside the plant on the north and east sides.
- No underground storage tanks are on-Site.
- Outside aboveground storage tanks (ASTs) consisted of
    - 6,000-gallon AST, its location or contents were not provided.
    - Two, 60,000-gallon (sic) ASTs for storage of oily waste water. Its location was not provided.
    - 250-gallon AST used for storage of diesel fuel for the forklifts. This tank was located on the east side of the building, had secondary containment and was vented.
- A 150-gallon AST used to store hydraulic oil was identified inside the plant. Its location was not further defined.
- A major oil spill was identified as having occurred in 1980 (1978 according to the previous report), which entered Lake Erie. The spill was reported to have resulted from the 60,000-gallon (sic) fuel oil tank which later was used for storage of oily waste water.

The report indicated that the facility had three air emissions permits for the die dressing grinder in the northeast corner of the plant, the billet grinder in the southeast corner and the saw along the north wall.

The report stated that until early 1988, cooling water was obtained from and discharged to the Al Tech cooling pond. The facility then switched over to City of Dunkirk water which is run on a closed cycle cooling system with an on-site cooling tower.

Oily wastewater from the hydraulic system was reported to be separated in a contact chamber. The aqueous phase was discharged to the Al Tech pond, until a City of Dunkirk sewer permit was received.

A quench tank was located in the southeast portion of the building which contained cooling water recycled through the cooling tower. The tank was used to cool the jaws of the overhead crane and manipulator. Prior to the installation of the cooling tower, the quench tank was filled from and discharged to the Al Tech cooling pond.

According to plant personnel, no hazardous waste is generated. Transformer drainage waste is handled by Transformer Consultants. Rochester Midland was responsible for the solvent emulsion degreaser supplied to SMC and periodically removed the spent material.

Three single phase 1,000 KVA transformers are located on the south side of the plant and were drained by Transformer Consultants. A soil sample was collected from around the transformers by O'Brien & Gere and the results indicated that Aroclor 1254 was present at a concentration of 1.2 parts per million (ppm)

The Al Tech cooling water pond was reported to contain several feet of sludge which is heavily contaminated with PCBs. No sampling results on the sludge of pond water were available.

The report indicated that correspondence exists in which Al Tech "intimates culpability on the part of SMC for this contamination". Al Tech provided SMC with a report from Hazard Evaluations (date not provided) that indicated that a sediment sample from a storm sewer which drains the floor area of the SMC facility contains PCBs at a concentration of 8 ppm.

On June 8, 1988, O'Brien & Gere collected samples of the following with the noted results: incoming pond water (0.15 ppb) and quench tank water (<0.1 ppb). In oil samples taken on 4/28/88 from the east tank and west tank, no PCBs were found using a detection limit of 1.0 ppm.

On June 21, 1988, O'Brien & Gere took oil samples from the following locations – west manipulator, press-oil, east manipulator, firequel, east 50,000 (sic) gallon tank and west 50,000 (sic) gallon tank and no PCBs were found at a detection limit of 1.0 ppm. Water samples were also taken of water from the pond as it came into the quench tank, within the quench tank and when it returned to the pond. The sample results were 0.22 parts per billion (ppb), 0.18 ppb and 0.15 ppb, respectively. No PCBs were detected in water samples that were taken from the two 50,000 (sic) gallon tanks at a detection limit of 10 ppb.

A sample of quench tank composite sludge taken by O'Brien & Gere on 8/10/1988 was found to contain no PCBs at a detection limit of 0.5 ppm.

Personnel from the SMC New Hartford have monitored the Dunkirk facility air for metals dust (dates not provided) and found the levels were below threshold limit values.

(d) August 1990, SMC Dunkirk Facility Update Report by Dames & Moore.

Pertinent information from this report is provided below.

The facility was visited by Dames & Moore on June 28, 1990.

The two, 60,000-gallon ASTs formerly used to store oily waste water were no longer in use. The tanks were empty with the exception of the residual tank bottoms at the time of the visit. The facility maintained five, 275-gallon ASTs for storage of waste oil. Their locations were not identified.

It was identified that plant operations were going to be affected by the addition of a new forging press and its associated structure along the southeast corner of the plant. This area was identified as having several piles of miscellaneous solid waste, one pile of oily mill scale from grinding operations. Plant personnel indicated that the oily mill scale was to be placed in the oily waste dumpster inside the plant for proper disposal.

No significant changes were noted in the operations since the last audit. However, facility personnel have undertaken waste minimization procedures in order to reduce the volume of liquid and solid waste generated at the plant. The effort had resulted in lower waste volumes.

Seventeen (17) air contaminant sources were identified during the facility visit. Three of the sources have operating permits and a fourth was identified (welding hood fume) that discharges to the atmosphere and should have an operating permit. The remaining 13 sources are forge, furnaces and heaters which are fired by natural gas and vent to the building interior and do not require permits.

Conversations with facility personnel and site observations, indicated that asbestos contained material (ACM) was removed from pipe insulation in the plant (location not provided). Two additional sources of potential ACM were identified: ceiling tiles in the plant offices and pipe elbows in the manufacturing area. These materials were reported to be in good condition and represent minimal exposure hazard.

The SMC facility maintains a permit to discharge oily waste water to the City of Dunkirk POTW. Though no formal Notice of Violation was received, conditions of the discharge permit prescribed that corrective actions to the oil/water separator were necessary in order to achieve compliance with the City of Dunkirk regulations. According to SMC facility personnel, the oil/water separator has been repaired and a proposal to the City of Dunkirk POTW was submitted for the installation of flow monitoring devices.

Two solvent degreasing basins were maintained at the facility which use mineral spirit compound (locations not provided). The waste solvent was disposed of by Safety-Kleen and replaced with new product. The facility has an EPA hazardous waste generator number (No. NYD 057982993).

Appropriate documentation regarding the disposal of hazardous waste and the removal of waste oil from the facility were reviewed and appeared to be complete.

No spills or discharges of hazardous materials or petroleum products occurred since the last audit.

It was reported that the SMC facility no longer uses water from or discharges cooling or process water to the adjacent Al Tech pond. Cooling water is provided from a municipal supply via the closed loop cooling tower system. Storm water runoff is discharged to the Al Tech pond via three on-site storm drains. Al Tech's water recirculating system passes through SMC's property. A break in the system occurred in the fall of 1989, but was repaired. The location of the break was not identified.

Three PCB-bearing transformers are located at the SMC facility. They have been tested and the appropriate warning labels are posted. The transformers were scheduled to be retrofitted in the fall of 1990.

(e) *"Soils and Site Management Plan, Special Metals Corporation, 100 Willowbrook Avenue, Dunkirk, New York" prepared for Special Metals Corporation, by GZA GeoEnvironmental of New York, dated July 2006.*

Pertinent information from this report is provided below.

The Soils and Site Management Plan (SSMP) was prepared to set guidelines for the management of soil and construction material that may have been generated by subsurface activities resulting from construction, demolition, or utility installation/preparation done in and around the SMC property during the CY 2006 building expansion construction activities.

Environmental soil samples were collected from geotechnical borings done as part of Empire Geo-Services, Inc. geotechnical work (discussed below). Select soil samples were tested and the analytical results were included in the SSMP.

Soil and bedrock samples were collected and screened for volatile organic compounds (VOCs), using an organic vapor meter (OVM), equipped with a photo-ionization detector (PID). The overburden soil thickness ranged from about 16 to 17-feet. Bedrock was cored for a thickness of between 10 and 40-feet. Visual and olfactory observations were made of the soil/rock samples collected as a secondary screening method to check for obvious signs of potential contaminants of concern[2]. The OVM/PID screening resulted in measurements that ranged from 0 to 10 parts per million (ppm). Field observations did not note visual or olfactory evidence of potential contamination. Soil samples were randomly selected and sent to a laboratory for one or more of the following analysis.

Volatile Organic Compounds	EPA Method 8260
Semi-volatile Organic Compounds	EPA Method 8270
PCBs	EPA Method 8082
Metals	EPA Method 6010

[2] Contaminants of concern were assumed to consist of petroleum related compounds, polychlorinated biphenyl's and metals unless otherwise stated.

Groundwater was not encountered within the overburden soils during the subsurface investigation. Bedrock core samples were also collected at several locations and screened with the OVM/PID. Measurements or visual observations did not indicate contamination was present.

The soil sample results were compared to the applicable regulatory guidelines (NYSDEC TAGM #4046[3]), which are considered recommended soil cleanup objectives (RSCOs)). The sample results were as follows:

VOCs: Benzene was detected within one soil sample at a concentration slightly above its RSCO. This lone detection of Benzene was not considered an environmental concern.

SVOCs: No SVOCs were detected above method detection limits within the five soil samples analyzed.

PCBs: No PCBs were detected above method detection limits within the five soil samples analyzed.

Metals: Several metals were detected within each of the five soil samples analyzed. Chromium was the only compounded detected at a concentration above its RSCO. However, the concentration detected was within the range established as Eastern USA Background. Therefore, metals were not considered to be an environmental concern.

(f) *"Closure Report, NYSDEC Spill #0650719, Special Metals Corporation, Dunkirk, New York" prepared for Special Metals Corporation, by GZA GeoEnvironmental of New York, dated November 2006.*

Pertinent information from this report is provided below.

This report was prepared to document the closure of NYSDEC Spill Number 0650719. SMC had reported three (3) petroleum product spills to NYSDEC during construction of a SMC facility expansion that began in CY 2006 for the installation of a rotoforge. As referenced earlier, each spill report was issued a separate spill number (spill nos. 0650719, 0606195 and 0606199). Based on a review of the NYSDEC Spill Database, the three reported spills were consolidated into one spill number (0650719).

Spill No. 0650719 - The petroleum impact observed is likely due to the long industrial history at the Site and surrounding area. SMC had its contractor

[3] NYSDEC, Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046: Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 24, 1994 and revised December 20, 2000 (referred to herein as "TAGM 4046").

remove and segregate the impacted materials encountered. Additional soils were excavated down to bedrock as part of the Rotoforge press foundation installation and the area has been covered with a reinforced concrete mat. The low level detections of VOCs and SVOCs in the groundwater are considered residual and may have been the result of on-going construction activities within the excavation area.

Spill No. 0606195 - Based on the results of the soil samples collected, no VOCs were detected at concentrations exceeding the TAGM 4046 RSCOs. Also, no SVOCs or PCBs were detected above method detection limits. The low level detections of VOCs in the groundwater are considered residual and may have been the result of on-going construction activities within the excavation area.

Spill No. 0606199 - A limited number of VOCs and SVOCs were detected above method detection limits in the three groundwater samples collected. Six (6) VOCs exceeded their respective Class GA criteria in sample, Center Exc 4 Feet Deep. The concentration of these compounds detected was considered low (highest at 36 ppb) with a total VOC concentration of about 110 ppb.

It was GZA's opinion that SMC had successfully remediated the petroleum based contamination encountered during its expansion construction. Low levels of petroleum related compounds were detected in some of the soil and groundwater samples collected following remediation. These concentrations are considered residual and will likely decrease with time. Also, the surrounding area is supplied by public water. SMC has removed the source material and impacted soil. Therefore, no further remedial work is required and it was requested that Spill number 0650719 be closed.

(f) *"Interim Remedial Measures Work Plan, PCB Contaminated Soil Excavation and Removal, Special Metals Corporation, 100 Willowbrook Avenue, Dunkirk, New York, Site #907031" prepared for Special Metals Corporation, by GZA GeoEnvironmental of New York, dated February 2007.*

Pertinent information from this document is provided below.

Twenty-eight (28) subsurface soils probes were conducted to delineate the extent of PCB contamination identified in the western portion of the SMC facility. Groundwater was not encountered during the soil probe work.

Soil samples were collected from each of the 28 soil probes in two feet intervals. Each soil sample was field and headspace screened for organic vapors using an OVM. No significant headspace readings were noted. Select soil samples were field screened using a Dexsil L2000 DX PCB Analyzer. Fifty-six (56) soil samples

were selected and sent for analysis which included 54 samples for PCB analysis via USEPA Method 8082. A portion of the samples were also tested for RCRA 8 Metals via USEPA Method 60l0B17470, Total Compound List (TCL) VOCs via USEPA Method 8260 and/or TCLP Chromium via USEPA Method 1311/6010B. Results of the soil sample analysis from this delineation effort identified that PCBs were the primary parameters of concern.

- PCBs were detected at levels ranging from non-detect to 1,200 ppm.
- VOC and SVOC contamination was detected but not at levels of concern.
- Chromium was the metal detected that posed a potential concern due to its detection at a concentration above NYSDEC TAGM 4046 RSCOs. However, toxicity characteristic leachate procedure (TCLP) testing for chromium was done on samples collected as part of the soil probe delineation. Chromium was not detected at a concentration above the hazardous waste threshold.

The remedial area delineated has an approximate 6,400 square foot footprint. It has been estimated that approximately 1,000 tons of soil will be excavated and disposed of as hazardous waste at the CWM facility. It should be noted that the sample locations where elevated chromium levels were detected are within the area delineated for excavation and disposal as part of the IRM.

Relevant Engineering Reports and Support Documentation for SMC Facility

(a) "Subsurface Exploration and Geotechnical Engineering Report, Proposed Building Addition and Rotary Forge Installation, Special Metals – Dunkirk Facility Expansion, Dunkirk, New York", prepared for Special Metals Corporation, by Empire Geo-Services, Inc., dated July 2006.

This report was prepared to assist in planning the design and construction of foundations to support the recent building expansion and rotary forge installation at the SMC facility in Dunkirk, New York.

(b) United States Department of the Interior Geological Survey, Dunkirk Quadrangle, New York, Chautauqua County, 7.5 Minute Series (topographic), dated 1954, photo revised 1979.

(c) Aerial photographs available from the Chautauqua County Department of Planning, which included SMC facility: 1938, 1956, 1961, 1966, 1971, 1977, 1983, 1989, 1995.

(d) "ALTA/ASCM Land Title Survey for Special Metals Corporation, City of Dunkirk, County of Chautauqua, State of New York, Job No. 83-12-22 &

980812, Date of Last Revision: February 12, 2007" prepared by Michael D. Masters, Licensed Land Surveyor, NY No. 50004.

(e) Process Water & Storm Sewer System Layout, Dunkirk Plant, Drawing No. 31-M-13, dated July 15, 1988. This drawing identifies the locations of the two former, 60,000-gallon (sic) used hydraulic oil tanks and the storm sewer line running beneath the AOC.

3 (i) SITE HISTORY, DESCRIPTION AND NATURE OF OPERATIONS

SMC owns and operates the approximate 8-acre industrial property located at 100 Willowbrook Avenue in Dunkirk, New York (see Figure 2) for the manufacture of alloys for the aerospace industry by heat treating nickel-based alloys. Ingot or billets are received, ground to remove surface flaws, heat treated and forged in hydraulic presses. Natural gas is used for all combustion sources.

Adjacent to the SMC facility to the north, east and west is a NYSDEC Inactive Hazardous Waste Disposal Site (Al-Tech Specialty Steel Corporation (Al-Tech) Site # 907022). South of the SMC facility, across Willowbrook Avenue are residential homes and a vacant lot that is owned by SMC.

The tracts of land which make up the SMC facility and the Al-Tech site were formerly owned and operated by a single owner, Allegheny Ludlum Industries, Inc., which utilized the properties for the manufacturing of steel products. Allegheny Ludlum conveyed the Al-Tech Site in 1976 and retained the SMC facility, which was later conveyed to SMC in 1983. (The deed to SMC was from Allegheny International, Inc. and the deed indicates that the conveying entity was formerly known as Allegheny Ludlum Steel Corporation and Allegheny Ludlum Industries, Inc.)

SMC operates two New York manufacturing facilities – the subject one in Dunkirk, New York and one in New Hartford. SMC filed a Chapter 11 bankruptcy petition on March 27, 2002 and emerged from bankruptcy on November 26, 2003. On May 25, 2006, Precision Castparts Corp. completed the acquisition of SMC.

A review of the title history indicates a reference to an easement to Al Tech that allows storm water run off from the Al Tech site to be conveyed via a 16-inch diameter pipe from the portion of the Al Tech property located east of the SMC facility to the cooling water pond located on the Al Tech property west of the SMC facility. This pipe runs in an east-west direction beneath the AOC identified in the Order on Consent. Its depth in the vicinity of the AOC is approximately 10 to 12 feet below ground surface.

In addition, a historical map (Attachment A-3) identified a 3-inch diameter polyethylene line running beneath the AOC parallel to the 16-inch diameter line.

3 (ii) INFORMATION REGARDING HAZARDOUS WASTE GENERATION AT THE SMC FACILITY

The following types and quantities of hazardous waste are generated at the SMC facility:

Soil – Approximately 43 tons of PCB impacted soil have been disposed from the SMC facility as part of the recent building expansion activities. In addition, lead paint chips from paint stripping (2 drums per year) are generated.

SMC is not aware of any release of hazardous waste to the environment at or emanating from the area of the Site. The source of the PCB contamination under investigation and to be addressed by SMC under the Order on Consent is unknown to SMC, but believed to be associated with historical operations at the Site when the Al-Tech Site and SMC facility were under common ownership.

3 (iii) DESCRIPTION OF SITE SECURITY

The majority of the SMC facility is surrounded by a 6-foot high chain linked fence. A security guard is on duty 24-hours a day, seven (7) days a week. A small portion of the facility in the southwest corner, which is used as a visitor's parking lot, is accessible to the general public. In order to access the facility, all visitors must sign in with security and enter the facility past the guard house.

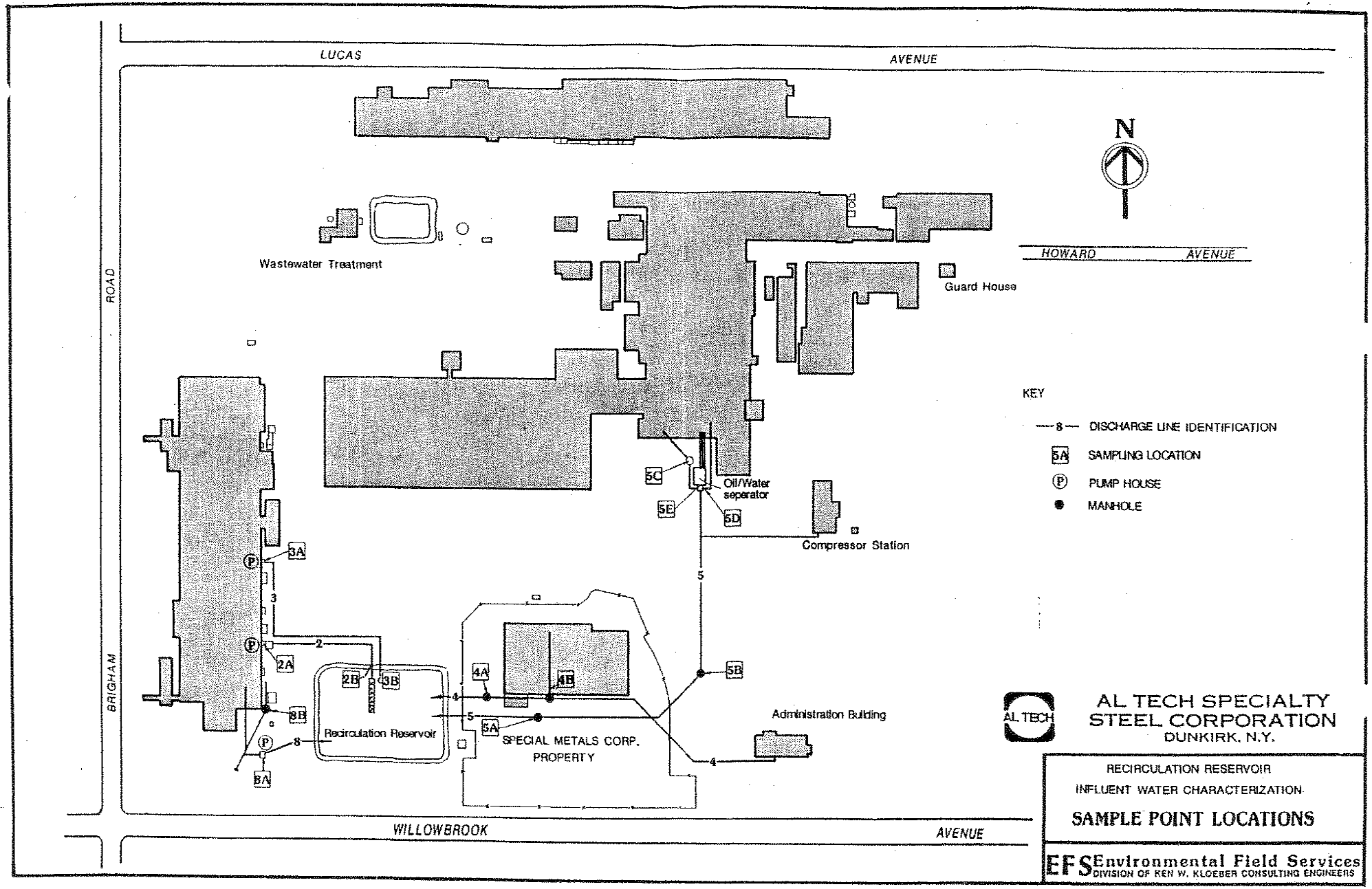
3 (iv) PERSONNEL RESPONSIBLE FOR DISPOSAL OF HAZARDOUS WASTE

Robert J. DiFondi, SMC Environmental Coordinator
4317 Middle Settlement Road, New Hartford, New York 13413

Mr. DiFondi has been the acting Environmental Coordinator for SMC for approximately the past 13 years. Mr. DiFondi's predecessor in this position is no longer with SMC.

ATTACHMENT A-1

SAMPLE POINT LOCATIONS
AL TECH SPECIALTY STEEL CORPORATION


LUCAS AVENUE
BRIGHAM ROAD
WILLOWBROOK AVENUE
HOWARD AVENUE
N
Wastewater Treatment
Guard House
Oil/Water seperator
Compressor Station
Recirculation Reservoir
SPECIAL METALS CORP. PROPERTY
Administration Building
KEY
8 DISCHARGE LINE IDENTIFICATION
5A SAMPLING LOCATION
P PUMP HOUSE
MANHOLE
AL TECH SPECIALTY STEEL CORPORATION
DUNKIRK, N.Y.
RECIRCULATION RESERVOIR
INFLUENT WATER CHARACTERIZATION
SAMPLE POINT LOCATIONS
EFS Environmental Field Services
DIVISION OF KEN W. KLOEBER CONSULTING ENGINEERS

ATTACHMENT A-2

CATCH BASIN ANALYTICAL DATA
AND
CATCH BASIN LOCATION FIGURE

PARADIGM
ENVIRONMENTAL SERVICES, INC.

Analytical Report Cover Page

For Lab Project # 06-3602

The reported results relate only to the samples as they have been received by the laboratory.

Any noncompliant QC parameters having impact on the data are flagged or documented on the final report.

All soil or solid samples have been reported on a dry weight basis, unless qualified "reported as received".

The Chain of Custody provides additional information, including compliance with sample condition requirements upon receipt. Sample condition requirements are defined under the 2003 NELAC Standard, sections 5.5.8.3.1 and 5.5.8.3.2.

Data qualifiers are used, when necessary, to provide additional information about the data. This information may be communicated as a flag or as text at the bottom of the report. Please refer to the following list of frequently used data flags and their meaning:

"ND" = analyzed for but not detected.
"E" = Result has been estimated, calibration limit exceeded.
"D" = Duplicate results outside QC limits. May indicate a non-homogenous matrix.
"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.
"B" = Method blank contained trace levels of analyte. Refer to included method blank report.

This report contains a total of 12 pages.

179 Lake Avenue · Rochester, NY 14608 · (585) 647-2530 · Fax (585) 647-3311 · ELAP ID# 10958

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
Client Job Number:	21.0056196.10	**Lab Sample Number:**	12151
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-1	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.379
Aroclor 1221	ND< 0.379
Aroclor 1232	ND< 0.379
Aroclor 1242	ND< 0.379
Aroclor 1248	0.387
Aroclor 1254	ND< 0.379
Aroclor 1260	ND< 0.379

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger: Technical Director

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
Client Job Number:	21.0056196.10	**Lab Sample Number:**	12152
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-2	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 2.14
Aroclor 1221	ND< 2.14
Aroclor 1232	ND< 2.14
Aroclor 1242	5.61
Aroclor 1248	ND< 2.14
Aroclor 1254	ND< 2.14
Aroclor 1260	ND< 2.14

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger: Technical Director

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
Client Job Number:	21.0056196.10	**Lab Sample Number:**	12153
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-3	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.462
Aroclor 1221	ND< 0.462
Aroclor 1232	ND< 0.462
Aroclor 1242	ND< 0.462
Aroclor 1248	ND< 0.462
Aroclor 1254	ND< 0.462
Aroclor 1260	ND< 0.462

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger: Technical Director

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site: Special Metals
100 Willowbrook
Client Job Number: 21.0056196.10
Field Location: N/A
Field ID Number: CB-4
Sample Type: Soil

Lab Project Number: 06-3602
Lab Sample Number: 12154

Date Sampled: 11/28/2006
Date Received: 11/28/2006
Date Analyzed: 11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.345
Aroclor 1221	ND< 0.345
Aroclor 1232	ND< 0.345
Aroclor 1242	ND< 0.345
Aroclor 1248	ND< 0.345
Aroclor 1254	ND< 0.345
Aroclor 1260	ND< 0.345

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger: Technical Director

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
Client Job Number:	21.0056196.10	**Lab Sample Number:**	12155
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-5	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.338
Aroclor 1221	ND< 0.338
Aroclor 1232	ND< 0.338
Aroclor 1242	ND< 0.338
Aroclor 1248	ND< 0.338
Aroclor 1254	ND< 0.338
Aroclor 1260	ND< 0.338

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger, Technical Director

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
Client Job Number:	21.0056196.10	**Lab Sample Number:**	12156
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-6	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.359
Aroclor 1221	ND< 0.359
Aroclor 1232	ND< 0.359
Aroclor 1242	ND< 0.359
Aroclor 1248	ND< 0.359
Aroclor 1254	ND< 0.359
Aroclor 1260	ND< 0.359

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger: Technical Director

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
Client Job Number:	21.0056196.10	**Lab Sample Number:**	12157
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-7	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.393
Aroclor 1221	ND< 0.393
Aroclor 1232	ND< 0.393
Aroclor 1242	ND< 0.393
Aroclor 1248	ND< 0.393
Aroclor 1254	ND< 0.393
Aroclor 1260	ND< 0.393

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger: Technical Director

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
Client Job Number:	21.0056196.10	**Lab Sample Number:**	12158
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-8	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.411
Aroclor 1221	ND< 0.411
Aroclor 1232	ND< 0.411
Aroclor 1242	ND< 0.411
Aroclor 1248	ND< 0.411
Aroclor 1254	ND< 0.411
Aroclor 1260	ND< 0.411

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger, Technical Director

PARADIGM ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
Client Job Number:	21.0056196.10	**Lab Sample Number:**	12159
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-11	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.359
Aroclor 1221	ND< 0.359
Aroclor 1232	ND< 0.359
Aroclor 1242	ND< 0.359
Aroclor 1248	ND< 0.359
Aroclor 1254	ND< 0.359
Aroclor 1260	ND< 0.359

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger: Technical Director

PARADIGM
ENVIRONMENTAL SERVICES, INC. 179 Lake Avenue Rochester, New York 14608 (585) 647 - 2530 FAX (585) 647 - 3311

PCB Analysis Report for Soils/Solids/Sludges

Client: GZA GeoEnvironmental, Inc.

Client Job Site:	Special Metals 100 Willowbrook	**Lab Project Number:**	06-3602
		Lab Sample Number:	12160
Client Job Number:	21.0056196.10		
Field Location:	N/A	**Date Sampled:**	11/28/2006
Field ID Number:	CB-12	**Date Received:**	11/28/2006
Sample Type:	Soil	**Date Analyzed:**	11/29/2006

PCB Identification	Results in mg / Kg
Aroclor 1016	ND< 0.366
Aroclor 1221	ND< 0.366
Aroclor 1232	ND< 0.366
Aroclor 1242	ND< 0.366
Aroclor 1248	ND< 0.366
Aroclor 1254	ND< 0.366
Aroclor 1260	ND< 0.366

ELAP Number 10958 Method: EPA 8082

Comments: ND denotes Non Detect
mg / Kg = milligram per Kilogram

Signature: _____
Bruce Hoogesteger: Technical Director

WHITE COPY - Original YELLOW COPY - Lab Files PINK COPY - Lab Returns to Proj. Mgr. GOLDENROD COPY - Proj. Mgr. Keeps

W.O. # 06-3602 (for lab use only)

CHAIN-OF-CUSTODY RECORD

Sample I.D.	Date/Time Sampled (Very Important)	Matrix (A=Air, S=Soil, GW=Ground W., SW=Surface W., WW=Waste W., DW=Drinking W., Other (specify))	WW ONLY: 624	601 602	625	ANALYSIS REQUIRED: 524.2 502.1	8260	8260 - "8240" List	8021	8021 - "8010" List	8021 - "8020" List	8270 PAH A BN	8081 Pest Only	TPH-GC (Mod 8100)	ETPH (CT)	Metals PPM-13 R-8	Metals (List Below)	8082 PCB	Lab #	Total # of Cont.	Note #
CB-1	11/28/06	S																X	12151	2	
CB-2																		X	12152	2	
CB-3																		X	12153	2	
CB-4																		X	12154	2	
CB-5																		X	12155	2	
CB-6																		X	12156	2	
CB-7																		X	12157	2	
CB-8																		X	12158	2	
CB-11																		X	12159	2	
CB-12																		X	12160	1	

PRESERVATIVE (Cl - HCl, N - HNO3, S - H2SO4, Na - NaOH, O - Other)*

CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, T-Teflon, O-Other)*

RELINQUISHED BY: Chris Baron DATE/TIME 11/28/06 1400 RECEIVED BY:

RELINQUISHED BY: DATE/TIME 11/28/06 1400 RECEIVED BY:

RELINQUISHED BY: DATE/TIME RECEIVED BY: Elizabeth A. Honch 11/28/06 1655

NOTES: Preservatives, special reporting limits, known contamination, etc. Rec'd at lab at 10°C ICe

EDH

24hrs TAT

PROJECT MANAGER: C. Baron EXT: 3309

716-695-2300

GZA GeoEnvironmental, Inc.
LABORATORY
106 South St
Hopkinton, MA 01748
(508) 435-9244
FAX (508) 435-9912

Buffalo Office

TURNAROUND TIME: Standard Rush Days, Approved by BH LAB USE TEMP. OF COOLER °C

GZA FILE NO: 21.0056196.10 P.O. NO.: Special Metals

Bill Bob DiFonzo

PROJECT Special Metals

LOCATION 100 Willowbrook

COLLECTOR(S) CZB SHEET 1 OF 1

GZAP-032

LEGEND:

⊞CB-1	APPROXIMATE LOCATION AND DESIGNATION OF EXISTING CATCH BASIN WHERE SEDIMENT SAMPLE WAS COLLECTED
⊞CB-9	APPROXIMATE LOCATION AND DESIGNATION OF EXISTING CATCH BASIN WHERE NO SEDIMENT SAMPLE WAS COLLECTED

NOTES:

1. BASE MAP ADAPTED FROM A 2004 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/ mg/interactive_main.html, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

DRAWN BY: DEW

DATE: NOVEMBER 2006

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 60 120 240

SPECIAL METALS CORPORATION

DUNKIRK FACILITY

100 WILLOWBROOK AVENUE

DUNKIRK, NEW YORK

SITE INVESTIGATION

CATCH BASIN & SEDIMENT SAMPLE LOCATION PLAN

PROJECT No.

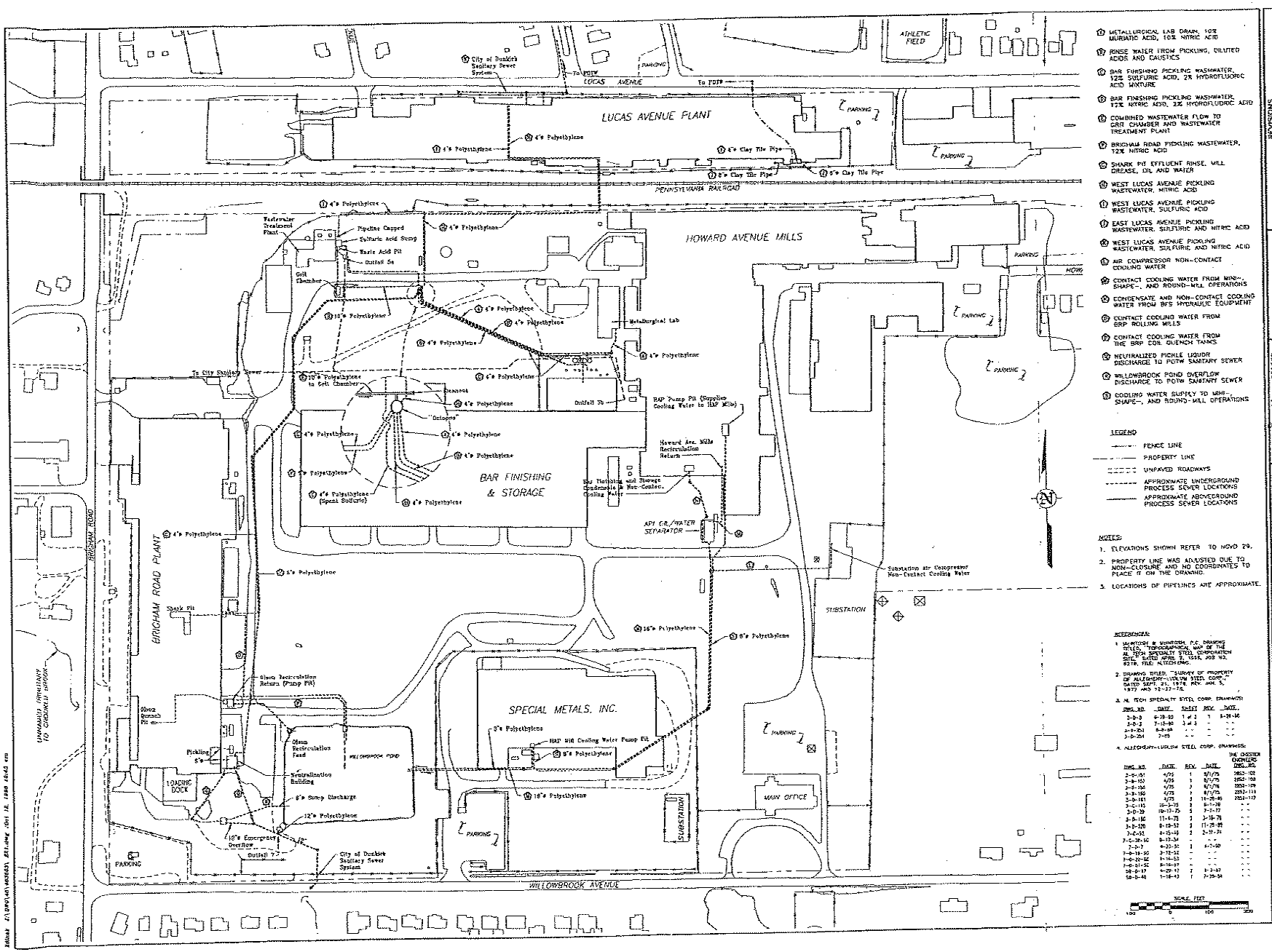
21.0056196.10

FIGURE No.

1

ATTACHMENT A-3

PROCESS SEWER IDENTIFICATION
AL TECH SPECIALTY STEEL CORPORATION



BY	DESCRIPTION	DATE
	REVISIONS	

PROCESS SEWER IDENTIFICATION
AL TECH SPECIALTY STEEL CORPORATION
DUNKIRK, NEW YORK
PHASE I RFI

ENVIRONMENTAL STRATEGIES CORPORATION
Four Parc Center West
Suite 315
Pittsburgh, PA 15275
(412) 787-5100

Figure 3-6

Drawing Number
483B03-E21

APPENDIX B

FIELD ACTIVITIES PLAN

FIELD ACTIVITIES PLAN
REMEDIAL INVESTIGATION/ FEASIBILITY STUDY
SPECIAL METALS CORPORATION
100 WILLOWBROOK AVENUE
DUNKIRK, NEW YORK
SITE # 907031

PREPARED FOR:
Special Metals Corporation
100 Willowbrook Avenue
Dunkirk, New York

PREPARED BY:
GZA GeoEnvironmental of New York
Buffalo, New York

March 2007
File No. 21.0056196.20

SPECIAL METALS CORPORATION
FIELD ACTIVITIES PLAN
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
DUNKIRK, NEW YORK
TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this Field Activity Plan (FAP) is to describe activities planned as part of the fieldwork portion of the Remedial Investigation (RI) at Special Metals Corporation (SMC) located at 100 Willowbrook Avenue, Dunkirk, New York (See Figure 1).

The work described in this FAP is being done under an Order on Consent (# B9-0737-07-02; Site #907031) between SMC and the New York State Department of Environmental Conservation (NYSDEC). Under the Order on Consent, the "Site" has been identified as the approximate 100 foot by 100 foot area, shown on Figure 2. GZA GeoEnvironmental of New York (GZA) will complete the RI and Feasibility Study (FS) for SMC.

The objective of the RI is to characterize the nature and extent of potential contamination on-Site to provide data for completing a FS. The FS will identify and evaluate technology/alternatives for remediation of the Site and will be used as the basis for final selection of the appropriate remedial response.

SMC will implement an Interim Remedial Measure (IRM) at the Site prior to the start of the RI field activities in the Area of Concern (AOC) that has been identified along the western side of the SMC property (see Figure 2). The IRM will involve the excavation and disposal of soil that has been impacted by the presence of polychlorinated biphenyls (PCBs). This FAP does not include activities associated with the IRM.

1.2 PROPERTY DESCRIPTION

The SMC facility consists of an approximate 8-acre industrial property located at 100 Willowbrook Avenue in Dunkirk, New York (see Figure 2) that is used for the manufacture of alloys for the aerospace industry (the "Forge facility"). The Forge facility is bordered by the former Al-Tech Specialty Steel site, which is currently on the New York State Registry of Inactive Hazardous Waste Disposal Sites (Registry Site #907022) (Al-Tech Site). The Al-Tech Site was issued an Order on Consent by NYSDEC in 1995, requiring investigation and remediation.

The Al-Tech Site borders the SMC property to the north, west and west. South of the Forge facility across Willowbrook Avenue are residential homes.

The tracts of land which make up the Forge facility and the Al-Tech site were formerly owned and operated by a single owner, Allegheny Ludlum Industries, Inc., which utilized the properties for the manufacturing of steel products. Allegheny Ludlum conveyed the Al-Tech Site in 1976 and retained the Forge facility, which was later conveyed to SMC in 1983. (The deed to SMC was from Allegheny International, Inc. and the deed indicates that the conveying entity was formerly known as Allegheny Ludlum Steel Corporation and Allegheny Ludlum Industries, Inc.)

1.3 BACKGROUND

An expansion of the existing manufacturing building at the Forge facility for the installation of a new rotary forge has been completed. The new building addition covers an area of about 72-feet (north-south) by 87-feet to the west (see Figure 2).

As part of the building expansion, four trench excavations were completed along the western portion of the Site for the placement of subsurface utilities, as further defined below (see Figure 2). Soils impacted by the presence of polychlorinated biphenyls (PCBs) were encountered during the installation of three of the four trenches (#2, #3 and #4 listed below).

1. A natural gas and water line trench excavation was done in August 2006 along the southern and western sides of the new building expansion, north of the AOC. Olfactory or visual evidence of impacted soil was not noted in this excavation. Additionally, impacted soils were not observed in the soil excavation for the building expansion foundation, located approximately 5 to 10 feet north of the natural gas and water line excavation.

2. An electrical conduit trench was excavated along the western portion of the property from an electrical pole to the building expansion area (the "Electric Trench"). During the Electric Trench excavation (August 30, 2006), odors were detected within a portion of the trench, shown on Figures 2, 3 and 4. SMC requested that its earthwork contractor stockpile the soil excavated from the trench on the asphalt surface and collect soil samples for analytical testing. Two soil samples were collected (designated Electric Trench 1 and Electric Trench 2, see Table 1).

   Results of the sampling indicated that PCBs were present at a concentration of 140 parts per million (ppm) and 31 ppm in samples Electric Trench 1 and Electric Trench 2, respectively. Other compounds were also detected, including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals (see Table 1). The detected levels of VOCs and SVOCs are relatively minor, but the PCB concentration of 140 ppm is above the 50 ppm threshold for the material to be considered hazardous waste in New York (6 NYCRR § 371.4(e)).

   The elevated detections of chromium (Electric Trench 1; Electric Trench 2; SP-1, 2 – 4 ft bgs; SP-6, 2 – 4 ft bgs; SP-9, 0 – 2 ft bgs; and SP-16, 2 – 4 ft bgs) are located within the AOC where impacted soils have been delineated for excavation and disposal. The results of testing of environmental soil samples, which were collected as part of the geotechnical work for the building expansion, are reflected in the development of a Soils and Site Management

Plan (SSMP)[1] and included as Table 1 of the SSMP. These samples also had detections of total chromium above TAGM 4046,[2] but within the range of the TAGM 4046 Eastern USA Background levels.

Analytical data from the adjacent Al-Tech Site[3], included the detection of chromium at levels consistently above TAGM 4046 at multiple locations around the property and in many instances above Eastern USA Background levels. The presence of chromium may be attributed to the apparent presence of fill material that may have been used in construction prior to the time the Forge facility and the Al-Tech Site were separated in 1976.

Although it is the presence of PCBs that is compelling the performance of the IRM and will define the extent of the excavation, areas of elevated chromium concentrations will also be addressed in the removal of PCB-impacted soil. Soil samples will be collected to confirm the residual concentration of chromium following the IRM excavation to evaluate whether future exposure to the soils needs to be limited. The frequency for metals analysis in the confirmation soil samples is discussed in Section 5.0.

3. A trench excavation was dug on December 12, 2006 for a communication utility line along the western side of the existing building from the building expansion south to the Guard House (see Figure 2). The excavation is located in the eastern portion of the AOC. When olfactory evidence of impacted soil was noted, SMC had its earthwork contractor stockpile the soil on polyethylene sheeting. A composite sample (designated Trench Stockpile) was collected from the soil stockpile and tested for PCBs. Results of the sampling indicated that PCBs were present at a concentration of 370 ppm (see Table 1). Re-analysis of the sample by another laboratory indicated that PCBs were present at a concentration of 1,200 ppm (see Table 1)

4. A trench excavation was dug on December 13, 2006 for electric and communication utility lines along the southwestern portion of the property (see southern trench on Figure 2). The trench was excavated from the utility pole south to the back flow prevention meter along Willowbrook Avenue. During the course of this excavation, olfactory evidence of impacted soil was noted in a 2-foot wide by 3-foot long by 1-foot deep (6 cubic feet) area of the trench. This

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1 Prior to building expansion construction and as part of its due diligence process, SMC requested that GZA prepared a Soils and Site Management Plan (SSMP) that sets forth the procedures to be followed in the event contaminated or suspected contaminated soils and/or groundwater were encountered during the construction activities. A copy of the SSMP was previously provided by SMC to the Region 9 Office of NYSDEC.

2 NYSDEC, Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046: Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 24, 1994 and revised December 20, 2000 (referred to herein as "TAGM 4046").

3 "Phase I RCRA Facility Investigation Report, Al Tech Specialty Steel Corporation, Dunkirk, New York, Volume 1 of 6" dated October 22, 1998. Prepared by Environmental Strategies Corporation.

soil was removed and placed with soil stockpiled from the communication trench excavation (see Item 3 above) that was dug east of the AOC.

Subsurface soils probes were conducted on the following two separate events in the vicinity of the Electric Trench to delineate the extent of the PCB contamination (see Figure 3). Groundwater was not encountered in any of the soil probe work.

1. The first event was done on September 16, 2006 and consisted of 16 soil probes (SP-1 through SP-16) to an approximate depth of 12 feet below ground surface (bgs) or refusal, whichever came first.

2. The second event was completed on December 2, 2006 and consisted of 12 soil probes (SP-17 through SP-27) to an approximate depth of 12 feet bgs or refusal, whichever came first.

Soil samples were collected in two feet intervals and were field and headspace screened for organic vapors using an organic vapor meter (OVM) equipped with a photoionization detector (PID). No significant headspace readings were noted.

Select soil samples were field screened using a Dexsil L2000 DX PCB Analyzer. Based on the findings of the field screening, olfactory observations and for broader coverage, 56 soil samples were selected and sent for analysis. Fifty four (54) samples were analyzed for PCBs via USEPA Method 8082and a portion of the samples were also tested for RCRA 8 Metals via USEPA Method 6010B/7470, Total Compound List (TCL) VOCs via USEPA Method 8260 and/or TCLP Chromium via USEPA Method 1311/6010B.

Results of the analysis from the delineation effort were consistent with the initial Electric Trench samples in that PCBs are the primary parameters of concern. VOC and SVOC contamination was detected but not at levels of concern.

Based on the foregoing, an AOC was defined, which is located within the area defined as the "Site" in the Order on Consent. This remedial area, which is shown on Figure 4, has an approximate 6,400 square foot footprint.

2.0 DESCRIPTION OF FIELD ACTIVITIES

The RI is intended to obtain Site-specific data on the nature and extent of potential soil and groundwater contamination and the degree to which the potential contamination poses a threat to human health and the environment.

GZA is proposing to do the RI in a phased approach. A phased approach will help limit exploration locations that may provide little or no value to the investigation, minimizing the number of analytical samples needed and focusing on potential areas of interest that are identified during the investigation.

The first phase of the RI will involve test borings, monitoring well installation, soil probes and analytical sample collection at the Forge facility. In addition to these field activities, a review will be done of the previously collected data from the adjacent Al-Tech property to establish potential correlations between contaminant levels between the two properties.

The specific objectives of the RI are as follows:

- Assess Site geology;
- Assess hydrogeology;
- Evaluate areal and vertical extent of potential contamination;
- Evaluate transport mechanisms;
- Assess the potential source(s) of contamination and assess impact to soil and groundwater; and
- Identify potential pathways for human exposure as part of a qualitative risk assessment.

The subtasks described below are intended to accomplish the objectives. Additional information, regarding the methodologies to be used, is provided in the Site-specific Quality Assurance Project Plan (QAPP). Field activities will be completed in accordance with the Site-specific Health and Safety Plan (HASP).

2.1 GENERAL FIELD ACTIVITIES

General field activities include site meetings, mobilization, implementing the health and safety plan, sampling and analytical testing, decontamination and handling of investigation wastes and survey. Subcontractors will be used for drilling, analytical testing, data validation, and surveying.

2.1.1 Site Meeting

A Site "kick-off" meeting will be held with SMC, GZA and the drilling subcontractor(s) prior to initiating field work activities to orient field team members and subcontractors with the Site and familiarize project personnel and GZA subcontractor personnel with Site background, scope of work, potential dangers, health and safety requirements, SMC Site specific security and safety protocols, emergency contingencies and other field procedures. NYSDEC are welcome to attend and will be notified seven (7) days in advance as required under ¶ XIV.B of the Order on Consent.

2.1.2 Mobilization

Following approval of the RI Work Plan by NYSDEC, the Underground Facilities Protection Organization (UFPO) will be contacted at 1-800-962-7962 to clear exploration locations. Utility clearance will require three working days by UFPO. GZA and its subcontractors then will mobilize necessary materials and equipment to the Site.

2.1.3 Health and Safety

It is anticipated that the work to be completed at the Site will be done at level D personal protection. Should health and safety monitoring during field activities indicate a threat to field personnel or warrant an upgrade to level C protection, work will stop and Site conditions will be re-evaluated by GZA.

2.1.4 Decontamination and Handling of Investigation Derived Waste

Decontamination procedures specific to each of the field activities are described in the QAPP. Personal protective equipment (i.e., latex gloves) and disposable sampling equipment (i.e., polyethylene tubing) will be placed in plastic garbage bags for disposal as a solid waste.

Excess soil cuttings from soil borings or probes that are not returned to the boreholes (see TAGM 4032) will be drummed and stored on-Site for future disposal unless the soil appears to be uncontaminated based on olfactory evidence and measurements from an organic vapor meter (OVM) that is equipped with a photo-ionization detector (PID). These measurements should be less than 1 part per million (ppm) in headspace screening[4] and the soils should appear to be visually clean. If less than 1 ppm, the material will be staged on the ground at a location acceptable to SMC.

Purge water and well development water will be containerized in 55-gallon drums and stored until analytical results are received. If analytical results are non-detect, the drummed water will be discharged to the ground surface at the Site. If minor contaminants are present but meet the requirements of the City of Dunkirk wastewater treatment facility, drummed water will be discharged to the sanitary sewer. If analytical results do not permit discharge to the sanitary sewer, drummed water will be sampled and characterized for proper disposal.

The volume of material to be disposed from drums is unknown, if any. GZA will coordinate with SMC to test and dispose of collected wastewater.

2.1.5 Survey

Following completion of the RI investigation, a professional land surveying firm will be subcontracted to locate exploration locations and prepare a Site base map.

2.2 RI FIELD INVESTIGATIONS

RI field work will generally be done in compliance with NYSDEC's Draft DER-10 "Technical Guidance for Site Investigation and Remediation", dated December 2002.

[4] Headspace screening involves field measurements of the adjacent air during soil sampling plus measurements of the air volume or headspace above a soil sample placed in a plastic baggie, plastic or glass jar. Field measurements are made for total volatile organic compounds using a PID properly calibrated.

2.2.1 Soil Probes

GZA is proposing six (6) soil probe locations during the first phase of the investigation. Figure 5 has the soil probe locations identified; however, actual locations will be based on findings during the soil probe work. The soil probes will be done in the area of the potentially impacted soil encountered in the southern portion of the Forge facility while excavating the southern trench (see Section 1.3, #4).

The soil probes will be advanced into overburden soils utilizing direct push technology via a hydraulic hammer mounted on a truck or track mounted rig equipped with a 2-inch outer diameter by 48-inch long macrocore sampler. Soil probes will be advanced to a depth of about 12 feet bgs, or refusal, which ever is encountered first. Should it be required that additional depth is needed to explore the vertical extent of potential contamination or waste material, the probe depth will be extended.

A field engineer/geologist will observe the soil probes and create a field log for each probe. Real time air monitoring will be conducted while soil probes are being completed using an OVM. Soil samples will be collected from the soil probes for classification, laboratory analysis and screening with the OVM. Soil samples will be collected at two-foot intervals to the bottom of the probes. Samples collected for analytical testing will typically be collected from contaminated soils or material, based on visual, olfactory, field screening and engineering judgment that warrant further analysis. Procedures discussed in Section 2.1.4 will be utilized to determine the handling of the soil spoils.

2.2.2 Test Boring, Monitoring Well Installation and Sampling

Four (4) permanent monitoring wells will be installed as part of the RI. Figure 5 has the proposed monitoring well locations identified. Based on previous geotechnical work[5] done at the SMC property, groundwater in the vicinity of the AOC was measured at a depth of approximately 17 feet bgs. This is located near the overburden soil and bedrock interface.

Test borings for monitoring well installation will be advanced in the overburden soils using a track or truck mounted rotary drill rig using 4 ¼ - inch inside diameter hollow stem augers (HSA). Overburden soil samples will be obtained by driving a 1 3/8-inch inside diameter by 24-inch long split spoon sampler 24-inches ahead of the lead cutting shoe of the HSA, in general accordance with ASTM D1586.

Soil samples collected from the test borings will be classified in the field by visual examination in accordance with a modified Burmeister Classification System. Boring logs that identify appropriate stratification lines, blow counts (if applicable), sample identification,

5 "Subsurface Exploration and Geotechnical Report, Proposed Building Addition and Rotary Forge Installation, Special Metals – Dunkirk Facility Expansion, Dunkirk, New York" prepared for SMC by Empire Geo-Services, Inc, dated July 2006.

sample depth interval and recovery, and date will be generated for each test boring and included as an appendix to the RI/FS report.

Two soil samples will be collected for analytical testing from each test boring. One sample will be collected from approximately 6-inches to 2 feet bgs and the second sample will be collected from the upper two feet of native soil.

The HSAs will be advanced until refusal is encountered. Drilling fluids will not be used while advancing the HSA in the overburden, so groundwater can be identified, if encountered. GZA assumes the soil spoils generated from the test borings will not be contaminated. Procedures discussed in Section 2.1.4 will be utilized to determine the handling of the soil spoils.

The test borings will be observed by a field engineer/geologist and a field log for each boring/monitoring well will be created. Real time air monitoring will be conducted while test borings are being completed using an OVM. Soil samples will be collected at two-foot intervals to the bottom of the boring for classification, laboratory analysis and screening with the OVM. Soil samples collected for analytical testing will typically be collected from contaminated soils or material, based on visual, olfactory, field screening (OVM) and engineering judgment that warrant further assessment.

The completed test borings will be converted to groundwater monitoring wells, if groundwater is encountered. The wells will be constructed of 2-inch inner diameter flush coupled PVC riser and screen.

The screened interval shall intercept the water table extending above and below the water table. The screen will consist of a 5 to 10 foot long section of machine slotted pipe. The length of the screened section will be dependent on the depth at which groundwater is encountered and the depth to which the boring can be advanced.

A sand filter will be placed in the boring around the annulus space of the well screen such that the sand extends a minimum of 1-foot above the top of the screen. An approximate 3-foot thick layer of bentonite will be placed above the sand filter to provide a seal from the overlying overburden conditions. A mixture of cement/bentonite grout will extend from the bentonite seal to approximately 3-feet bgs.

The monitoring well will be completed by placing locking stick-up casing or flush-mounted road box over the riser. Concrete will be placed in the boring around the protective casing and sloped away from the casing.

The monitoring wells will be developed to remove the fines and develop the sand filter pack. Hydraulic conductivity testing, using either rising or falling head test method, will be done to assess whether the monitoring well is functioning and provide hydrologic information that will aid in evaluating subsurface conditions. Water level measurements will be collected to interpret groundwater flow direction.

Water generated during development and purging prior to sampling will be containerized until the analytical results of the groundwater samples are received. If analytical results are non-detect, the drummed water will be discharged to the ground surface at the Site. If minor contaminants are present but meet the requirements of the City of Dunkirk wastewater treatment facility, drummed water will be discharged to the sanitary sewer. If analytical results do not permit discharge to the sanitary sewer, drummed water will be sampled and characterized for proper disposal.

2.2.3 Fish and Wildlife Resources Impact Analysis

A fish and wildlife impact analysis that characterizes resources used to identify potential or actual impacts will be done for the Site (Part 1 assessment – see NYSDEC Draft DER-10). If no fish or wildlife resources or ecological exposure pathways are identified, then this component of the work will be considered complete. If there is a potential for fish and wildlife impacts, then a plan will be developed to implement a preliminary ecological impact assessment (Part 2).

During a January 31, 2007 meeting between NYSDEC, SMC and GZA, it was indicated that NYSDEC had recently completed an ecological assessment of the Al-Tech property and would provide a copy for review. The ecological assessment from the Al-Tech property will be evaluated in conjunction with the ecological assessment of the Site on the Forge facility.

2.3 ENVIRONMENTAL ANALYTICAL TESTING PROGRAM

The environmental testing program is summarized in Table 1. The location for sample collection will be determined based upon the results of the field screening and engineering judgment. The samples collected as part of this RI will be subject to analytical testing methodologies that follow NYSDEC Analytical Service Protocol (ASP) Category B deliverables and data validation. Further information regarding sampling and testing methodologies can be found in the Site-specific QAPP.

2.4 SURVEY

The survey will be done after completion of the fieldwork to locate test pits, soil probes, background samples, surface soil samples, sediment samples and monitoring wells. This will allow measurement of the actual exploration locations and elevations.

A licensed land surveyor will be subcontracted to do the survey. Vertical measurements will include a ground surface elevation, plus top of casing and top of riser for monitoring wells. The top of riser will serve as the water level monitoring point. Vertical measurements will be made relative to the National Geodetic Vertical Datum (NGVD). Monitoring point measurements and top of protective casing measurements will be accurate to within 0.01 foot. Horizontal measurements and ground surface elevations will be accurate to within 0.1 foot.

The base map for the Site will include pertinent Site features and the investigation exploration locations.

3.0 ADDITIONAL FIELD EXPLORATIONS

Contingent field explorations for the RI, if determined to be necessary, may be conducted. This work may consist of additional test pits, soil probes and additional monitoring well installations for supplemental soil and groundwater data to complement or fill in data gaps from the initial RI, if deemed necessary. If needed, a scope of work will be developed by GZA for review and approval under the terms of the Order on Consent. The work activities will be completed according to the procedures described in this FAP and any subsequently approved modifications.

APPENDIX C

SITE-SPECIFIC HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN
REMEDIAL INVESTIGATION/ FEASIBILITY STUDY
SPECIAL METALS CORPORATION
100 WILLOWBROOK AVENUE
DUNKIRK, NEW YORK
SITE # 907031

PREPARED FOR:
Special Metals Corporation
100 Willowbrook Avenue
Dunkirk, New York

PREPARED BY:
GZA GeoEnvironmental of New York
Buffalo, New York

March 2007
File No. 21.0056196.20

SPECIAL METALS CORPORATION
HEALTH AND SAFETY PLAN
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
DUNKIRK, NEW YORK

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SPECIAL METALS CORPORATION
HEALTH AND SAFETY PLAN
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
DUNKIRK, NEW YORK

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LIST OF ATTACHMENTS

1.0 INTRODUCTION

1.1 OVERVIEW

This Site-Specific Health and Safety Plan (HASP) has been developed by GZA GeoEnvironmental of New York (GZA) to establish the health and safety procedures required to protect on-site personnel and off-site receptors from potential hazards associated with activities within the specified scope of work for the Remedial Investigation and Feasibility Study (RI/FS) at the Special Metals Corporation, Dunkirk Facility, (SMC) located at 100 Willowbrook Avenue in Dunkirk, New York (see Figure 1). The work will be completed by GZA GeoEnvironmental of New York (GZA) under an Order on Consent (Index# B9-0737-07-02; Site# 907031) between the New York State Department of Environmental Conservation (NYSDEC) and SMC. Under the Order on Consent, the "Site" or Area of Concern (AOC) has been identified as an approximate 100 foot by 100 foot area, as shown on Figure 2.

The provisions of this plan apply to GZA personnel involved with the RI activities that may be exposed to safety and/or health hazards related to activities described in Section 3.0 of this document. The procedures in this plan have been developed based on current knowledge regarding the hazards, which are known or anticipated for the operations to be conducted at this Site.

The following sections (1.1.1 to 1.2) present a brief summary of information from the body of this HASP. This information is intended as a guide to assist the reader and is not intended to be all-inclusive.

1.1.1 Project Scope

This project involves test borings, monitoring well installation, monitoring well development, soil probes, subsurface soil and groundwater sample collection and surveying. Figure 5 within the Work Plan identifies the proposed areas to be investigated as part of the RI. The exclusion zones are expected to be variable and temporary in accordance with planned daily activities.

1.1.2 Site Hazards

The primary hazards anticipated at the Site are the physical hazards associated with operation of mechanical equipment (e.g., soil probes rig and drill rig), including noise exposure. GZA personnel will not be involved with the actual operation of large mechanical equipment (drill rigs) and potential exposure to these hazards can be controlled by keeping a safe distance from heavy equipment during operation.

Exposure hazards that may potentially result from the presence of potential contamination in the soil and groundwater will be minimized by wearing proper personnel protective equipment (PPE) while working with the various media and by conducting air monitoring (organic vapor) in the breathing zone of the work area.

1.1.3 Levels of Protection

Non-intrusive activities, investigation activities and environmental sampling described within the scope of this HASP will require Level D protection.

1.2 PROJECT TEAM

The personnel responsible for the completion of this project and monitoring compliance with this HASP are:

Name	Project Title/Assigned Role	Office Phone Numbers	Cellular Phone Numbers
Bob DiFondi	SMC Environmental Coordinator Project Oversight	(315) 768-7530	(315) 525-4340
Chris Boron	GZA - Project Manager (Remedial Investigation Oversight, Environmental Sample Collection & Report Preparation)	(716) 685-2300 ext 3309	(716) 570-5990

Activities covered in this HASP must be conducted in compliance with this HASP and with the applicable federal, state and local health and safety regulations, including 29 CFR 1910.120. Each remedial activities employee must sign a copy of the HASP Orientation Verification Form (included in Attachment C-1 of this HASP) verifying that he or she has read it and understands its requirements. Personnel covered by this HASP who cannot or will not comply must be excluded from Site activities.

GZA subcontractors may use this HASP for informational purposes when developing their own HASP. However, subcontractors are responsible for determining their HASPs adequacy and applicability to their on-site and off-site activities. If required, subcontractors will be asked to deliver their HASP in clear written form to GZA prior to the initiation of on-site activities. GZA will not review or approve subcontractor HASPs.

2.0 BACKGROUND

An expansion of the existing manufacturing building at the Forge facility for the installation of a new rotary forge has been completed. The new building addition covers an area of about 72-feet (north-south) by 87-feet to the west (see Figure 2).

As part of the building expansion, four trench excavations were completed along the western portion of the Site for the placement of subsurface utilities, as further defined below (see Figure 2). Soils impacted by the presence of polychlorinated biphenyls (PCBs) were encountered during the installation of three of the four trenches (#2, #3 and #4 listed below).

1. A natural gas and water line trench excavation was done in August 2006 along the southern and western sides of the new building expansion, north of the AOC. Olfactory or visual evidence of impacted soil was not noted in this excavation. Additionally, impacted soils were not observed in the soil excavation for the building expansion foundation, located approximately 5 to 10 feet north of the natural gas and water line excavation.

2. An electrical conduit trench was excavated along the western portion of the property from an electrical pole to the building expansion area (the "Electric Trench"). During the Electric Trench excavation (August 30, 2006), odors were detected within a portion of the trench, shown on Figures 2, 3 and 4. SMC requested that its earthwork contractor stockpile the soil excavated from the trench on the asphalt surface and collect soil samples for analytical testing. Two soil samples were collected (designated Electric Trench 1 and Electric Trench 2, see Table 1).

   Results of the sampling indicated that PCBs were present at a concentration of 140 parts per million (ppm) and 31 ppm in samples Electric Trench 1 and Electric Trench 2, respectively. Other compounds were also detected, including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals (see Table 1). The detected levels of VOCs and SVOCs are relatively minor, but the PCB concentration of 140 ppm is above the 50 ppm threshold for the material to be considered hazardous waste in New York (6 NYCRR § 371.4(e)).

   The elevated detections of chromium (Electric Trench 1; Electric Trench 2; SP-1, 2 – 4 ft bgs; SP-6, 2 – 4 ft bgs; SP-9, 0 – 2 ft bgs; and SP-16, 2 – 4 ft bgs) are located within the AOC where impacted soils have been delineated for excavation and

disposal. The results of testing of environmental soil samples, which were collected as part of the geotechnical work for the building expansion, are reflected in the development of a Soils and Site Management Plan (SSMP)[1] and included as Table 1 of the SSMP. These samples also had detections of total chromium above TAGM 4046,[2] but within the range of the TAGM 4046 Eastern USA Background levels.

Analytical data from the adjacent Al-Tech Site[3], included the detection of chromium at levels consistently above TAGM 4046 at multiple locations around the property and in many instances above Eastern USA Background levels. The presence of chromium may be attributed to the apparent presence of fill material that may have been used in construction prior to the time the Forge facility and the Al-Tech Site were separated in 1976.

Although it is the presence of PCBs that is compelling the performance of the IRM and will define the extent of the excavation, areas of elevated chromium concentrations will also be addressed in the removal of PCB-impacted soil. Soil samples will be collected to confirm the residual concentration of chromium following the IRM excavation to evaluate whether future exposure to the soils needs to be limited.

3. A trench excavation was dug on December 12, 2006 for a communication utility line along the western side of the existing building from the building expansion south to the Guard House (see Figure 2). The excavation is located in the eastern portion of the AOC. When olfactory evidence of impacted soil was noted, SMC had its earthwork contractor stockpile the soil on polyethylene sheeting. A composite sample (designated Trench Stockpile) was collected from the soil stockpile and tested for PCBs. Results of the sampling indicated that PCBs were present at a concentration of 370 ppm (see Table 1). Re-analysis of the sample by another laboratory indicated that PCBs were present at a concentration of 1,200 ppm (see Table 1)

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[1] Prior to building expansion construction and as part of its due diligence process, SMC requested that GZA prepared a Soils and Site Management Plan (SSMP) that sets forth the procedures to be followed in the event contaminated or suspected contaminated soils and/or groundwater were encountered during the construction activities. A copy of the SSMP was previously provided by SMC to the Region 9 Office of NYSDEC.

[2] NYSDEC, Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046: Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 24, 1994 and revised December 20, 2000 (referred to herein as "TAGM 4046").

[3] "Phase I RCRA Facility Investigation Report, Al Tech Specialty Steel Corporation, Dunkirk, New York, Volume 1 of 6" dated October 22, 1998. Prepared by Environmental Strategies Corporation.

4. A trench excavation was dug on December 13, 2006 for electric and communication utility lines along the southwestern portion of the property (see southern trench on Figure 2). The trench was excavated from the utility pole south to the back flow prevention meter along Willowbrook Avenue. During the course of this excavation, olfactory evidence of impacted soil was noted in a 2-foot wide by 3-foot long by 1-foot deep (6 cubic feet) area of the trench. This soil was removed and placed with soil stockpiled from the communication trench excavation (see Item 3 above) that was dug east of the AOC.

Subsurface soils probes were conducted on the following two separate events in the vicinity of the Electric Trench to delineate the extent of the PCB contamination (see Figure 3). Groundwater was not encountered in any of the soil probe work.

1. The first event was done on September 16, 2006 and consisted of 16 soil probes (SP-1 through SP-16) to an approximate depth of 12 feet below ground surface (bgs) or refusal, whichever came first.

2. The second event was completed on December 2, 2006 and consisted of 12 soil probes (SP-17 through SP-27) to an approximate depth of 12 feet bgs or refusal, whichever came first.

Soil samples were collected in two feet intervals and were field and headspace screened for organic vapors using an organic vapor meter (OVM) equipped with a photoionization detector (PID). No significant headspace readings were noted.

Select soil samples were field screened using a Dexsil L2000 DX PCB Analyzer. Based on the findings of the field screening, olfactory observations and for broader coverage, 56 soil samples were selected and sent for analysis. Fifty four (54) samples were analyzed for PCBs via USEPA Method 8082and a portion of the samples were also tested for RCRA 8 Metals via USEPA Method 6010B/7470, Total Compound List (TCL) VOCs via USEPA Method 8260 and/or TCLP Chromium via USEPA Method 1311/6010B.

Results of the analysis from the delineation effort were consistent with the initial Electric Trench samples in that PCBs are the primary parameters of concern. VOC and SVOC contamination was detected but not at levels of concern.

Based on the foregoing, an AOC was defined, which is located within the area defined as the "Site" in the Order on Consent. This remedial area, which is shown on Figure 4, has an approximate 6,400 square foot footprint.

The purpose of the RI is to evaluate other portions of the SMC facility for potential contamination, primarily PCBs and chromium. However, analytical testing parameters will include VOCs, SVOCs, PCBs and metals.

3.0 SCOPE OF WORK

Field activities during this RI shall be comprised of intrusive activities and non-intrusive activities. Non-intrusive activities will consist of site meetings, utility location, and air monitoring and are not expected to result in significant exposure to contamination. Intrusive activities are those activities that will result in the excavation and handling of PCB impacted soils (screening and sampling). The field activities planned are briefly described below.

3.1 NON-INTRUSIVE ACTIVITIES

3.1.1 Site Meeting

A Site meeting will be held with the entire project team prior to the start of the project to familiarize the parties involved with the Site and various remedial investigation activities.

3.1.2 Air Monitoring

Air monitoring will be conducted to monitor for organic vapors in the work and breathing zones.

3.1.3 Utility Location

Utility clearance will be called into Dig Safely New York, at least three days prior to any intrusive activities to be conducted. Additionally, SMC personnel shall be responsible to identify subsurface utilities in the various investigation areas and approve locations of the test borings and soils probes.

3.1.4 Survey

A licensed land surveyor will be subcontracted to measure the vertical and horizontal locations of soil probes, test pits, test borings, new monitoring wells, and selected Site features.

3.2 Intrusive Activities

3.2.1 Soil Probes

The nature and extent of potential subsurface soil contamination will be further assessed by completing approximately 6 soil probes at the Site (see Figure 5). Soil probes will be advanced into the overburden and soil samples will be collected using a truck or track mounted soil probe unit equipped with a two-inch outer diameter (OD) by four foot long sampler. The probe unit will include a hydraulic push/hammer that will be used to advance the sampler. Soil probes will be advanced to approximately 12 feet bgs, the water table or refusal, whichever is encountered first. Should it be required that additional depth is needed to explore the vertical extent of potential contamination or waste material, a larger soil probe rig will be used or more traditional hollow-stem auger drilling.

The soil samples will be screened during sampling by GZA personnel with an OVM. GZA personnel will not be involved with the actual operation of soil probe equipment.

3.2.2 Test Borings and Monitoring Well Installation

Four test borings will be advanced utilizing a rotary drill rig to collect soil samples and install monitoring wells (see Figure 5). Borings will be advanced using hollow stem augers and rotary drilling methods. Samples will be collected using split spoon methods. The drill rig will be operated by a drilling subcontractor and GZA personnel will not be involved with the actual operation of drilling equipment.

The drilling crew will collect soil samples from the borehole. GZA will log the soil samples and retain the samples in jars and/or baggies. GZA personnel will stand away from the drilling equipment and will only approach to receive the sample once directed by the driller. The soil samples will be screened during sampling by GZA personnel with an OVM. Monitoring wells will be installed by a drilling subcontractor within boreholes to permit the collection of groundwater samples as directed by GZA personnel.

3.2.3 Groundwater Sampling

GZA will collect groundwater samples from the newly installed monitoring wells and submit them to an analytical laboratory for testing. GZA will screen the well casing for the presence of VOCs using an OVM prior to sampling.

4.0 HAZARD ASSESSMENT

The following chemical, physical, and biological hazard assessment applies only to the activities within the specified scope of this HASP.

4.1 CHEMICAL HAZARDS

The potential chemical hazards at the Site are polychlorinated biphenyls, semi-volatile organic compounds and metal compounds based on previous investigation and sampling in the remedial area. The following discusses actual and potential hazards associated with the work to be conducted.

4.1.1 Volatile Organic Compounds

Exposure to the vapors of many VOCs above their respective permissible exposure limits (PELs), as defined by the Occupational Safety and Health Administration (OSHA), may produce irritation of the mucous membranes of the upper respiratory tract, nose and mouth. Overexposure may also result in the depression of the central nervous system. Symptoms of such exposure include drowsiness, headache, fatigue and drunken-like behavior. Some VOCs are considered to be potential human carcinogens.

The vapor pressures of many of these compounds are high enough to generate significant quantities of airborne vapor. On sites where high concentrations of these compounds are present, this can result in a potential inhalation hazard to the field team during subsurface investigations. To reduce the potential for exposure to the vapors of organic compounds, respiratory protection may be required. Because this Site is open and the anticipated quantities of contamination are relatively small, the potential for overexposure is expected to be small.

4.1.1.1 Chlorinated Organic Compounds

Exposure to vapors of many chlorinated organic compounds such as vinyl chloride, tetrachloroethene, 1,1,1 trichloroethane, trichlorethene and 1,2 dichloroethene above their respective PELs will result in similar symptoms. Exposure to chlorinated compounds can cause symptoms such as irritation of the eyes, nose and throat. Over exposure may also result in symptoms such as drowsiness, dizziness, headache, etc. Skin contact with the liquid may cause dermatitis. If splashed in the eyes, the liquid may cause burning, irritation and damage. Vinyl chloride is a known carcinogen.

4.1.1.2 Petroleum Hydrocarbons

Petroleum hydrocarbons (PHCs) such as fuel oil are generally considered to be of low toxicity. Recommended airborne exposure limits have not been established for these vapors. However, inhalation of low concentrations of the vapor may cause mucous membrane irritation. Inhalation of high concentrations of the vapors may cause pulmonary edema. Repeated or prolonged direct skin contact with the oil may produce skin irritation as a result of defatting. Protective measures, such as wearing chemically resistant gloves, to minimize contact are addressed elsewhere in this plan. Because of relatively low vapor pressures associated with PHCs, an inhalation hazard in outdoor an environment is not likely.

4.1.2 Metal Compounds

Overexposure to metals has been associated with a variety of health hazards, both acute and chronic in nature, with chronic effects being most significant. Direct contact with dust of some metal compounds can result in contact or allergic dermatitis. The American Conference of Governmental Industrial Hygienists (ACGIH) has established inhalation exposure limits, expressed as Threshold Limit Values (TLVs), to which most workers can be exposed (on an 8-hour time-weighted average (TWA) basis) without adverse affect. To limit potential exposure visible clouds of dust should be controlled as required and workers and observers will remain upwind of intrusive activities.

Hexavalent chromium compounds, upon contact with the skin can cause ulceration and possibly an allergic reaction. Inhalation of hexavalent chromium dust is irritating and corrosive to the mucous membranes of the upper respiratory tract. Chrome ulcers and chrome dermatitis are common occupational health effects from prolonged and repeated exposure to hexavalent chromium compounds. Acute exposures to hexavalent chromium dusts may cause coughing or weezing, pain on deep inspiration, tearing, inflammation of the conjunctiva, nasal itch and soreness or ulceration of the nasal septum. Certain forms of hexavalent chromium have been found to cause increased respiratory cancer among workers. Inhalation of copper and zinc dusts above their established PEL's may result in flu-like symptoms known as "metal fume fever".

Similarly, ingestion of quantities likely to result in any harmful effects are unlikely to occur within the scope of activities covered in this HASP. Incidental ingestion of minor amounts through hand-to-mouth contact can be avoided with good personal hygiene habits.

The most significant route of exposure is likely to be skin contact with the contaminated soils. Protective measures, such as the wearing of chemically resistant gloves, to minimize contact are addressed in Section 6.0 of this plan.

4.1.3 Polychlorinated Biphenyls

Prolonged skin contact with PCBs may cause a condition known as chloracne. PCBs are considered to be suspect carcinogens and may also cause reproductive damage.

It should be noted that PCBs have extremely low vapor pressures. This makes it unlikely that any significant vapor concentration (i.e. exposures above the OSHA PEL) will be created in the ambient environment. This minimizes the potential for any health hazards to arise due to inhalation unless the source is heated or generates significant airborn particulate. Based on sample information from previous work done at the Site, hazardous levels of PCBs are potentially present in the areas of investigation.

4.1.4 Pesticides

Pesticides can be grouped into three major categories; organophosphates, carbamate and chlorinated hydrocarbons. The actual PEL as set by OSHA, vary depending on the specific compound. Organophosphates, including Diazinon, Malathion and Parathion, are quickly absorbed into the body by inhalation, ingestion and direct skin contact. The symptoms of exposure include headache, fatigue, dizziness, blurred vision, sweating, cramps, nausea and vomiting. More severe symptoms can include tightness of the chest, muscle spasms, seizures and unconsciousness. It should also be noted that the Malathion and Parathion PELs both carry the *Skin* notation, indicating that these compounds adversely effect or penetrate the skin. OSHA specifies that skin exposure to substances carrying this designation be prevented or reduced through the use of the appropriate personal protective equipment (PPE).

Chlorinated hydrocarbons such as Chlordane, DDT and Heptachlor can cause dizziness, nausea, abdominal pain and vomiting. The more severe symptoms include epileptic like seizures, rapid heart beat, coma and death. These compounds also carry the OSHA *Skin* notation.

The symptoms of exposure to carbamate such as Carbaryl (also known as Sevin), are similar to those described for the organophosphates.

4.1.5 Methane

Methane is an odorless, colorless, tasteless gas, and is a significant fire and explosion hazard. It also acts primarily as a simple asphyxiate when present in high concentrations. Methane has a lower explosive limit (LEL) of 5% and an upper explosive limit of 15%.

4.1.6 Hydrogen Sulfide

Hydrogen sulfide, characterized by its "rotten egg" odor, is produced by decomposition of organic matter. In many instances, hydrogen sulfide is found in the same area as methane gas. An important characteristic of hydrogen sulfide is its ability to cause a decrease in ones ability to detect its presence by smell. So although you may no longer smell it, it still may be present in harmful concentrations.

The symptoms of over exposure include headaches, dizziness, staggering and nausea. Severe over exposure can cause respiratory failure, coma and death. The OSHA PEL is 10 ppm.

4.1.7 Chemicals Subject to OSHA Hazard Communication

Chemicals brought on-Site such as solvents, reagents, decontamination solutions, or other hazardous chemicals must be accompanied by the required labels, Material Safety Data Sheets (MSDS), and employee training documentation (OSHA 1910.120). GZA will maintain these documents on-Site. For additional information refer to the GZA Hazard Communication Program contained in GZA's Health and Safety Program Manual.

4.2 PHYSICAL HAZARDS

Personnel on-Site should be provided with the information and training necessary to avoid accidental injury. This includes assuring that the Site is maintained in such a way that slip, trip and fall hazards as well as cut, puncture and abrasion hazards such as nails, scrap metal, rusted containers and construction derbies are recognized and eliminated or controlled. Basic personal protective equipment (i.e, hard hat and safety glasses) is required by SMC prior to entering the facility.

4.2.1 Construction Hazards, Construction Equipment and Excavators

The use of drill rigs and other heavy construction equipment represent potentially serious construction hazards. Whenever such equipment is used, personnel in the vicinity should be limited to those who must be there to complete their assigned duties. All personnel must avoid standing within the turning radius of the equipment or below any suspended load. Job sites must be kept as clean, orderly and sanitary as possible. When water is used, care must be taken to avoid creating muddy or slippery conditions. If slippery conditions are unavoidable, barriers and warning signs must be used to warn of these dangers.

Procedures that will be implemented to limit physical hazard impacts include the following. Never turn your back to operating machinery when in the machine's operational area. Never wear loose clothing, jewelry, hair or other personal items around rotating equipment or

other equipment that could catch or ensnare loose items. Always stand far enough away from operating machinery to prevent accidental contact which may result from mechanical or human error.

Additionally, the following basic personal protective measures must be observed: Hard Hats must be worn to protect against bumps or falling objects. Safety glasses must be worn by all workers in the vicinity of drill rigs or other sources of flying objects. Goggles, face shields or other forms of eye protection must be worn when necessary to protect against chemicals or other hazards. Steel toed safety shoes or boots are also required. The shoes must be chemically resistant or protected with appropriately selected boots/coverings where necessary. Unless otherwise specified, normal work clothes must be worn. Gloves are also required whenever necessary to protect against hazardous contact, cuts, abrasions or other possible skin hazards.

4.2.2 Trenching and Excavation

OSHA requires that a competent person, who is trained to recognize the hazards associated with trenching and excavating activities and has authority to control these hazards within the limits established by OSHA Trenching and Excavation Standard (29 CFR 1926.650-652) be present at all times. Trenching and excavating will be done by Pinto Construction. Excavation work will be completed in accordance with OSHA regulations (29 CFR 1926 Subpart P).

4.2.3 Fire and Explosion

The possibility of flammable materials being encountered during field activities must be recognized. Therefore, the appropriate steps necessary to minimize fire and explosion must be observed. This includes situations where excessive organic vapors or free product are encountered. When this occurs, monitoring with a combustible gas indicator (CGI) and OVM, is required.

Excessive organic vapors can cause an explosion hazard. Therefore, whenever excessive organic vapors are detected using an OVM, monitoring should be done for the presence of explosive gases.

Fire, explosion and hazardous chemical release should be regarded as one of, if not the, most significant hazard associated with drilling operations and other intrusive work conducted at sites where possible reactive and/or toxic waste may be encountered. Accordingly, all sources of ignition must be fully controlled. Failure to control ignition sources could result in fire, explosion and pose a serious threat to life and health. Fire extinguishers will be located near each intrusive activity.

4.2.4 Noise

Noise exposure can be affected by many factors including the number and types of noise sources (continuous vs. intermittent or impact), and the proximity to noise intensifying structures such as walls or building which cause noise to bounce back or echo. The single most important factor affecting total noise exposure is distance from the source. The closer one is to the source the louder the noise. The operation of an excavator or other mechanical equipment can be sources of significant noise exposure. In order to reduce the exposure to this noise, personnel working in areas of excessive noise must use hearing protectors (ear plugs or ear muffs). If hearing protection is worn, hand signals will be implemented as needed.

4.2.5 Heat and Cold Stress

Overexposure to temperature extremes can represent significant risks to personnel if simple precautions are not observed. Typical control measures designed to prevent heat stress include dressing properly, drinking plenty of the right fluids, and establishing an appropriate work/break regimen. Typical control measures designed to prevent cold stress also include dressing properly, and establishing an appropriate work/break regimen.

4.2.6 Electrical

OSHA regulations require that employees who may be exposed to electrical equipment be trained to recognize the associated hazards and the appropriate control methods. All extension cords used for portable tools or other equipment must be designed for hard or extra usage and be (three wire) grounded. All 120 volt, single-phase 15 and 20 ampere receptacle outlets on construction sites and other locations where moisture/water contact may occur must be equipped with ground-fault circuit interrupters (GFCI) units. GFCI units must be attached directly to or as close as possible to the receptacle. GFCI units located away from the receptacle will not protect any wiring between the receptacle and the GFCI unit. Only the wiring plugged into the GFCI unit and outward will be protected by the GFCI. All (temporary lighting) lamps for general illumination must be protected from accidental breakage. Metal case sockets must be grounded. Portable lighting in wet or conductive locations should be 12 volt or less. GZA does not anticipate the need for temporary lighting for this project. GZA assumes that all the work will be completed during the daylight hours.

4.2.7 Moving Vehicles, Traffic Safety

Vehicular traffic routes which could impact worker safety shall be identified and communicated. When necessary, barriers or other methods must be established to prevent injury from moving vehicles. This is particularly important when field activities are conducted in parking lots, driveways, or roadways.

The uncontrolled presence of pedestrians during intrusive activities can be hazardous to both pedestrians and site workers. Prior to the initiation of Site activities, the Site should be surveyed to determine if, when and where pedestrians may gain access. This includes walkways, parking lots, gates and doorways. Barriers or caution tape should be used to exclude all pedestrians. Exclusion of pedestrian traffic is intended to prevent injury to the pedestrian and eliminate distractions which could cause injury to GZA personnel or other site workers.

4.2.8 Overhead Utilities and Hazards

Overhead hazards can include low hanging structures which can cause injury due to bumping into them. Other overhead hazards include falling objects, suspended loads, swinging loads and rotating equipment. Hard-hats must be worn by personnel in areas were these types of physical hazards may be encountered. Barriers or other methods must also be used to exclude personnel from these areas were appropriate. Electrical wires are another significant overhead hazard. According to OSHA (29 CFR 1926.550), the minimum clearance which must be maintained from overhead electrical wires is 10 feet from an electrical source rated $\leq$ 50 kV. Sources rated > 50 kV require a minimum clearance of 10 feet plus 0.4 inches per kV above 50 kV.

4.2.9 Underground Utilities and Hazards

The identification of underground pipes, utilities and other underground hazards is critically important prior to intrusive activities. In accordance with OSHA 29 CFR 1926.650, the estimated location of utility installations, such as sewer, telephone, electric, water lines and other underground installations that may reasonably be expected to be encountered during intrusive work, must be determined prior to opening an excavation. In New York State, the "Dig Safe" notification phone number is 1-800-962-7962. Additionally, SMC personnel will be asked to provide assistance in identifying on-Site utilities and approving intrusive locations prior to the start of the intrusive work. The mark-outs provided by the utility companies will be maintained on a regular basis during the intrusive work and Dig Safe will be re-notified if intrusive activities will take longer that 10-business days.

4.2.10 Confined Space

Confined space entry activities, such as entering sewer systems requires specialized procedures beyond the scope of this plan. Therefore, if circumstances require such activities, this plan must be modified accordingly.

4.3 BIOLOGICAL HAZARDS

All personnel on site should be provided with the information and training necessary to avoid accidental injury or illness which can result from exposure to biological hazards. This includes assuring that the Site is carefully assessed so that the hazards associated with poisonous plants, insects or other sources of biological contamination (i.e., septic systems) are recognized and eliminated or controlled. In most cases this can be done by using proper PPE. Due to the current site conditions and time of year, biological hazards are not expected to be encountered.

5.0 AIR MONITORING

Air Monitoring falls into three separate categories; real time monitoring, community air monitoring and personal exposure monitoring. Real time monitoring will be conducted within the exclusion zone (EZ). Community air monitoring will be done at the down wind perimeter of the EZ. Attachment C-2 summarizes the type of environmental monitoring as well as appropriate response actions applicable to the Site. Additional details regarding air monitoring are presented below.

5.1 REAL TIME MONITORING

Real time monitoring that is required to determine the airborne concentrations of the volatile organic compounds and the corresponding response action, will be conducted using the instruments indicated in Attachment C-1. Although the data provided by these instruments can be used to determine the appropriate control actions and PPE requirements, the data may be inappropriate for use in determining employee time weighted average exposures as required by OSHA.

Monitoring with the specified instruments will be conducted at a frequency necessary to adequately characterize airborne contamination levels around the excavation area. Initial monitoring will be most frequent and will be either continuous or at intervals of once every 15 minutes as directed by the GZA's field representative. Monitoring shall be conducted in close proximity to the intrusive activities as described in this HASP. If instruments indicate the presence of elevated levels of organic vapors in the work area or the general breathing zone, then the EZ should then be monitored to determine appropriate response action in accordance with the action levels specified in this section.

Equipment calibration must be performed in accordance with the manufacturer's instructions. Field checks using the appropriate reference standards must be made on-Site at the minimum frequency of twice per shift (pre- and post-sampling). A daily log of all instrument readings, as

well as all field reference checks and calibration information, and corrective actions must be maintained.

5.1.1 Total Volatiles Organics

An OVM with a PID, equipped with a 10.2 ev lamp calibrated to a standard referenced to benzene in air, will be used to monitor the breathing zone of workers performing remedial activities to assess the potential presence of organic vapors. If elevated levels above background are sustained (> 1 minute) in the work area, work will be suspended until the situation can be assessed and the potential source of the organic vapors determined.

5.2 COMMUNITY AIR MONITORING

Real-time air monitoring, for organic compound levels at the perimeter of the work area will be conducted as follows. Volatile organic compounds shall be monitored at the downwind perimeter of the work area at a minimum of once per hour. If total organic vapor levels exceed 5 ppm above background, work activities must be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings shall be recorded and will be available for review.

5.2.1 Vapor Emission Response Plan

If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the work area, activities will be halted and monitoring continued. If the organic vapor level decreases below 5 ppm above background, work activities can resume. If the organic vapor levels are greater the 5 ppm over background but less then 25 ppm over background at the perimeter of the work area, activities can resume provided that the organic vapor level 200 ft. downwind of the work area or half the distance to the nearest residential or commercial structure, whichever is less, is below 5 ppm over background.

If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. When work shutdown occurs, downwind air monitoring as directed by the GZA's field representative will be implemented.

5.2.2 Major Vapor Emissions

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, work activities must be halted.

If, following the cessation of the work activities, or as a result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the

nearest residential or commercial property from the work area, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If efforts to abate the emission source are unsuccessful and levels above 5 ppm above background persist for more than 30 minutes in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect (See Section 5.2.3).

5.2.3 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken.

1. Emergency Response Contacts listed in the Health and Safety Plan will go into effect (See Section 10.2).

2. The local police authorities will immediately be contacted and advised of the situation.

3. Frequent air monitoring will be conducted at 30 minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified.

5.3 PERSONAL EXPOSURE MONITORING

Determinations regarding individual exposure potentials will be based on the work area monitoring described above. Separate personal air sampling will not be conducted.

6.0 PERSONAL PROTECTIVE EQUIPMENT

PPE will be donned as described below for the activities covered by this HASP. Non-intrusive activities within the scope of this HASP will require Level D protection. All intrusive activities will be initiated in Level D for personnel working in the intrusive activities areas. Level C protection is outside the scope of this HASP.

6.1 NON-INTRUSIVE ACTIVITIES

Non-intrusive activities, which include Site meetings, air monitoring and utility location will require Level D protective equipment. This equipment is defined as:

- Hard hat;
- Steel-toed work boots;

- Work clothes;
- Hearing protection (if necessary); and,
- Eye protection - contact lenses may not be worn on site.
- Disposable latex gloves (as needed).

6.2 INTRUSIVE ACTIVITIES

Intrusive activities, which include soils probes, test borings and monitoring well installation will require Level D protective equipment for personnel working in the excavation. This equipment is defined as:

- Hard hat;
- Steel-toed work boots;
- Disposable latex gloves;
- Eye protection; and,
- Hearing protection (see Section 4.2.4).
- Eye protection - contact lenses may not be worn on site.
- Disposable latex gloves.

If air monitoring results indicate the need to upgrade to Level C respiratory protection, work will be stopped until the situation can be assessed. Due to number of employees and construction workers at the SMC facility, unrelated to the RI investigation activities, an update to Level C would not be prudent until the situation can be properly assessed and the well being of the entire work force at the SMC facility be taken into consideration.

7.0 SITE CONTROL

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas along with personal protective equipment requirements will be clearly identified as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November, 1985. They recommend the area surrounding the work areas to be divided into three zones; the exclusion or "Hot" zone, contamination reduction zone (CRZ), and the support zone.

7.1 EXCLUSION ZONE

Due to the scattered locations of the activities covered within the scope of this HASP, the actual zones are expected to change frequently in accordance with daily activities. Therefore, all exclusion zones (EZ) are expected to be temporary or dynamic. Site personnel will be advised of

the locations of temporary work zones as part of the routine Site safety meetings described in Section 9.0.

Each EZ will consist of the active work areas where Site investigations are taking place. A 15-foot radius will be established as the typical perimeter of the zone, however, this may be increased as necessary in order to protect personnel from contact with vapors that may arise from these operations. The perimeter of the zone will be marked with traffic cones or brightly colored hazard tape. All personnel entering these areas must wear the prescribed level of protective equipment.

7.2 CONTAMINATION REDUCTION ZONE

The contamination reduction zone (CRZ) will be the corridor between the exclusion and support zones. The actual length and/or location of the corridor will also be temporary or dynamic in accordance with the locations of the exclusion zones. The CRZ is where personnel will begin the sequential decontamination process when exiting the EZ. To prevent cross contamination and for accountability purposes, all personnel must enter and leave the exclusion zone through the CRZ. A separate heavy equipment decontamination zone will also be established at the Site.

7.3 SUPPORT ZONE

The support zone (SZ) will coincide with the project command post, and will consist of an area outside the exclusion zone and CRZ where support equipment will be staged. Eating, drinking and smoking will be allowed only in this area. Sanitary facilities will be located within the SZ. In addition, potable water and water and soap for hand washing will be available at the SMC facility, along with containers for solid waste for use by GZA and GZAs subcontractor personnel. Hazardous, or potentially hazardous, materials will be drummed, labeled and stored with other drums of substances generated during this project for future disposal as required by the project specific work plan.

7.4 OTHER SITE CONTROL AND SAFETY MEASURES

The following measures are designed to augment the specific health and safety guidelines provided in this plan.

- The "buddy system" will be used at all times by all field personnel. No one is to perform field work alone. The standby project team member must be intimately familiar with the procedures for initiating an emergency response.

- Avoidance of contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk

around (not through) puddles and discolored surfaces. Do not kneel on the ground or set equipment on the ground. Protect air monitoring equipment from water by bagging.

- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited except in the support zone after proper decontamination.

- The use of alcohol or drugs is prohibited during the conduct of field operations.

- All equipment must be decontaminated or properly discarded before leaving the Site.

- Safety equipment (PPE) described in Section 6.0 will be required for all field personnel unless otherwise approved by the local/regional health and safety representative.

7.5 SITE SECURITY

SMC has on-Site 24 hours a day, seven days a week and all personnel entering and exiting the Site are required to sign in and out.

Equipment left on-Site during off hours must be locked, immobilized and/or otherwise secured to prevent theft or unauthorized use or access.

8.0 DECONTAMINATION

To the extent possible, the sampling methods and equipment have been selected to minimize both the need for decontamination and the volume of waste material to be generated. Used PPE will be disposed of as solid waste.

8.1 PERSONNEL DECONTAMINATION

Personnel decontamination will be accomplished by following a systematic procedure of cleaning and removal personal protective clothing (PPE). Contaminated PPE such as latex gloves, boot covers or Tyvek coveralls will be removed in the CRZ and disposed of. The following decontamination sequence in the re-useable PPE

8.1.1 Decontamination Sequence

Steps required will depend on the level of protection worn in accordance with Section 6.0:

1. Remove and wipe clean hard hat.
2a. Rinse outer boots and outer gloves (if used) of gross contamination.
2b. Scrub boots and gloves clean (if used).
2c. Rinse boots and gloves (if used).
3. Remove outer protective boots (if used).
4. Remove outer gloves (if used).
5. Remove inner (latex) gloves.

Boots that have been decontaminated or protected with disposable boot covers can be worn into the support zone.

8.2 EQUIPMENT DECONTAMINATION

To the extent possible, measures should be taken to prevent contamination of sampling and monitoring equipment. Sampling devices become contaminated, but monitoring instruments, unless they are splashed, usually do not. Once contaminated, instruments are difficult to clean without damaging them. Delicate instrument which cannot be easily decontaminated should be protected while it is being used. It should be placed in a clear plastic bag, and the bag taped and secured around the instrument. Openings are made in the bag for sample intake and exhaust.

If solvents are used for decontamination of equipment all safety precautions specified on the manufacturer's warning label and MSDS must be observed. Rinsate generated during the decontamination process will be containerized, labeled, sampled and properly disposed.

Drilling rigs, trucks, backhoes, and other heavy equipment are difficult to decontaminate. The method generally used is to wash them with water under high pressure or to scrub accessible parts with detergent/water solution under pressure. A decontamination pad will be constructed on-site by the drillers and/or test pit excavators for equipment decontamination.

In some cases, shovels, scoops and augers may require steam cleaning. Particular care must be given to those components in direct contact with contaminants. Personnel doing the decontamination must be adequately protected for the methods used since these can generate contaminated mists and aerosols.

9.0 MEDICAL MONITORING AND TRAINING REQUIREMENTS

9.1 MEDICAL

All personnel covered by this HASP must comply with 29 CFR 1910.120(f). Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any work on the Site covered by this HASP. Documentation of the examination must include a physician's statement indicating the employee is fit and capable of performing their duties.

9.2 TRAINING

All personnel covered by this HASP must have completed the appropriate training requirements specified in 29 CFR 1910.120 Hazard Communication and 29 CFR 1910.120(e). Each individual must have completed an annual 8-hour refresher training course and/or initial 40-hour training course within the last year prior to performing any work on the Site covered by this HASP.

9.3 SUBCONTRACTORS

Subcontractors to SMC and GZA will be required to provide to GZA specific written documentation that each individual assigned to this project has completed the medical monitoring and training requirements specified above. This information must be provided prior to their performing any work on site.

9.4 SITE SAFETY MEETINGS

Prior to the commencement of the RI activities, a Site safety meeting will be held to review the specific requirements of this HASP. Sign-off sheets will be collected at this meeting. Short safety refresher meetings will be conducted by GZA weekly (at a minimum) or as needed throughout the duration of excavation work. In addition, the GZA will ensure that Site visitors have had the required training in accordance with 29 CFR 1910.120 and will provide pre-entry safety briefings.

10.0 EMERGENCY ACTION PLAN

10.1 GENERAL REQUIREMENTS

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." Project personnel covered by this HASP may not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). Response actions will be limited to evacuation and medical/first aid as described within this section below.

The basic elements of an emergency evacuation plan include employee training, alarm systems, escape routes, escape procedures, critical operations or equipment, rescue and medical duty assignments, designation of responsible parties, emergency reporting procedures, and methods to account for all employees after evacuation.

10.1.1 Employee Information

General training regarding emergency evacuation procedures are included in the initial and refresher training courses as described above in Section 9.2 of this HASP. Also as described above in Section 9.4, employees must be instructed in the specific aspects of emergency evacuation applicable to the Site as part of the site safety meeting prior to the commencement of all on-Site activities. On-site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed.

10.1.2 Emergency Signal and Alarm Systems

An emergency communication system must be in effect at the Site. The most simple and effective emergency communication system in many situations will be direct verbal communications. The work area must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices can not be clearly perceived above ambient noise levels (i.e., noise from heavy equipment, drilling rigs, etc.) and anytime a clear line-of-sight can not be easily maintained amongst project personnel because of distance, terrain or other obstructions. When verbal communications must be supplemented, emergency signals (using hand-held portable airhorns) must be implemented.

10.2 EMERGENCY CONTACTS

In the event of an emergency, assistance may be requested using the following telephone numbers:

Police	911
Fire	911
Ambulance	911
Hospital	(716) 366-1111

Hospital Location

The hospital is Brooks Memorial Medical Center located at 529 Central Avenue, Dunkirk, New York. See Attachment C-3 (Map of Route to Hospital).

Other Emergency Contact Information

Special Metals Corporation – Bob Difondi	315-768-7530 (office)
(Primary)	315-525-4340 (cell)
Special Metals Corporation – Don Borowski	716-336-5663 ext. 229 (office)
(Secondary)	716-410-0741 (cell)
GZA GeoEnvironmental – Chris Boron	716-685-2300 ext. 3309 (office)
	716-570-5990 (cell)
GZA GeoEnvironmental – Ernest Hanna	716-685-2300 ext. 3301 (office)
	716-289-6610 (cell)

10.3 INCIDENT REPORTING PROCEDURES

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation should be initiated as soon as emergency conditions are under control. The purpose of this investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided. A copy of the Project Incident Investigation Form is included in Attachment C-1.

The investigation should begin while details are still fresh in the mind of anyone involved. The person administering first aid may be able to start the fact gathering process if the injured are able to speak. Pertinent facts must be determined. Questions beginning with who, what, when, where, and how are usually most effective to discover ways to improve job performance in terms of efficiency and quality of work, as well as safety and health concerns.

ATTACHMENT C-1

HEALTH AND SAFETY BRIEFING/SITE ORIENTATION RECORD
GZA INCIDENT INVESTIGATION FORM

Health and Safety Briefing /Site Orientation Record

Special Metal Corporation
Remedial Investigation/Feasibility Study
Dunkirk, New York

This is to verify that I, the undersigned, have been provided with a site (orientation) briefing regarding the safety and health considerations for the Remedial Investigation/Feasibility Study at the Special Metals Corporation facility, in Dunkirk, New York. I agree to abide by my project site-specific safety and health plan and other safety or health requirements applicable to the site.

Name (Print)	Signature	Company	Date

Site (orientation) briefing conducted by: _____ Date:_____

PROJECT INCIDENT INVESTIGATION FORM

Employee's Name | Company Name

Project Name | Project Location

Project Number

Building | Room | Other

Time Incident Occurred | Date

Supervisor's Name

Type of Case:

First Aid | Medical Treatment

Lost Time | Fatality | Property Damage

Occupational Illness

Describe the incident (What happened):

Describe the type of first aid or medical treatment provided:

Describe employee activity at time of incident:

Describe any tools or machinery involved:

Describe any personal protective equipment used by employee:

In your opinion, what the probable causes of the incident are:

In your opinion, how this incident could have been prevented:

Changes in process, procedure, or equipment that you would recommend:

How you would classify the apparent causes of this incident:

Human error	Equipment
Material	Personal Protective Equipment
Real Time	Other

Name and signature of person preparing this form:

Distribution:

Branch/Regional Office Manager:
Regional Health and Safety Coordinator:
Corporate Director of Health and Safety:
Other:

Note: If the space provided on this form is insufficient, provide additional information on separate paper and attach.

ATTACHMENT C-2

ACTION LEVELS

ATTACHMENT C-2
ACTION LEVELS

	Monitoring Type	Concentration	Instrument	Monitoring Location	Monitoring Frequency	Required Action
Real time Monitoring	Total VOCs	< 1 ppm	PID (10.2 ev)	EZ	At least every 15 minutes	Continue monitoring
Real time Monitoring	Total VOCs	> 5 ppm	PID (10.2 ev)	EZ	Continuous	Stop work and assess situation.
Community Air Monitoring (intrusive activities only)	Total VOCs	< 5 ppm above background	PID (10.2 ev)	Down wind of EZ	At least every 1 hour	Continue monitoring of EZ (potential source) and down wind perimeter of the EZ (work zone).
Community Air Monitoring (intrusive activities only)	Total VOCs	> 5 ppm above background	PID (10.2 ev)	Down wind of EZ	Continuous	Stop work. If organic vapors levels are >5ppm over background but less than 25 ppm over background at the perimeter of the work area than work can resume provided the organic vapor level 200 feet down wind of the work area or half the distance to the nearest structure is < 5ppm. If the level is > 5 ppm 200 feet downwind, follow procedures outlined in section 5.2.2 (Major Vapor Emissions) of this plan.
Community Air Monitoring (intrusive activities only)	Total VOCs	> 25 ppm above background	PID (10.2 ev)	Down wind of EZ	Continuous	Stop work. Follow air monitoring procedures outline in section 5.2.2 (Major Vapor Emissions) of this plan.

EZ= Exclusion Zone (work zone).
VOCs=Volatile organic compounds.

ATTACHMENT C-3

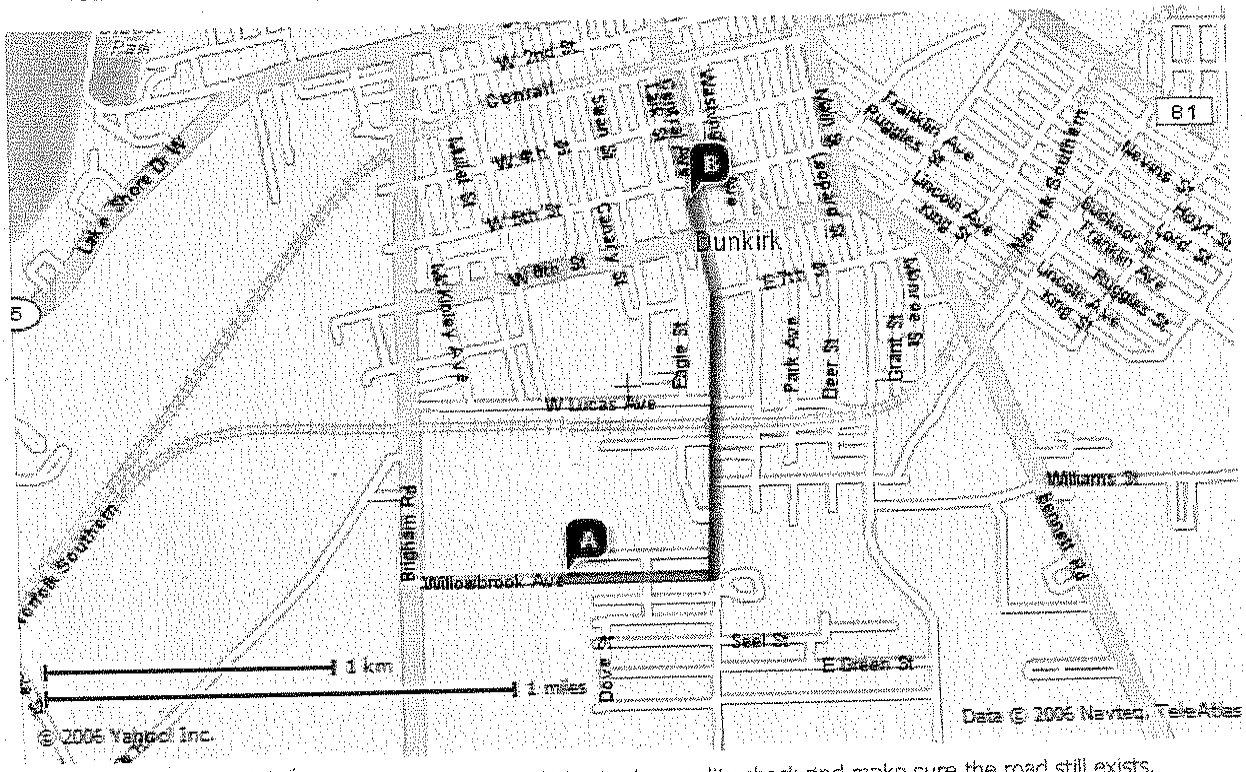
MAP OF ROUTE TO HOSPITAL

YAHOO! DRIVING DIRECTIONS

A Special Metals Corporation (716) 366-5663
100 Willowbrook Ave., Dunkirk NY

B Brooks Memorial Hospital (716) 366-1111 ★★★★★
529 Central Ave., Dunkirk, NY

Total Distance: NaN miles, Total Travel Time: NaN hours NaN mins



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

APPENDIX D

SITE-SPECIFIC QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN REMEDIAL INVESTIGATION/ FEASIBILITY STUDY SPECIAL METALS CORPORATION 100 WILLOWBROOK AVENUE DUNKIRK, NEW YORK SITE # 907031

PREPARED FOR:
Special Metals Corporation
100 Willowbrook Avenue
Dunkirk, New York

PREPARED BY:
GZA GeoEnvironmental of New York
Buffalo, New York

March 2007
File No. 21.0056196.20

SPECIAL METALS CORPORATION
QUALITY ASSURANCE PROJECT PLAN
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
DUNKIRK, NEW YORK

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SPECIAL METALS CORPORATION
QUALITY ASSURANCE PROJECT PLAN
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DUNKIRK, NEW YORK

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LIST OF ATTACHMENTS

1.0 INTRODUCTION

1.1 PURPOSE AND OBJECTIVE

The purpose of this Site-specific Quality Assurance Project Plan (QAPP) is to document planned investigative activities and establish the criteria for performing these activities at a pre-determined quality, and to review and summarize such work performed by others at or for the Special Metals Corporation (SMC) located at 100 Willowbrook Avenue in Dunkirk, New York (See Figure 1). The work will be completed by GZA GeoEnvironmental of New York (GZA) under an Order on Consent (Index# B9-0737-07-02; Site# 907031) between the New York State Department of Environmental Conservation (NYSDEC) and SMC. Under the Order on Consent, the "Site" or AOC has been identified as an approximate 100 foot by 100 foot area, as shown on Figure 2.

1.2 PROPERTY DESCRIPTION

The SMC facility consists of an approximate 8-acre industrial property located at 100 Willowbrook Avenue in Dunkirk, New York (see Figure 2) that is used for the manufacture of alloys for the aerospace industry (the "Forge facility"). The Forge facility is bordered by the former Al-Tech Specialty Steel site, which is currently on the New York State Registry of Inactive Hazardous Waste Disposal Sites (Registry Site #907022) (Al-Tech Site). The Al-Tech Site was issued an Order on Consent by NYSDEC in 1995, requiring investigation and remediation.

The Al-Tech Site borders the SMC property to the north, west and west. South of the Forge facility across Willowbrook Avenue are residential homes.

The tracts of land which make up the Forge facility and the Al-Tech site were formerly owned and operated by a single owner, Allegheny Ludlum Industries, Inc., which utilized the properties for the manufacturing of steel products. Allegheny Ludlum conveyed the Al-Tech Site in 1976 and retained the Forge facility, which was later conveyed to SMC in 1983. (The deed to SMC was from Allegheny International, Inc. and the deed indicates that the conveying entity was formerly known as Allegheny Ludlum Steel Corporation and Allegheny Ludlum Industries, Inc.)

1.3 PROJECT BACKGROUND

An expansion of the existing manufacturing building at the Forge facility for the installation of a new rotary forge has been completed. The new building addition covers an area of about 72-feet (north-south) by 87-feet to the west (see Figure 2).

As part of the building expansion, four trench excavations were completed along the western portion of the Site for the placement of subsurface utilities, as further defined below (see Figure 2). Soils impacted by the presence of polychlorinated biphenyls (PCBs) were encountered during

the installation of three of the four trenches (#2, #3 and #4 listed below).

1. A natural gas and water line trench excavation was done in August 2006 along the southern and western sides of the new building expansion, north of the AOC. Olfactory or visual evidence of impacted soil was not noted in this excavation. Additionally, impacted soils were not observed in the soil excavation for the building expansion foundation, located approximately 5 to 10 feet north of the natural gas and water line excavation.

2. An electrical conduit trench was excavated along the western portion of the property from an electrical pole to the building expansion area (the "Electric Trench"). During the Electric Trench excavation (August 30, 2006), odors were detected within a portion of the trench, shown on Figures 2, 3 and 4. SMC requested that its earthwork contractor stockpile the soil excavated from the trench on the asphalt surface and collect soil samples for analytical testing. Two soil samples were collected (designated Electric Trench 1 and Electric Trench 2, see Table 1).

   Results of the sampling indicated that PCBs were present at a concentration of 140 parts per million (ppm) and 31 ppm in samples Electric Trench 1 and Electric Trench 2, respectively. Other compounds were also detected, including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals (see Table 1). The detected levels of VOCs and SVOCs are relatively minor, but the PCB concentration of 140 ppm is above the 50 ppm threshold for the material to be considered hazardous waste in New York (6 NYCRR § 371.4(e)).

   The elevated detections of chromium (Electric Trench 1; Electric Trench 2; SP-1, 2 – 4 ft bgs; SP-6, 2 – 4 ft bgs; SP-9, 0 – 2 ft bgs; and SP-16, 2 – 4 ft bgs) are located within the AOC where impacted soils have been delineated for excavation and disposal. The results of testing of environmental soil samples, which were collected as part of the geotechnical work for the building expansion, are reflected in the development of a Soils and Site Management Plan (SSMP)[1] and included as Table 1 of the SSMP. These samples also had detections of total chromium above TAGM 4046,[2] but within the range of the TAGM 4046 Eastern USA Background levels.

   Analytical data from the adjacent Al-Tech Site[3], included the detection of chromium at levels consistently above TAGM 4046 at multiple locations around the property

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1 Prior to building expansion construction and as part of its due diligence process, SMC requested that GZA prepared a Soils and Site Management Plan (SSMP) that sets forth the procedures to be followed in the event contaminated or suspected contaminated soils and/or groundwater were encountered during the construction activities. A copy of the SSMP was previously provided by SMC to the Region 9 Office of NYSDEC.

2 NYSDEC, Technical and Administrative Guidance Memorandum (TAGM) HWR-94-4046: Determination of Soil Cleanup Objectives and Cleanup Levels, dated January 24, 1994 and revised December 20, 2000 (referred to herein as "TAGM 4046").

3 "Phase I RCRA Facility Investigation Report, Al Tech Specialty Steel Corporation, Dunkirk, New York, Volume 1 of 6" dated October 22, 1998. Prepared by Environmental Strategies Corporation.

and in many instances above Eastern USA Background levels. The presence of chromium may be attributed to the apparent presence of fill material that may have been used in construction prior to the time the Forge facility and the Al-Tech Site were separated in 1976.

Although it is the presence of PCBs that is compelling the performance of the IRM and will define the extent of the excavation, areas of elevated chromium concentrations will also be addressed in the removal of PCB-impacted soil. Soil samples will be collected to confirm the residual concentration of chromium following the IRM excavation to evaluate whether future exposure to the soils needs to be limited. The frequency for metals analysis in the confirmation soil samples is discussed in Section 5.0.

3. A trench excavation was dug on December 12, 2006 for a communication utility line along the western side of the existing building from the building expansion south to the Guard House (see Figure 2). The excavation is located in the eastern portion of the AOC. When olfactory evidence of impacted soil was noted, SMC had its earthwork contractor stockpile the soil on polyethylene sheeting. A composite sample (designated Trench Stockpile) was collected from the soil stockpile and tested for PCBs. Results of the sampling indicated that PCBs were present at a concentration of 370 ppm (see Table 1). Re-analysis of the sample by another laboratory indicated that PCBs were present at a concentration of 1,200 ppm (see Table 1)

4. A trench excavation was dug on December 13, 2006 for electric and communication utility lines along the southwestern portion of the property (see southern trench on Figure 2). The trench was excavated from the utility pole south to the back flow prevention meter along Willowbrook Avenue. During the course of this excavation, olfactory evidence of impacted soil was noted in a 2-foot wide by 3-foot long by 1-foot deep (6 cubic feet) area of the trench. This soil was removed and placed with soil stockpiled from the communication trench excavation (see Item 3 above) that was dug east of the AOC.

Subsurface soils probes were conducted on the following two separate events in the vicinity of the Electric Trench to delineate the extent of the PCB contamination (see Figure 3). Groundwater was not encountered in any of the soil probe work.

1. The first event was done on September 16, 2006 and consisted of 16 soil probes (SP-1 through SP-16) to an approximate depth of 12 feet below ground surface (bgs) or refusal, whichever came first.

2. The second event was completed on December 2, 2006 and consisted of 12 soil probes (SP-17 through SP-27) to an approximate depth of 12 feet bgs or refusal, whichever came first.

Soil samples were collected in two feet intervals and were field and headspace screened for organic vapors using an organic vapor meter (OVM) equipped with a photoionization detector (PID). No significant headspace readings were noted.

Select soil samples were field screened using a Dexsil L2000 DX PCB Analyzer. Based on the findings of the field screening, olfactory observations and for broader coverage, 56 soil samples were selected and sent for analysis. Fifty four (54) samples were analyzed for PCBs via USEPA Method 8082and a portion of the samples were also tested for RCRA 8 Metals via USEPA Method 60l0B/7470, Total Compound List (TCL) VOCs via USEPA Method 8260 and/or TCLP Chromium via USEPA Method 1311/6010B.

Results of the analysis from the delineation effort were consistent with the initial Electric Trench samples in that PCBs are the primary parameters of concern. VOC and SVOC contamination was detected but not at levels of concern.

Based on the foregoing, an AOC was defined, which is located within the area defined as the "Site" in the Order on Consent. This remedial area, which is shown on Figure 4, has an approximate 6,400 square foot footprint.

1.4 PROJECT DESCRIPTION

This QAPP is the quality control basis for the scope of work, which is further described in the Interim Remedial Measures (IRM) work plan (submitted to NYSDEC under separate cover) and Field Activity Plan (FAP) (Appendix B). The major tasks comprising the SMC IRM and Remedial Investigation and Feasibility Study are:

- Work Plan Development (IRM, FAP, Health and Safety Plan (HASP), and Quality Assurance Project Plan (QAPP).
- Soil excavation as part of the IRM
- Remedial Investigation (RI)
- Feasibility Study (FS)
- IRM, RI/RS Report

1.5 PROJECT MANAGEMENT AND ORGANIZATION

1.5.1 Personnel

The general responsibilities of key project personnel are listed below.

Bob DiFondi - SMC Environmental Coordinator, Overall Project Oversight
Ernest Hanna, P.E., GZA Principal, Technical Oversight and Technical Review
Chris Boron - GZA Project Manager, Implementation of IRM, RI/FS, Environmental Monitoring, Sample Collection & Report Preparation

1.5.2 Specific Tasks and Services

Subcontractor specialists for services relating to drilling and monitoring well installation, laboratory/analytical services, data validation services, and field surveying will be obtained. The planned subcontractors for utilization for the SMC IRM and RI/FS project in Dunkirk, New York are:

Laboratory Analysis -	To Be Determined. Laboratory will be NYSDOH Environmental Laboratory Accreditation Program (ELAP) Contract Laboratory Program (CLP) certified.
Data Validation -	Data Validation Services
Earthwork Contractor -	Pinto Construction.
Exploration Services -	SJB Services and TREC Environmental.
Surveying -	To Be Determined.

2.0 REMEDIAL INVESTIGATION PROCEDURES AND RATIONALE

As part of the SMC building expansion, four trench excavations were completed along the western portion of the Site for the placement of subsurface utilities (see Section 1.3). PCB impacted soils were encountered during in the excavation of three of those trenches. Other compounds were also detected, including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals. SMC has prepared an IRM Work Plan (submitted under separate cover) to address the PCBs identified during previous soil investigations. At the request of NYSDEC and under the Order on Consent, SMC plans going to collect soil and groundwater samples to determine if there is a potential for additional contamination to be present on the SMC property.

The additional soil and groundwater sampling locations will be investigated for potential volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals contamination on the SMC property. Environmental sampling and other field activities will be performed in general accordance with the appropriate techniques presented in the following guidance document.

- DRAFT DER-10: Technical Guidance for Site Investigations and Remediation; NYSDEC Division of Environmental Remediation, December 2002.

Field activities are described in the following sections and in the Field Activities Plan (Appendix B). Table 2 contains a list of the various media to be sampled and the expected number of samples for each matrix.

2.1 AIR SURVEILLANCE AND MONITORING

Air surveillance screening of volatile compounds for health and safety concerns will be

performed with a portable organic vapor meter (OVM) equipped with a photoionization detector (PID) that is using a 10.2 electron volt (eV) bulb. Monitoring will be done during invasive activities such as soil excavation (as part of the IRM), test borings and monitoring well installation, soil probes, well development, and sampling.

On-Site personnel will be outfitted in modified Level D personnel protection (hardhat, safety glasses, coveralls, work boots and latex gloves). Detections above background during air monitoring will require that the work be stopped until air monitoring levels decrease to background levels or until health and safety protocol are upgraded.

During the IRM soil excavation activities, in addition to the monitoring for organic vapors, particulate monitoring will also be conducted from the up wind and down wind directions. Additional details are presented in the HASP for the IRM, located in Appendix E of the IRM Work Plan (submitted under separate cover).

2.2 SOIL SAMPLING

Soil samples, with the exception of those for VOA, will be homogenized using a "coning and quartering" procedure. The soil will be removed from the sampling equipment and transferred to a clean surface (metal foil, steel pan, bowl, etc.) and, with the exception of VOA samples, mixed to provide a more homogeneous sample to the lab. The soil will be scraped from the sides, corners, and bottom of the clean surface, rolled to the middle, and thoroughly mixed until the material appears homogenous. An aliquot of this pile will then be transferred to the required sample containers, slightly tamped-down, filled to near the top of the container, and sealed with the appropriate cap. Any soil or sediment on the threads of the container will be wiped off prior to placing the cap on the sample container.

VOA samples will not be mixed but will be placed directly from the sampling equipment into the VOA vial sample container (a 4 oz. wide mouth jar), limiting headspace by compacting the soil into the container. Samples for VOA will be placed into the appropriate container as soon as possible (ideally within 15 seconds of collection) prior to making any field measurements or sample homogenization.

Excavation soil grab samples will be collected from the excavator bucket and transferred to the sample containers supplied by the laboratory using dedicated stainless steel spoons. Care will be taken to collect soil that has not come in contact with the backhoe bucket.

Soil probe and test boring soil will be sampled by opening the acetate tube (soil probes) or split spoon sampler (borings) , slicing the core (if intact) vertically down the middle with a sharp knife or similar blade, and scooping sufficient sample from the long axis of the split core with a decontaminated stainless steel spoon or spatula. If the core is not intact, then upon opening the barrel the contents can be scooped directly with the spoon or spatula. Samples for VOA will be collected and transferred to sample containers as soon as possible after opening and slicing the split spoon sample. If the core is not homogeneous, representative portions of each type of

material within the sampler will be collected. There may also be situations where it will be appropriate to grab-sample specific zones due to textural variations, the presence of apparent staining, or "hot spot" preliminary screening results.

Soil screening will be performed in two ways: by holding the probe of the OVM directly over the sample and by headspace screening with the OVM.

The OVM will be calibrated daily, in accordance to manufacturer's requirements using a standard gas. Prior to screening, the soil samples will be allowed to equilibrate to ambient temperature. For headspace screening, a hole will be made in the sample baggie and 30 ml of sample air will be withdrawn from the headspace using a gas tight syringe. The test sample will be immediately injected into the OVM and the peak response will be recorded. A response of less than 1 part per million (ppm) using this method is not considered significant and will be reported as not detected. A syringe blank will be run between test samples to check that extraneous contamination was not carried over.

2.3 TEST BORINGS

The drill rig, tools, augers, etc. will be clean prior to arrival on the SMC property. Hollow stem augers (HSA) used to during the test borings will be decontaminated between holes at an on-Site temporary decontamination pad constructed in an area acceptable to SMC. Decontamination will be accomplished using steam cleaning or high pressure wash equipment. Split spoon sampling devices will be cleaned manually with non-phosphate detergent (i.e., alconox) wash and potable water followed by a potable water rinse or a second steam cleaning followed by a distilled/deionized water rinse. All equipment will be cleaned prior to leaving the Site.

Test borings will be advanced into the overburden using a rotary drill rig and 4-1/4 inch inside diameter (ID) hollow stem augers (HSA). Drilling fluids will not be used. Samples from ahead of the HSA will be obtained by driving a 1-3/8 inch I.D. by 24 inch long split spoon sampler 24 inches with a 140 pound hammer falling 30 inches, in general accordance with ASTM D1586 (Standard Penetration Test). The HSAs will be advanced until refusal is encountered, if appropriate. Drilling fluids will not be used while advancing the HSA in the overburden, so groundwater can be identified, if encountered. GZA assumes the soil spoils generated from the test borings will not be contaminated. Procedures discussed in Section 2.9 will be utilized to determine the handling of the soil spoils.

Soil samples collected from the test borings will be classified in the field by visual examination in accordance with a modified Burmeister Classification System. Boring logs that identify appropriate stratification lines, blow counts (if applicable), sample identification, sample depth interval and recovery, and date will be generated for each test boring and included as an appendix to the RI/FS report.

The test borings will be observed by a field engineer/geologist and a field log for each boring/monitoring well will be created. Real time air monitoring will be conducted while test

borings are being completed using an OVM. Soil samples will be collected at two-foot intervals to the bottom of the boring for classification, laboratory analysis and screening with the OVM. Soil samples collected for analytical testing will typically be collected from contaminated soils or material, based on visual, olfactory, field screening (OVM) and engineering judgment that warrant further assessment.

2.4 SOIL PROBES

The soil probe rig, samplers, tools, etc. will be clean prior to arrival on the SMC property. Sampling devices (i.e., marcocore sampler) will be cleaned manually with non-phosphate detergent (i.e., alconox) wash and potable water followed by a potable water rinse or steam cleaning followed by a distilled/deionized water rinse. A new acetate sample liner will be used to collect each subsurface soil sample. The equipment will be cleaned prior to leaving the Site.

The soil probes will be advanced into overburden soils utilizing direct push technology via a hydraulic hammer mounted on a truck or track mounted rig equipped with a 2-inch outer diameter by 48-inch long macrocore sampler. Soil probes will be advanced to a depth of about 12 feet bgs, or refusal, which ever is encountered first. Should it be required that additional depth is needed to explore the vertical extent of potential contamination or waste material, the probe depth will be extended unless sampler refusal is encountered. Soil samples will be collected from the soil probes for classification, laboratory analysis and screening with the OVM. Soil samples will be collected at two-foot intervals to the bottom of the probes. Samples collected for analytical testing will typically be collected from contaminated soils or material, based on visual, olfactory, field screening and engineering judgment that warrant further analysis. The soil probe unit will include a hydraulic push/hammer that will be used to advance the macrocore sampler. No drilling fluids will be used during soil probe work.

Soil samples will be classified by GZA in the field by visual examination using the Modified Burmeister Classification System. A log of each boring will be prepared with appropriate stratification lines, blow counts, sample identification, sample depth interval, recovery and date.

2.5 MONITORING WELL INSTALLATION

Monitoring wells will be constructed of 2-inch ID flush coupled Schedule 40, polyvinyl chloride (PVC) riser and screen. The actual installation depth of the screen will be selected based the depth at which bedrock and groundwater is encountered (the zone to be monitored). The screen will consist of a maximum 10-foot long section with approximately 3-foot of the screen extending above the groundwater table and 7-feet below. The actual length of the well screen may vary depending upon subsurface conditions encountered. A schematic of the well construction detail is provided as Figure 6.

Well materials will have the following specifications:

- Well screens shall be 0.01-inch factory slotted.
- Filter material shall have a D-30 (i.e., the soil particle size at which 30 percent of the soil particles are finer) of about 0.2 mm.

Following determination of the monitoring zone and placement of the assembled screen and riser, the borehole will be backfilled. Generally, this will include the placement of a sand filter around the well screen such that the sand extends a minimum of 1-foot above the top of the screen. A minimum 3-foot layer of bentonite pellets will be placed above the sand filter and allowed to hydrate. A mixture of cement/bentonite water extending to about 3-feet below ground surface (bgs) will be placed above the bentonite seal. The monitoring well will be completed by placing a locking steel casing or flush mounted road box over the riser. Concrete will be then placed in the borehole around the protective casing and sloped away from the casing.

All materials used in well installation will be kept in an on-Site storage area for use as necessary. All items will be brought to the Site clean and in like-new condition and kept clean and in satisfactory condition for potential use. Well materials (screen and riser pipe), will be cleaned on-Site prior to use, if necessary. The cleaning procedure is described in Section 2.9.4. Following cleaning, well materials will be wrapped in clean plastic sheeting for transportation to the well location. Site personnel handling well equipment after cleaning are required to wear clean gloves.

The monitoring wells will be developed to remove the fines and develop the sand filter pack. Hydraulic conductivity testing, using either rising or falling head test method, will be done to assess whether the monitoring well is functioning and provide hydrologic information that will aid in evaluating subsurface conditions. Water level measurements will be collected to interpret groundwater flow direction. Water generated during development and purging prior to sampling will be containerized until the analytical results of the groundwater samples are received. If analytical results are non-detect, the drummed water will be discharged to the ground surface at the Site. If minor contaminants are present but meet the requirements of the City of Dunkirk wastewater treatment facility, drummed water will be discharged to the sanitary sewer. If analytical results do not permit discharge to the sanitary sewer, drummed water will be sampled and characterized for proper disposal.

2.6 GROUNDWATER SAMPLING

Groundwater sampling of monitoring wells includes initial recording of data, purging of the well, and collection of the sample. The text below addresses these items, as well as filtration of water samples for metals. Installation of monitoring wells is discussed in Section 2.6.

2.6.1 Initial Data Recording

Groundwater sampling begins by locating the well to be sampled and recording the appropriate field data, as summarized below:

- Observations of the well (conditions of cap, collar, casing, etc.) and the ambient conditions (weather; surrounding area; date and time; sampling crew members and observers if any. See Section 5.1 for information to be recorded in the field notebook.).
- Unlocking the well cover, surveying ambient air, upwind air, and air directly at the top of the well.
- Taking a water level measurement, noting the reference point from which the measurement is made (typically a notch on the inner casing).
- Sounding the bottom of the well and agitating/loosening accumulated silt/sediment (this assumes sounding indicates minimal sediment accumulation and no need for additional well development).
- Record the standing volume of water within the monitoring well.

2.6.2 Well Purging/Evacuation

After the initial observations are recorded, the well is then purged of at least three volumes of standing water. Purging will be accomplished by bailing or pumping to remove water from the wells. Prior to removal of the first volume of water, and after each subsequent volume of water removed, field parameters (pH, turbidity, temperature and specific conductance) will be measured and recorded to document the presence of representative water in the well (i.e., equilibration to steady readings), or as an indicator that conditions have not reached a steady state. Prior to sample collection, the variability of field testing results between successive well volumes should not vary by more than 10% for turbidity and specific conductance, $\pm$0.2 units for pH, and $\pm$0.5 ^{o}C for temperature, with a minimum of three well volumes purged, and an upper limit of five volumes. The turbidity objective is less than 50 nephelometric turbidity units (NTU); if other parameters are stable but turbidity is still greater than 50 NTU, purging will continue until 50 NTU is achieved, or five well volumes are evacuated , or the well is purged to dry-like conditions (whichever comes first).

After the water level has returned to its pre-purge level (or within a maximum of two hours, if the well has recharged sufficiently to allow sampling), samples will be collected from the middle of the screened portion of the well for overburden wells. If the water level is slow to recharge and does not reach to its pre-purge level within two hours, then samples can be collected after sufficient water has recharged, and the degree of recharge indicated in field notes with time and depth to water noted.

2.6.3 Groundwater Sampling

Low-flow sampling techniques will be used for sample collection. A peristaltic pump and new disposable high density polyethylene (HDPE) tubing will be used at each location. Tubing and sampling equipment will be clean upon arrival at the Site. Low-flow sampling will be used to minimize water/sediment agitation within the well.

Sample Collection

The first sample collected will be for metals analysis. Volatile organics, semi-volatile organics and other analyses will follow.

Two or three (depending on laboratory-specific requirements) 40-ml glass vials (with Teflon septa) will be used to collect samples for volatile organic analysis (VOA). The vials will be filled from the tubing into the vial until overflowing and a convex meniscus is formed. The vial will then be capped, inverted and inspected for air pockets/bubbles that may be present on the inside surfaces of the vial. If any bubbles or aggregate of bubbles are observed, then a new sample will be obtained either using a new vial or the same vial.

Sample bottles are discussed in more detail in Section 3.2. [Note: If filtered samples are to be analyzed, both a filtered and unfiltered sample shall be collected.]

2.7 HYDRAULIC ASSESSMENT

Hydraulic assessment includes the completion of hydraulic conductivity tests and measurement of water levels in monitoring wells.

Hydraulic conductivity testing will be done using either rising or falling head methods and will be done to assess whether the monitoring well is functioning and provide hydrologic information that will aid in evaluating subsurface conditions. The rising or falling head tests will be completed using a slug to displace water within the well or by removing water from the well with a bailer and/or pump. The recovery of the initial water level is measured with respect to time. Hydraulic conductivity data obtained will be evaluated using procedures presented in "The Bouwer and Rice Slug Test - An Update", Bouwer, H., Groundwater Journal, Vol. 27, No. 3, May-June 1989.

Water level measurements will include measuring the depth of water within the wells from a monitoring point of known elevation established at the top of the well riser. The depth to water will be measured relative to the monitoring point. The water elevations will then be calculated based on the known elevation and measured depth to water. Wells will be allowed to equilibrate a minimum of 24 hours after purging or testing prior to measuring the water level.

2.8 EQUIPMENT DECONTAMINATION

To avoid cross contamination, sampling equipment (defined as any piece of equipment which may contact a sample) will be decontaminated according to the following procedures outlined below.

2.8.1 Non-Dedicated Reusable Equipment

Non-dedicated reusable equipment such as split spoons, stainless steel mixing bowls; pumps used for groundwater evacuation (and sampling, if applicable) etc. will require field decontamination. Acids and solvents will not be used in the field decontamination of such equipment. Decontamination typically involves scrubbing/washing with a laboratory grade detergent (e.g. alconox) to remove visible contamination, followed by potable (tap) water and analyte-free water rinses. Tap water may be used from any treated municipal water system; the use of an untreated potable water supply is not an acceptable substitute. Equipment should be allowed to dry prior to use. Steam cleaning or high pressure hot water cleaning may be used in the initial removal of gross, visible contamination. Tubing will not be re-used (new tubing will be used for each well).

2.8.2 Disposable Sampling Equipment

Disposable sampling equipment includes latex gloves; disposable bailers; tubing associated with groundwater sampling/purging pumps; etc. Such equipment will not be field-decontaminated. Disposable spoons or spatulas purchased from non-environmental equipment vendors (such as restaurant supply houses) will be decontaminated by scrubbing/washing with a laboratory grade detergent followed by potable water and analyte-free water rinse; or by using steam or high pressure hot water rinse, followed by analyte free water rinse. The equipment will be allowed to air dry prior to use.

2.8.3 Heavy Equipment

Certain heavy equipment such as excavator buckets, drilling augers, macrocore samplers etc. may be used to obtain samples. Such equipment will be subject to high pressure hot water or steam cleaning prior to use. A member of the sampling team will visually inspect the equipment to check that visible contamination has been removed by this procedure prior to sampling. The excavator bucket, drilling augers, and macrocore sampler will be cleaned between test pit, boring or probe locations. Decontamination between test pits, borings and soil probes will be done using alconox and water to clean the samplers, unless disposable acetate sleeves are used. Samples submitted for analysis will not include material, which has been in contact with the backhoe bucket/drilling augers.

The excavator bucket used during the IRM soil activities will be staged on a polyethylene pad when not in use and will be decontaminated at the end of the project. A second bucket will be available at Site for placement of backfill material. The excavation work will be done in a

manner or provisions will be made (i.e., plywood) to keep the tracks of the excavator from coming in contact with potential waste material.

Soil and water generated from the decontamination of the excavator bucket and sampling equipment used during the IRM will be containerized and disposed of as hazardous waste. Other soil and water generated as part of the RI will be containerized and disposed of based on sampling and analysis as noted in Section 2.9.

2.8.4 Monitoring Well Construction Materials

Well construction materials including well screens, well riser and end caps/tailpieces will be new upon arrival to the Site. If the materials appear to dirty or the wrappings are torn, the material will be cleaned prior to installation by steam cleaning or high pressure hot water rinse, if necessary.

2.9 STORAGE AND DISPOSAL OF INVESTIGATION-DERIVED WASTE

The sampling methods and equipment have been selected to limit both the need for decontamination and the volume of waste material to be generated. Investigation-derived material (e.g., drill cuttings and purge water) generated during this project and not be returned to the boreholes or test pits, will be drummed and stored on-Site for future disposal unless the soil appears to be uncontaminated based on olfactory evidence and measurements from an organic vapor meter (OVM) that is equipped with a photo-ionization detector (PID). These measurements should be less than 1 part per million (ppm) in headspace screening[4] and the soils should appear to be visually clean. If less than 1 ppm, the material will be staged on the ground at a location acceptable to SMC. Prior to movement off-site, the soils will be characterized by analysis.

Purge water and well development water will be containerized in 55-gallon drums and stored until analytical results are received. If analytical results are non-detect, the drummed water will be discharged to the ground surface at the Site. If minor contaminants are present but meet the requirements of the City of Dunkirk wastewater treatment facility, drummed water will be discharged to the sanitary sewer. If analytical results do not permit discharge to the sanitary sewer, drummed water will be sampled and characterized for proper disposal.

Personal protective equipment (PPE) and disposable sampling equipment generated as part of the RI activities will be placed in plastic garbage bags for disposal as a non-hazardous waste.

PPE (i.e., latex gloves, Tyvek suits) generated as part of the IRM activities will be disposal of as hazardous waste along with the soil being excavated.

Decontamination Fluids

[4] Headspace screening involves field measurements of the air volume or headspace above a soil sample placed in a plastic baggie, plastic or glass jar. Field measurements are made for total volatile organic compounds using a PID properly calibrated.

Wash water, rinse water and detergent generated as part of the RI activities, will be contained within the decontamination pad and allowed to evaporate. If the volume of decontamination liquids generated requires removal due to overfilling of the decontamination area, the liquid will be containerized in 55-gallon drums and sampled. If analytical results are non-detect, the drummed water will be discharged to the ground surface at the Site. If minor contaminants are present but meet the requirements of the City of Dunkirk wastewater treatment facility, drummed water will be discharged to the sanitary sewer. If analytical results do not permit discharge to the sanitary sewer, drummed water will be sampled and characterized for proper disposal.

Wash water, rinse water and detergent generated as part of the IRM activities will be containerized in 55-gallon drums, sampled and disposed of hazardous waste.

2.10 SURVEY

A licensed land surveyor will be subcontracted to perform survey activities. The survey of the Site will include a survey of the investigation exploration locations and development of a base map. The base map will include property lines, buildings, fence lines, and other key site features. The Site property lines will be obtained from a survey map, "ALTA/ASCM Land title Survey for Special Metals Corporation, City of Dunkirk, County of Chautauqua, State of New York, Job No. 83-12-22 & 980812, Revised December 26, 2006" prepared by Michael D. Masters, Licensed Land Surveyor, NY No. 50004.

The vertical and horizontal locations of the new exploration locations and monitoring wells will be measured after completion of the field activities. GZA will also identify other Site features, structures, etc. where horizontal and/or vertical measurements are required. These locations will be flagged by GZA. Vertical measurements will include the ground surface at exploration locations, plus the top of casing and top of riser at monitoring well locations. The top of riser will serve as the water level monitoring point. Vertical measurements will be made relative to the National Geodetic Vertical Datum. Monitoring point measurements and top of protective casing measurements will be accurate to within 0.01 foot. Horizontal measurements and ground surface elevations will be accurate to within 0.1 foot.

3.0 SAMPLE HANDLING

3.1 SAMPLE IDENTIFICATION/LABELING

Samples will be assigned a unique identification using the sample location or other sample-specific identifier. Sample identification will be limited to seven alphanumeric characters to be consistent with the limitations of the laboratory tracking/reporting software. The general sample identification format follows.

ST - XX - Y-Y

Where:

ST	=	Sample Type (i.e., soil probe, test pit, monitoring well)
XX	=	Numeric character indicating the number from which the sample was obtained.
Y-Y	=	Depth of the sample.

Quality control (QC) field duplicate samples will be submitted blind to the laboratory; a fictitious sample identification will be created using the same system as the original. The sample identifications (of the original sample and its field duplicate) will be marked in the project specific field book and on the copy of the chain-of-custody kept by the sampler and copied to the project manager. Affixed to each sampling container will be a non-removable label on which the following information will be recorded with permanent water-proof ink:

- Site name, location, and job number;
- Sample identification code;
- Date and time;
- Sampler's name;
- Preservative; and,
- Requested analyses.

3.2 SAMPLE, BOTTLES, PRESERVATION, AND HOLDING TIME

Table 3 specifies the analytical method, matrix, holding time, containers, and preservatives for the various analysis to be completed as part of the RI. Sample bottle requirements, preservation, and holding times are discussed further below.

3.2.1 Sample Bottles

The selection of sample containers used to collect samples is based on the criteria of sample matrix, analytical method, potential contaminants of concern, reactivity of container material with the sample, QA/QC requirements and regulatory protocol requirements. Sample bottles will be provided by the analytical laboratory and will conform to the requirements of USEPA's Specifications and Guidance for Contaminant-Free sample Containers.

Specifications and Guidance for Contaminant-Free Sample Containers.

3.2.2 Sample Preservation

Samples will be preserved as indicated below and summarized on Table 3.

Soil Samples

Analytical (all analysis) - cooled to 4 °C; no chemical preservatives added.

Aqueous Samples:

Volatile Organics (VOCs) - cooled to 4 °C; no chemical preservatives added.
Semi-volatile organics - cooled to 4 °C; no chemical preservatives added.
PCBs/Pesticides - cooled to 4 °C; no chemical preservatives added.
Metals - HNO_3 to pH $\leq$2; cool to 4 °C.

Chemical preservatives will be added to the sample bottles (prior to sample collection) by the analytical laboratory. The pH of water samples will be spot-checked in the field and additional preservative will be added as needed. Sample preservation is checked upon sample receipt by the laboratory; this information is reported to GZA's Quality Assurance Officer (QAO) within two business days of sample receipt. If it appears that the level of chemical preservation added is not adequate, laboratory preservative preparation and addition will be modified or additional preservative will be added in the field by the sampling team.

3.2.3 Holding Times

Holding times are judged from the verified time of sample receipt (VTSR) by the laboratory; samples will be shipped from the field to arrive at the lab no later than 48 hours from the time of sample collection. Holding time requirements will be those specified in the NYSDEC ASP; it should be noted that for some analyses, these holding times are more stringent than the holding time for the corresponding USEPA method.

Although trip blanks are prepared in the analytical laboratory and shipped to the Site prior to the collection of environmental samples, for the purposes of determining holding time conformance, trip blanks will be considered to have been generated on the same day as the environmental samples with which they are shipped and delivered. Procurement of bottles and blanks will be scheduled to prevent trip blanks from being stored for excessive periods prior to their return to the laboratory; the goal is that trip blanks should be held for no longer than one week prior to use.

3.3 CHAIN OF CUSTODY AND SHIPPING

A chain-of-custody form will trace the path of sample containers from the project site to the laboratory. A sample Chain of Custody is included in Attachment D-1, Field Forms. Sample/bottle tracking sheets or the chain-of-custody will be used to track the containers from the laboratory to the containers' destination. The project manager will notify the laboratory of upcoming field sampling events and the subsequent transfer of samples. This notification will include information concerning the number and type of samples, and the anticipated date of arrival. Insulated sample shipping containers (typically coolers) will be provided by the

laboratory for shipping samples. All sample bottles within each shipping container will be individually labeled with an adhesive identification label provided by the laboratory. Project personnel receiving the sample containers from the laboratory will check each cooler for the condition and integrity of the bottles prior to field work.

Once the sample containers are filled, they will be immediately placed in the cooler with bagged ice or synthetic ice packs to maintain the samples at 4 °C. The field sampler will indicate the sample designation/location number in the space provided on the chain-of-custody form for each sample. The chain of custody forms will be signed and placed in a sealed plastic Ziploc bag in the cooler. The completed shipping container will be closed for transport with shipping tape, and one paper seal affixed to the lid. The seal must be broken to open the cooler and will indicate tampering if the seal is broken before receipt at the laboratory. The cooler will be shipped by an overnight delivery service to the laboratory. When the laboratory receives the coolers, the custody seals will be checked and lab personnel will sign the chain-of-custody form.

4.0 DATA QUALITY REQUIREMENTS

4.1 ANALYTICAL METHODS

Analyses for volatile and semi-volatile organic compounds, and inorganics (metals and cyanide) will utilize NYSDEC Analytical Services Protocol (ASP) Superfund Contract Laboratory Program (CLP) methods:

CLP Volatile Organics	NYSDEC Method 95-1
CLP Semi-volatile Organics	NYSDEC Method 95-2
CLP PCBs/Pesticides	NYSDEC Method 95-3
CLP Metals	NYSDEC CLP-M Metals Methods[(1)]
Total Organic Carbon	SW846 Method 9060

[(1)] Analysis for arsenic, lead, selenium, and thallium will be by atomic absorption methods (CLP-M methods 206, 239, 270, and 279, respectively; or trace ICP if contract required detection limits (CRDLs) can be achieved. Analysis for mercury will be by CLP-M Method 245.1 or 245.2 (aqueous samples) or 245.5 (soil/sediment samples). Analysis for other TAL metals will be done by inductively coupled plasma (ICP), Method 200.7, CLP-M or by trace ICP.

Analytical methods used during this project are presented in the NYSDEC Analytical Services Protocol (ASP), June 2000. Specific methods and references for each parameter are shown above. It is the laboratory's responsibility to be familiar with this document, procedures and deliverables within.

For the SMC IRM and RI investigation, the laboratory will be determined at a later date. The laboratory will be certified by the NYSDOH Environmental Laboratory Accreditation Program (ELAP) and be in good standing for all the ASP/CLP parameter groups. Due to the need for 24-hour turn around time for analysis during the IRM work, the laboratory will be selected based on its ability to meet the project needs at the time the work is to be completed.

4.2 QUALITY ASSURANCE OBJECTIVES

Data quality objectives (DQOs) for measurement data in terms of sensitivity and the PARCC parameters (precision, accuracy, representativeness, comparability, and completeness) are established so that the data collected are sufficient and of adequate quality for their intended uses. Data collected and analyzed in conformance with the DQO process described in this QAPP will be used in assessing the uncertainty associated with decisions related to this Site.

4.2.1 Sensitivity

The sensitivity or detection limit desired for each analysis or compound is established by NYSDEC as part of the Analytical Services Protocol (ASP) Contract Laboratory Program (CLP). It is understood that such limits are dependent upon matrix interferences.

Volatile Organics (ASP method 95-1). The Contract Required Quantitation Limits (CRQLs) for all analytes is 10 µg/L (10 µg/kg for soil). The reporting limit for non-detected analytes is the CRQL. Based on laboratory method detection limit (MDL) studies, detected analytes will be reported down to 1 ug/L; analytes reported at concentrations below the CRQL will be flagged "J" (estimated) by the laboratory.

Semi-volatile Organics (ASP method 95-2). The CRQLs for semi-volatile organic analytes is 10 µg/L (330 µg/kg for soil) for most analytes. (The CRQLs are 25 µg/L [aqueous] and 800 µg/kg [soil] for a few semi-volatiles.) The reporting limit for non-detected analytes is the CRQL. Detected semi-volatile analytes will be reported down to about one-tenth of the CRQL; analytes reported at concentrations below the CRQL will be flagged "J" (estimated) by the laboratory.

PCBs/Pesticides (ASP Method 95-3). The CRQLs for pesticides range from 0.05 ug/L to 0.5 ug/L, except for toxaphene. Toxaphene has a CRQL of 5.0 ug/L Corresponding soil CRQLs are 1.7 ug/kg to 17 ug/kg (170 ug/kg for toxaphene). CRQLs for PCBs are 1 ug/L (33 ug/kg for soil) except for Aroclor 1221, for which the CRQL is 2 ug/L (67 ug/kg soil). The reporting limit for detected and non-detected results is the CRQL.

Inorganics (Metals). The CRDLs for inorganics are analyte-specific. The laboratory is required to perform an instrument detection limit (IDL) study quarterly; the reporting limit for non-detected metals is the IDL. Metals concentrations between the IDL and the CRDL are flagged "J" by the laboratory.

4.2.2 Precision

The laboratory objective for precision is to equal or exceed the precision demonstrated for the applied analytical methods on similar samples. Precision is evaluated by the analyses of laboratory and field duplicates. Laboratory duplicate analyses will be performed once for every twenty samples for metals as specified in the NYSDEC ASP-CLP.

Relative Percent Difference (RPD) criteria, prescribed by the NYSDEC, and those determined from laboratory performance data, are used to evaluate precision between duplicates. A matrix spike duplicate will be performed once for every twenty samples for volatile organics.

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value. Precision is usually stated in terms of standard deviation but other estimates such as the coefficient of variation, relative standard deviation, range (maximum value minus minimum value), and relative range are common, and may be used pending review of the data.

The overall precision of measurement data is a mixture of sampling and analytical factors. Analytical precision is easier to control and quantify than sampling precision; there are more historical data related to individual method performance and the "universe" is not limited to the samples received in the laboratory. In contrast, sampling precision is unique to each site or project.

Overall system (sampling plus analytical) precision will be determined by analysis of field duplicate samples. Analytical results from laboratory duplicate samples will provide data on measurement (analytical) precision.

Precision will be determined from field duplicates, as well as laboratory matrix duplicate samples for metals analyses, and matrix spikes and matrix spike duplicates for organic analyses; it will be expressed as the relative percent difference (% RPD):

$$\% \text{ RPD} = 100 \times 2(X_1 - X_2) / (X_1 + X_2)$$

where:

X_1 and X_2 are reported concentrations for each duplicate sample and subtracted differences represent absolute values.

Criteria for evaluation of laboratory duplicates are specified in the applicable methods. The objective for field duplicate precision is $\leq$ 50% RPD for all matrices.

4.2.3 Accuracy

The laboratory objective for accuracy is to equal or exceed the accuracy demonstrated for the applied analytical method on similar samples. Percent recovery criteria, published by the NYSDEC as part of the ASP, and those determined from laboratory performance data, are used to evaluate accuracy in matrix (sample) spike and blank spike quality control samples. A matrix spike and blank spike will be performed once for every sample delivery group (SDG) as specified in the ASP-CLP. This will apply to inorganics and volatile and semi-volatile organics analyses. Other method-specific laboratory QC samples (such as laboratory control samples for metals, and continuing calibration standards) may also be used in the assessment of analytical accuracy. Sample (matrix) spike recovery is calculated as:

$$\%R = (SSR-SR)/SA \times 100,$$

where

SSR = Spiked Sample Result
SR = Sample Result, and
SA = Spike Added

Accuracy measures the bias in a measurement system. It is difficult to measure accuracy for the entire data collection activity. Accuracy will be assessed through use of known QC samples.

Accuracy values can be presented in a variety of ways. Accuracy is most commonly presented as percent bias or percent recovery. Percent bias is a standardized average error, that is, the average error divided by the actual or spiked concentration and converted to a percentage. Percent bias is unitless and allows accuracy of analytical procedures to be compared.

Percent recovery provides the same information as percent bias. Routine organic analytical protocol requires a surrogate spike in each sample. Surrogate recovery will be defined as:

$$\% \text{ Recovery} = (R/S) \times 100$$

where

S = surrogate spike concentration
R = reported surrogate concentration

Recovery criteria for laboratory spikes and other laboratory QC samples through which accuracy may be evaluated are established in the applicable analytical method.

4.2.4 Representativeness

The representativeness of data is only as good as the representativeness of the samples collected. Sampling and handling procedures, and laboratory practices are designed to provide a standard set of performance-driven criteria to provide data of the same quality as other analyses of similar matrices using the same methods under similar conditions. Representativeness will be determined by a comparison of the quality controls for these samples against data from similar samples analyzed at the same time.

4.2.5 Comparability

Comparability of analytical data among laboratories becomes more accurate and reliable when all labs follow the same procedure and share information for program enhancement. Some of these procedures include:

- Instrument standards traceable to National Institute of Standards and Technology (NIST), the U.S. Environmental Protection Agency (EPA), or the New York State Departments of Health or Environmental Conservation;
- Using standard methodologies;
- Reporting results for similar matrices in consistent units;
- Applying appropriate levels of quality control within the context of the laboratory quality assurance program; and,
- Participation in inter-laboratory studies to document laboratory performance.

By using traceable standards and standard methods, the analytical results can be compared to other labs operating similarly. The QA Program documents internal performance. Periodic laboratory proficiency studies are instituted as a means of monitoring intra-laboratory performance.

4.2.6 Completeness

The goal of completeness is to generate the maximum amount possible of valid data. The highest degree of completeness would be to find all deliverables flawless, valid and acceptable. The lowest level of completeness is excessive failure to meet established acceptance criteria and consequent rejection of data. Due to the relatively large number of data points to be generated during the IRM and RI/FS process, the completeness goal is 95% useable data. It is acknowledged that this goal may not be fully achievable; for example, individual analytes (e.g., 2-hexanone) may be rejected within an otherwise acceptable analysis. The impact of rejected or unusable data will be made on a case-by-case basis. If the RI/FS can be completed without the missing datum or data, no further action would be necessary. However, loss of critical data may require resampling or reanalysis.

4.3 FIELD QUALITY ASSURANCE

Blank water generated for use during this project must be "demonstrated analyte-free". The criteria for analyte-free water is based on the EPA assigned values for the Contract Required Detection Limits (CRDLs) and CRQLs. If the levels of detection needed on a specific site are lower than the CLP CRDLs/CRQLs, then those levels are used to define the criteria for analyte-free water.

Volatile organics	< 10 µg/l
Semi-volatile organics	< 10 µg/l or 25 µg/l (analyte specific)
PCBs/Pesticides	<CRQL (analyte specific)
Inorganics	< CRDL

However, specifically for the common laboratory contaminants (acetone and 2-butanone) the allowable limits are five times the respective CRQLs. For methylene chloride, the limit is 2.5 times the CRQL.

The analytical testing required for the water to be demonstrated as analyte free must be performed prior to the start of sample collection; thus, blank water will be supplied by the laboratory.

4.3.1 Equipment (Rinsate) Blanks

Equipment blanks consist of demonstrated, analyte-free water that show if sampling equipment has the potential for contaminant carryover to give a false impression of contamination in an environmental sample. When blank water is used to rinse a piece of sampling equipment (before it is used to sample), the rinsate is collected and analyzed to see if sampling could be biased by contamination from the equipment.

Field Equipment (Rinsate) blanks for HDPE tubing: For initial sampling, as well as at subsequent rounds of sampling when tubing is used, at least one piece of tubing will be used to generate equipment (rinsate) blanks during groundwater sampling. Disposable tubing will be obtained from a single vendor for this project. One rinsate blank will be collected per groundwater sampling event.

One rinsate blank will be collected for every 20 soil probe samples collected or one per week whichever is more frequent. The rinsate blanks will be collected from the acetate liner used to collect the samples.

4.3.2 Field Duplicate Samples

Field duplicate samples are used to assess the variability of a matrix at a specific sampling point and to assess the reproducibility of the sampling method. For soil samples, these samples are separate aliquots of the same sample; prior to dividing the sample into "sample" and

"duplicate" aliquots, the samples are homogenized (except for the VOC aliquots, which are not homogenized). Aqueous field duplicate samples are second samples collected from the same location, at the same time, in the same manner as the first, and placed into a separate container (technically, these are co-located samples). Each duplicate sample will be analyzed for the same parameters as the original sample collected that day. The blind field duplicate Relative Percent Difference (RPD) objective will be ±50% percent RPD for all matrices. Field duplicates will be collected at a frequency of 1 per 20 environmental samples for both matrices (aqueous and non-aqueous) and test parameters.

4.3.3 Split Samples

Split samples are used for performance audits or inter-laboratory comparability of data. A split sample will be defined as at least two separate sub-samples taken from a single original sample, which has been thoroughly mixed or homogenized prior to the formation of the split samples. The exception to this is samples for volatile organics analysis, which will not be homogenized. Collection of split samples is not planned.

4.3.4 Trip Blanks

The purpose of a VOC trip blank (using demonstrated analyte-free water) is to place a mechanism of control on sample bottle preparation and blank water quality, and sample handling. The trip blank travels from the lab to the site with the empty sample bottles and back from the site with the collected samples. There will be a minimum of one trip blank per shipment containing aqueous samples for volatile organic compounds (VOCs) analysis. Trip blanks will be collected only when aqueous volatile organics are being sampled and shipped; except that a trip blank is not required when the only aqueous samples in a shipment are QC samples (rinsate blanks).

4.4 FIELD TESTING QC

Field testing of groundwater will be performed during purging of wells prior to sampling for laboratory samples. Field QC checks of control limits for pH, specific conductance (conductivity) and turbidity are detailed below. The calibration frequencies discussed below are the minimum. Field personnel can and should check calibration more frequently in adverse conditions, if anomalous readings are obtained, or subjective observations of instrument performance suggest the possibility of erroneous readings.

4.4.1 pH

The pH meter is calibrated twice daily (prior to initial use and midday), using two standards bracketing the range of interest (generally 4.0 and 7.0). If the pH QC control sample (a pH buffer, which may be the same or different than those used to initially calibrate the instrument) exceeds ± 0.1 pH units from the true value, the source of the error will be determined and the instrument recalibrated. If a continuing calibration check with pH 7.0 buffer is off by ±

0.1 pH units, the instrument will be recalibrated. Expired buffer solutions will not be used. A field pH Calibration Form is included in Attachment D-1.

Note that gel-type probes take longer to equilibrate (up to 15 minutes at near-freezing temperatures); this must be taken into account in calibrating the instrument and reading samples and standards.

4.4.2 Specific Conductivity

A vendor-provided conductivity standard will be used to check the calibration of the conductivity meter twice daily (prior to initial use and midday). Specific conductance QC samples will be on the order of 0.01 or 0.1 molar potassium chloride solutions in accordance with manufacturer's recommendations. A Field Specific Conductance Calibration Form is included in Attachment D-1.

4.4.3 Turbidity

The turbidity meter should be calibrated using a standard as close as possible to 50 NTU (the critical value for determining effectiveness of well development and evacuation). The turbidimeter will be calibrated/checked twice daily. The turbidity QC sample will be a commercially prepared polymer standard (Advanced Polymer System, Inc., or similar). A Field Turbidity Calibration Form is included in Attachment D-1.

4.4.4 Temperature

Temperature probes associated with instruments are not subject to field calibration, but the calibration should be checked to monitor instrument performance. It is recommended that the instrument's temperature reading be checked against a NBS-traceable thermometer concurrently with checking the conductivity calibration. The instrument manual will be referenced for corrective actions if accurate readings cannot be obtained. A Temperature Calibration Form is included in Attachment D-1.

4.5 LABORATORY QUALITY ASSURANCE

4.5.1 Method Blanks

A method blank is laboratory water on which every step of the method is performed and analyzed along with the samples. They are used to assess the background variability of the method and to assess the introduction of contamination to the samples by the method, technique, or instruments as the sample is prepared and analyzed in the laboratory. Method blanks will be analyzed at a frequency of one for every 20 samples analyzed or as otherwise specified in the analytical protocol.

4.5.2 Laboratory Duplicates

Laboratory duplicates are sub-samples taken from a single aliquot of sample after the sample has been thoroughly mixed or homogenized (with the exception of volatile organics), to assess the precision or reproducibility of the analytical method on a sample of a particular matrix. Laboratory duplicates will be performed on spiked samples as a Matrix Spike and a Matrix Spike Duplicate (MS/MSD) for volatile and semi-volatile organics, and as a Matrix Spike and Matrix Spike Duplicate for metals.

4.5.3 Spiked Samples

Two types of spiked samples will be prepared and analyzed as quality controls: Matrix Spikes and Matrix Spike Duplicates (MS/MSD) are analyzed to evaluate instrument and method performance and performance on samples of similar matrix. MS/MSD will be analyzed at a frequency of one (pair) for every 20 samples. For metals, a matrix spike and matrix duplicate are analyzed for each set of 20 samples. In addition, matrix spike blanks (MSBs) will also be run by the lab as part of its NYSDEC CLP.

5.0 DATA DOCUMENTATION

5.1 FIELD NOTEBOOK

A GZA field notebook will be initiated at the start of on-Site work. Subcontractor field notes shall either be transcribed into the dedicated site notebook or referenced to record pertinent activities. Subcontractor notes/correspondence shall be included within the project file. In addition to any forms that will be filled out summarizing field work (and become part of the project file), legible photocopies of pertinent notebook pages will be submitted by the contractors with their finished written report or product. The field notebook will include the following daily information for Site activities:

- Date;
- Meteorological conditions (temperature, wind, precipitation);
- Site conditions (e.g., dry, damp, dusty, etc.);
- Identification of crew members (GZA and subcontractor present) and other personnel (e.g., agency or site owner) present;
- Description of field activities;
- Location(s) where work is performed;
- Problems encountered and corrective actions taken;

- Records of field measurements or descriptions recorded; and,
- Notice of modifications to the scope of work.

During drilling operations, the supervising field engineer/geologist will add the following information:

- Rig type;
- Documentation of materials used;
- Downtime;
- Time work is performed at an elevated or lowered level of respiratory protection;
- Description of soil or rock strata; and,
- Diagram of well or piezometer construction.

During sampling of surface water and monitoring wells, field samplers will add the following:

- Sampling point locations and test results such as pH, conductance, etc.
- Information about sample collection
- Chain of custody information, and
- Field equipment calibration.

5.2 FIELD REPORTING FORMS

Field reporting forms (or their equivalent) to be utilized in this investigation are presented in Attachment D-1. These include:

- Soil probe Boring & Piezometer Installation Log;
- Monitoring Well Field Measurements Log;
- Hydraulic Conductivity Test Form;
- Chain of Custody Form;
- pH Calibration Log;
- Specific Conductance Calibration Log;
- Turbidity Calibration Log; and,
- Temperature Calibration Log.

These forms, when completed, will become part of the project file.

6.0 EQUIPMENT CALIBRATION AND MAINTENANCE

6.1 STANDARD WATER AND AIR QUALITY FIELD EQUIPMENT

Field equipment used during the collection of environmental samples includes:

- Water quality meter with a flow through cell. The water quality meter will read, at a minimum, turbidy, pH, conductivity, and temperature.
- Organic vapor meter with a photoionization detector.
- Particulate meter.

Calibration and standardization for the field water quality tests will be in conformance with the manufacturers recommendations. The water quality meter will be fully calibrated at the start of the groundwater sampling event. The pH calibration check will be done at least two times daily and it will be checked with pH 7.0 buffer every two hours, or every time it has been turned off for more than two hours and then turned on, whichever occurs first. The calibration of the specific conductance meter will be checked twice daily (at the beginning and in the middle of the work day).

The OVM used for soil screening and health and safety air monitoring will be calibrated following the manufacturer's instructions, at the beginning of the day, whenever the instrument is shut off for more than two hours, and at the field technician's discretion.

The particulate monitor does not require daily calibration and will be operated in accordance with manufacturer's recommendations.

6.2 LABORATORY EQUIPMENT

Laboratory equipment will be calibrated according to the requirements of the 1995 Revised NYSDEC ASP, Superfund Contract Laboratory Program for each parameter or group of similar parameters, and maintained following professional judgment and the manufacturer's specifications.

7.0 CORRECTIVE ACTIONS

If instrument performance or data fall outside acceptable limits, then corrective actions will be taken. These actions may include recalibration or standardization of instruments, acquiring new standards, replacing equipment, repairing equipment, and reanalyzing samples or redoing sections of work. Subcontractors providing analytical services should perform their own internal laboratory audits and calibration procedures with data review conducted at a frequency so that errors and problems are detected early, thus avoiding the prospect of redoing large segments of

work.

Situations related to this project requiring corrective action will be documented and made part of the project file. For each measurement system identified requiring corrective action, the responsible individual for initiating the corrective action and also the individual responsible for approving the corrective action, if necessary, will be identified. As part of its total quality management program, GZA makes the results of laboratory audits and data validation reports available to the analytical laboratories. The laboratories are therefore made aware of non-critical items and areas where improvement may be made in subsequent NYSDEC ASP work.

8.0 DATA REDUCTION, VALIDATION, AND REPORTING

The guidance followed to perform quality data validation, and the methods and procedures outlined herein pertain to initiating and performing data validation, as well as reviewing data validation performed by others (if applicable). An outline of the data validation process is presented here, followed by a description of data validation review summaries.

8.1 LABORATORY DATA REPORTING AND REDUCTION

The laboratory will meet the applicable documentation, data reduction, and reporting protocols as specified in the 1995 revision of the NYSDEC ASP CLP. Laboratory data reports for non-CLP data will conform to NYSDEC Category B deliverable requirements. With full CLP documentation, deliverables will include, but not be limited to:

Organics	**Inorganics**
Chains of Custody	Chains of Custody
Blanks	Holding Times
Holding Times	Blanks
Internal Standards	Furnace AA QC
Laboratory Duplicates	CRDL Standards
Tentatively Identified Compounds	ICP Serial Dilutions
GC/MS Instrument Performance Check	Laboratory Control Samples
System Monitoring Compound Recovery	Laboratory Duplicates
Matrix Spike & Matrix Spike Duplicates	ICP Interference Check
GC/MS Tuning	Spiked Sample
Surrogate Recoveries	Recovery

Copies of the laboratory's generic Quality Assurance Plan (QAP) will be on file at GZA. The laboratory's QAP will indicate the standard methods and practices for obtaining and assessing data, and how data are reduced from the analytical instruments to a finished report, indicating

levels of review along the way.

In addition to the hard copy of the data report, the laboratory will be asked to provide the sample data in spreadsheet form on compact disc (CD). The CD will be generated to the extent possible directly from the laboratory's electronic files or information management system to minimize possible transcription errors resulting from the manual transcription of data.

8.2 DATA VALIDATION DATA USABILITY SUMMARY REPORT

CLP data will be validated by a data validation subcontractor. Data validation will be performed by following guidelines established in the US EPA Region 2 SOP No. HW-6, "CLP Organics Data Review" (Revision No. 8, January 1992); and SOP No. HW-2, "Evaluation of Metals Data for the Contract Laboratory Program (CLP)" (based on SOW 3/90; January 1992). These documents are check lists which are designed to formally and rigorously assess the quality and completeness of CLP data packages. The use of these USEPA SOPs will be adapted to conform to the specific requirements of the NYSDEC ASP (e.g., NYSDEC/ASP holding times; matrix spike blank requirements). Where necessary and appropriate, supplemental validation criteria may be derived from the EPA Functional Guidelines (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, Publication 9240.1-05, EPA-540/R-94/012, February, 1993; and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, Publication 9240.1-05-01; EPA-540/R-94/013, PB94-963502, February, 1994).

Validation reports will consist of text results of the review and marked up copies of Form I (results with qualifiers applied by the validator). Validation will consist of target and non-target compounds with corresponding method blank data, spike and surrogate recoveries, sample data, and a final note of validation decision or qualification, along with any pertinent footnote references. Qualifiers applied to the data will be documented in the report text.

There may be some analyses for which there is no established USEPA or NYSDEC data validation protocol. In such cases, validation will be based on the EPA Region II SOPs and EPA Functional Guidelines as much as possible, as well as the laboratory's adherence to the technical requirements of the method, and the professional judgment of the validator. The degree of rigor in such validation will correspond to the nature of the data and the significance of the data and its intended use. Unless otherwise requested, non-CLP data (e.g., total organic carbon) is not subject to validation.

8.3 DATA USABILITY

Subsequent to review of the items evaluated in the subcontractor data validator reports and accompanying tables, GZA's QA staff then prepares a brief data usability summary. The data usability summary, which will be provided as part of the RI/FS Report, encompasses both quantitative and qualitative aspects, although the qualitative element is the most significant.

The quantitative aspect is a summary of the data quality as expressed by qualifiers applied to the data; the percent rejected, qualified (i.e., estimated), missing, and fully acceptable data are reported. As appropriate, this quantitative summary is broken down by matrix, laboratory, or analytical fraction or method.

The qualitative element of the data usability summary is the QA officer's translation and summary of the validation reports into a discussion useful to data users. The qualitative aspect will discuss the significance of the qualifications applied to the data, especially in terms of those most relevant to the intended use of the data. The usability report will also indicate whether there is a suspected bias (high or low) in qualified data, and will also provide a subjective overall assessment of the data quality. If similar analyses are performed by more than one method, a discussion of the extent of agreement among the various methods will be included, as well as discussion of any discrepancies among the data sets. The QAO will also indicate if there is a technical basis for selecting one data type over another for multiple measurements which are not in agreement.

Non-CLP data which has not been validated and field data used for the SI will be discussed in the data usability summary.

8.4 FIELD DATA

Field chemistry data collected during air monitoring, soil screening (e.g., OVM readings), and water monitoring (i.e., pH, turbidity, specific conductance, and temperature) will be presented in tabular form with any necessary supporting text. Unless activities resulted in significant unexpected results, field data comments can be added as footnotes to the tables.

9.0 PERFORMANCE AND SYSTEM AUDITS

The laboratory assigned to this project will be certified by the NYSDOH (ELAP) CLP protocols to be used. Therefore, no audit of the laboratory(s) during the RI will be performed unless warranted by a problem(s) that cannot be resolved by any other means, or at the discretion of GZA or NYSDEC.

10.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

Monthly project status reporting to the NYSDEC will include aspects of quality control that were pertinent during the month's activities. Problems revealed during review of the month's activities will be documented and addressed. These reports will include a description of completed and on-going activities and an indication how each task is progressing relative to the project schedule.

The project manager, through task managers, will be responsible for verifying that records and files related to this project are stored appropriately and are retrievable.

The laboratory will submit memoranda or correspondence related to quality control of this project's samples as part of its deliverables package.

ATTACHMENT D-1

FIELD FORMS

WHITE COPY - Original (Accompanies Report) YELLOW COPY - Field Copy

CHAIN-OF-CUSTODY RECORD

Station Number	Time (24 hr.)	Container ID	Sampler ID	Location Description	Sample Type	ANALYSES REQUIRED	Total # of Cont.	Note #

TOTAL NUMBER OF CONTAINERS

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)

NOTES:

ANALYTICAL LABORATORY: _____

LABORATORY CONTACT: _____

GZA CONTACT: _____

GZA GeoEnvironmental of New York
364 Nagel Drive
BUFFALO, NY 14225
(716) 685-2300

GZA FILE NO. _____ P.O. NO. _____

PROJECT _____

LOCATION _____

COLLECTOR _____

DATE OF COLLECTION _____ SHEET _____ OF _____

DAILY FIELD SUMMARY

DATE _____ FILE No. _____

REPORT No. _____ SHEET ____ of ____

PROJECT _____ LOCATION _____

OWNER _____ CONTRACTOR _____

WEATHER CONDITIONS _____

REMARKS _____

REPORT

Field Time _____

Travel Time _____

Office Time _____

Total Time _____

GZA

_____

PREPARED BY

GZA GEOENVIRONMENTAL OF NEW YORK
364 NAGEL DRIVE, BUFFALO, NEW YORK

ENGINEERS AND SCIENTISTS

PROJECT
[Site]
[Location]

BORING No.
SHEET 1 OF 1
FILE No.
CHECKED BY :

CONTRACTOR _____ BORING LOCATION _____
DRILLER _____ GROUND SURFACE ELEVATION _____ DATUM _____
START DATE _____ END DATE _____ GZA GEOENVIRONMENTAL REPRESENTATIVE

WATER LEVEL DATA

DATE	TIME	WATER	CASING	NOTES

TYPE OF DRILL RIG _____
CASING SIZE AND DIAMETER _____
OVERBURDEN SAMPLING METHOD _____
ROCK DRILLING METHOD _____

DEPTH	SAMPLE BLOWS (/6")	NO.	DEPTH (FT)	N-VALUE /RQD %	RECOVERY (%)	SAMPLE DESCRIPTION	EQUIPMENT DESCRIPTION		OVM (ppm)
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									

S - Split Spoon Sample
C - Rock Core Sample

NOTES:

General Notes:
1) Stratification lines represent approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

File: 55191

Page: _____

Summary of Field Groundwater Quality Measurements

Well Identification		Well Elevation		Well Construction	
Monitoring Well :		Ground Surface Elevation:		Riser/Screen Material:	
Installation Date:		Protective Casing Elevation:		Top of Intake Depth:	
Installed By:		Monitoring Point Elevation:		Bottom of Intake Depth:	
		Elevation Datum:			

Date	Time	Depth to Water	Cumulative Volume Purged	pH (Standard Units)	Specific Conductance (uMhos/cm)	Temperature (°C)	Turbidity (NTU)	Color	Notes

File: 55191 Page: _____

Existing Well Assessment - _____

Historic Information

Boring Log Available (yes/no/attached):

Installation Log Available (yes/no/attached)

Summary

Monitoring Well :		Ground Surface Elevation:		Riser/Screen Material:	
Installation Date:		Protective Casing Elevation:		Top of Intake Depth:	
Installed By:		Monitoring Point Elevation:		Bottom of Intake Depth:	
		Elevation Datum:			

Previous Field measurement Information Available (yes/no/attached)

Ranges of Previous Field Measurements

Depth to Water (ft)	pH (Standard Units)	Specific Conductance (uMhos/cm)	Temperature (°C)	Turbidity (NTU)	Color

Notes:

Field Observations

Exterior Observations:

Interior Observations

Signs of Damage/Tampering:

Locked (yes/no)	Well Cap (yes/no)	Surface Seal Intact (yes/no)	PID Measurement:	Odors:

Well Development

Date	Time	Depth to Water	Cumulative Volume Purged	pH (Standard Units)	Specific Conductance (uMhos/cm)	Temperature (°C)	Turbidity (NTU)	Color	Notes

File: 55191

Page:

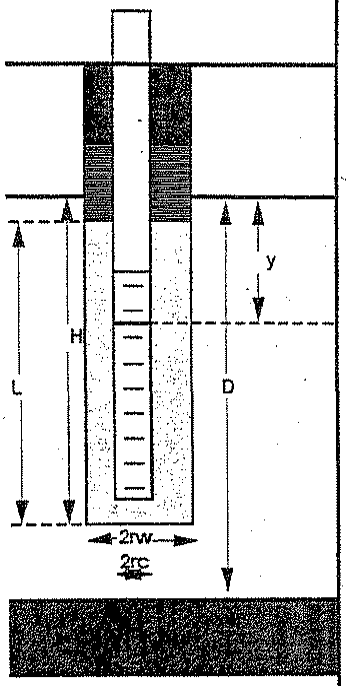
Hydraulic Conductivity Test - _____

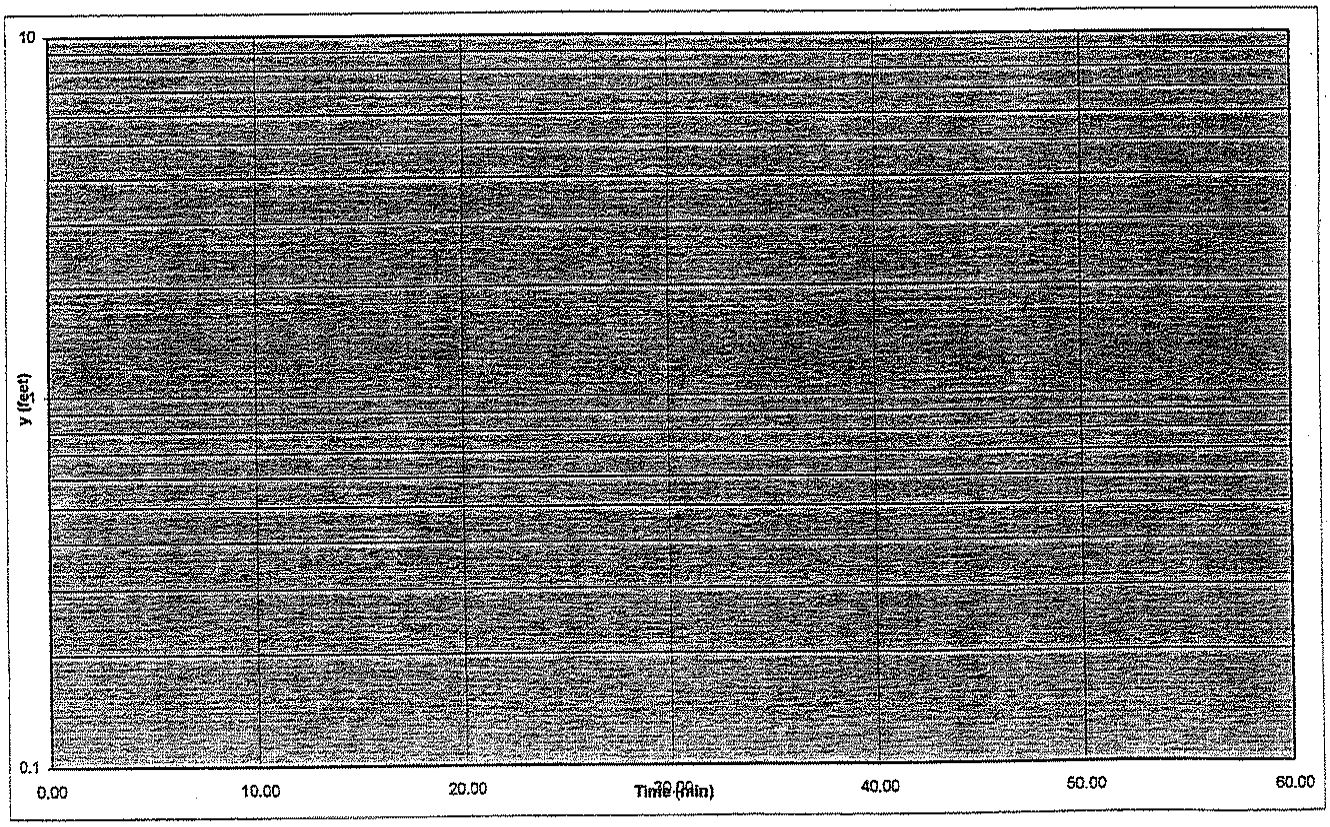
Well Identification		Test Information		Well Construction	
Monitoring Well :		GZA Representative:		Top of Intake Depth:	
Installation Date:		Test Date:		Bottom of Intake Depth:	
Installed By:		Weather Conditions:		Screened Zone:	
				Confined/Unconfined	

Test Data

Time (hr/min/sec)			Time (min)	Water Level (feet)	Drawdown = y (feet)

Well Configuration	
L (ft) =	
H (ft) =	
D (ft) =	
rw (ft) =	
rc (ft) =	





File: 55191 Page

Sample Collection Log

Sample Identification

Sample Location
Sample Type
Sample Code
Date
Time
GZA Representatives:

Miscellaneous

Weather Conditions
Chain-of-Custody Completed (yes/no)
Sample Containers Labeled (yes/no)
Shipping Containers Sealed (yes/no)
Trip Blank Identification
Field Blank Identification

General

Sample Collection Equipment
Decontamination Procedure
Sample Collection Procedure

Field Measurement Equipment Used and Calibration Information

pH
Specific Conductance
Temperature
Turbidity
Other Equipment

Requested Testing

Container	Preservative	TCL VOCs	TCL Semi-VOCs	TCL PCBs	TCL Pesticides	8 RCRA Metals	Hardness	TOC											

Summary of Field Measurements

Depth to Water	Cumulative Volume Purged	pH (Standard Units)	Specific Conductance (uMhos/cm)	Temperature (°C)	Turbidity (NTU)	Other

Notes

Turbidity Meter Calibration Worksheet

Project:	**GZA File :**
Location:	**Sample Collection Date:**
Turbidity Meter Model:	

Calibration (1)

Date	Target Value (2) (ūMhos/cm)	Actual Reading (uMhos/cm)	Analyst's Initials	Remarks

Notes:

1) Calbration done in accordance with manufacturers recommendations.
2) Target value of standards provided by manufacturer.

pH Meter Calibration Worksheet

Project:	GZA File :
Location:	Sample Collection Date:

pH Meter Model:

Calibration (1)

Date	Set Points (2) (pH units)	Target Value (3) (pH units)	Actual Reading (4) (pH units)	Analyst's Initials	Remarks

Notes:

1) These calibrations were done in accordance with the NYSDOH's Environmental Laboratory Approval Program (ELAP manual, item 231 revised as of April 1, 1986)

2) For a one point calibration, the set point is the pH of the standard buffer solution used to initially calibrate the meter. For a two point calibration, the set points are the pH of the standard buffers used to calibrate the slope of the pH meter.

3) For a one point calibration, the target values are the pH of the standard buffers used to check the slope of the pH meter. For a two point calibration, the target value is the pH of the standard buffer used to check the initial calibration.

4) The accepted accuracy for the readings using a one point calibration is +/- 0.2 pH units. The accepted accuracy for the actual reading using a two point calibration is +/- 0.05 pH units of the target value.

Conductivity Meter Calibration Worksheet

Project:	**GZA File :**
Location:	**Sample Collection Date:**
Conductivity Meter Model:	

Calibration (1)

Date	Temperature (C)	Target Value (2) (uMhos/cm)	Actual Reading (uMhos/cm)	Analyst's Initials	Remarks

Notes:

1) Calibrations done in accordance with manufacturers recommendations and are completed by adjusting the meter to a standard of known specific conductance. The standard is selected to be as close to the sample measurement as possible.
2) Target value is the specific conductance of the standard solution.

Thermometer Calibration Worksheet

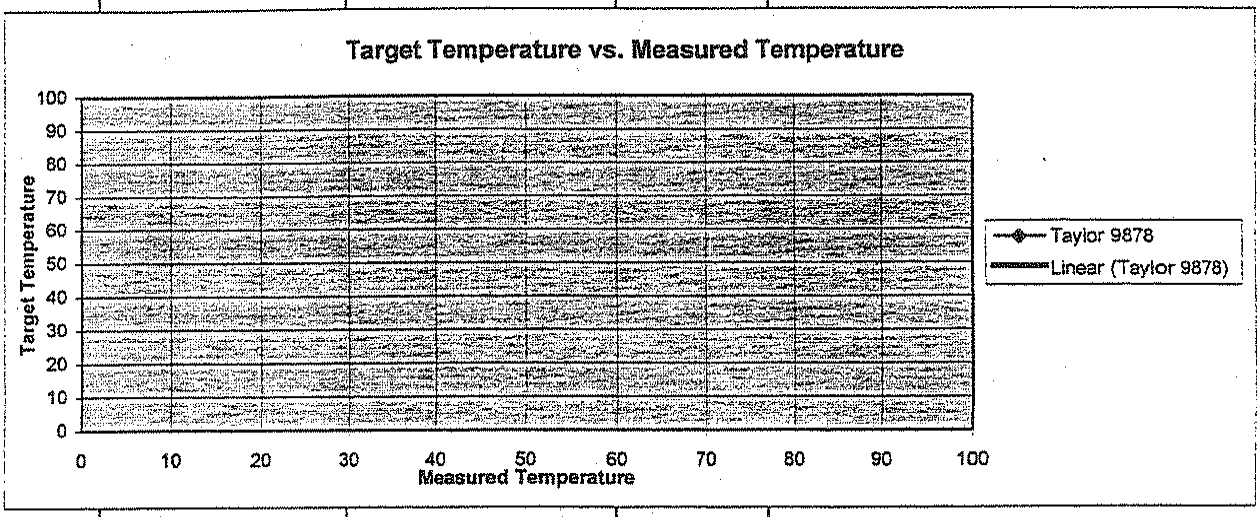
Project: **GZA File :**

Location: **Sample Collection Date:**

Thermometer Model:

Calibration (1)

Date	Target Temperature (C)	Observed Temperature (C)	Analyst's Initials	Remarks



Notes:

1) These calibrations were done in accordance with the NYSDOH's Environmental Laboratory Approval Program (ELAP manual, item 231 revised as of April 1, 1986).
2) Target temperature is the temperature of the National Bureau of Standards (NBS) traceable thermometer. The NBS thermometer was certified on July 11, 1985 and checked at the ice point on September 19, 1988.
3) The observed tempertature is the tempeature of the calibrated thermometer.
4) The correction factor of the calibrated thermometer is:

Corrected tamperature =1.0467 X Observed Temperature -0.8587

APPENDIX E

FEASIBILTY STUDY PLAN

SPECIAL METALS CORPORATION
FEASIBILITY STUDY PLAN
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
DUNKIRK, NEW YORK

Based upon the results of the Remedial Investigation (RI), it is expected that the Feasibility Study (FS) will determine the feasibility of the following remedial alternatives - excavation and natural attenuation - as opposed to exploring the full range of available remedial alternatives), given the limited area of the defined Site, the scope of the contamination identified in the Fall of 2006 investigation and the contaminant of concern (PCBs). In the review, the "no-action" alternative will be considered, and based on the RI results, other remedial options (in-place fixation, in-situ chemical oxidation, or other innovative technologies) may also be appropriate to evaluate.

The evaluation of the identified remedial alternatives will be performed in accordance with the procedures recommended in New York State Department of Environmental Conservation (NYSDEC) Draft DER-10 "Technical Guidance for Site Investigation and Remediation", dated December 2002 (DER-10) and United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response (OWSWER) "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" dated October 1988 (EPA RI/FS Under CERCLA).

The results of the FS will be set forth in a FS report, which will be organized according to NYSDEC DER-10, and will be a stand-alone document. There are nine criteria that are required by NYSDEC for evaluating remedial alternatives (overall protection of human health and the environment; compliance with standards, criteria and guidance (SCGs); long-term effectiveness and performance; reduction of toxicity, mobility, or volume; short term effectiveness; implementability; cost; and New York State acceptance and community acceptance). The State and community acceptance will be reflected by NYSDEC in the issuance of its Record of Decision (ROD) for this Site.

TABLES

Table 1

Electric Trench & Trench Stockpile Soil Analytical Testing Results Summary
Special Metals Corporation
Dunkirk, New York
Remedial Investigation/Feasibility Study Work Plan

Sample Location	NYSDEC TAGM 4046 RSCO	Eastern USA Background	NYSDEC Part 375-6 SCO	Electric Trench 1	Q	Electric Trench 2	Q	Trench Stockpile	Q
Volatile Organics (mg/kg)									
Acetone	0.2	NA	1,000	0.043		0.006	J	NT	
Methylene Chloride	0.1	NA	1,000	0.006	B	0.01	B	NT	
Trichlorofluoromethane	NV	NA	NV	0.001	J	0.001	J	NT	
Semi-Volatile Organics mg/kg)									
Biphenyl	NV	NA	NV	0.14	J	0.03	J	NT	
2-Methylphenol	0.1 or MDL	NA	NV	0.12	J	0.061	J	NT	
4-Methylphenol	0.9	NA	NV	0.12	J	0.061	J	NT	
2,4-Dimethylphenol	NV	NA	NV	17	D	8.8	D	NT	
Phenanthrene	50	NA	1,000	0.024	J	0.019	J	NT	
Fluoanthene	50	NA	1,000			0.02	J	NT	
Pyrene	50	NA	1,000	0.027	J	0.023	J	NT	
Benzo(a)anthracene	0.224 or MDL	NA	1	0.028	J			NT	
Chrysene	0.4	NA	1	0.066	J	0.033	J	NT	
bis(2-Ethylhexyl)phthalate	50	NA	NV	0.26	J	0.1	J	NT	
Benzo(b)fluoranthene	1.1	NA	1.7	0.074	J	0.039	J	NT	
Benzo(k)fluoranthene	1.1	NA	1.7	0.066	J	0.027	J	NT	
PCBs (mg/kg)									
Aroclor-1242		NA		140		31		370 [12]	
TOTAL PCBs	10	NA	25	140		31		370	
Inorganics (mg/kg)									
Arsenic	7.5 or SB	3-12	16	7.2		7.2		NT	
Barium	300 or SB	15-600	10,000	105		112		NT	
Chromium	10 or SB	1.5-40	6,800*/800**	114		122		NT	
Lead	SB	200-500	3,900	23		28.5		NT	
Mercury	0.1	0.001-0.2	5.7			0.025		NT	

Notes:

1. Only compounds detected in one or more soil samples are presented in this table.
2. Blank indicates compound was not detected.
3. Analytical testing completed by STL Buffalo and GZA GeoEnvironmental Laboratory in Hopkinton Massachusetts.
4. Q = laboratory qualifier; J = estimated concentration; D = concentration obtained from diluted concentration; B = compound was detected in associated method blank.
5. mg/kg = parts per million
6. TAGM # 4046 RSCO are Recommended Soil Cleanup Criteria from NYSDEC Technical and Administrative Guidance Memorandum No. HWR-94-4046, dated January 1994, amended December 2000.
7. NYSDEC Part 375-6 SCO are Soil Cleanup Objectives from NYSDEC 6 NYCRR Subpart 375-6, effective Decemeber 14, 2006.
8. Concentrations that are bold exceed TAGM 4046 RSCO.
9. Eastern USA Background are from TAGM 4046.
10. NV = no value, MDL = method detection limits.
11. * = trivalent chromium cleanup value; ** = hexivalent chromium cleanup value.
12. Analytical result of Trench Stockpile sample re-test was 1,200 ppm.

TABLE 2
Proposed Analytical Testing Program Summary
Special Metals Corporation
Dunkirk, New York
Remedial Investigation/Feasibility Study

Location	Matrix	TCL VOCs	TCL SVOCs	TAL Metals	TCL PCBs
Monitoring Well Subsurface Soil Samples					
Various[1]	Soil	8	8	8	8
Duplicate	Soil	1	1	1	1
MS/MSD	Soil	2	2	2	2
Rinsate	Water	1	1	1	1
Total		12	12	12	12
Soil Probe Subsurface Soil Samples					
Various	Soil	4	4	4	4
Duplicate	Soil	0	0	0	0
MS/MSD	Soil	0	0	0	0
Rinsate	Water	1	1	1	1
Total		5	5	5	5
Monitoring Well Groundwater Samples					
New Monitoring Wells	Groundwater	4	4	4	4
Duplicate	Groundwater	1	1	1	1
MS/MSD	Groundwater	2	2	2	2
Rinsate Blank	Water	1	1	1	1
Trip Blank	Water	1	-	-	-
Total		9	8	8	8
	TOTAL	26	25	25	25

Notes:
1) Actual sample location to be selected based on field observation.
MS/MSD - Matrix Spike/Matrix Spike Duplicate.
TCL VOCs - Target Compound List Volatile Organic Compounds.
TCL SVOCs - Target Compound List Semi-volatile Organic Compounds.
TAL Metals - Target Analyte List Metals.
TCL PCBs - Target Compound List Polychlorinated Biphenyls.

Table 3
Summary of Container, Preservation and Holding Time Requirements
Quality Assurance Project Plan
Special Metals Corporation
Dunkirk, New York
Remedial Investigation/Feasibility Study Work Plan

Analysis	Method	Holding Time (days)		Containers		Preservative
		To Extraction	To Analyze	Number	Type	
Soil Samples						
TCL Volatiles	NYSDEC Method 95-1 (a)		7	2	L	Cool
TCL Semivolatiles	NYSDEC 95-2 (a)	5	40	1	J[1]	Cool
Cyanide	US EPA Method 335.2		12	1	J[1]	Cool
PCBs/Pesticides	NYSDEC 95-3 (a)	5	40	1	J[1]	Cool
TOC	SW 846 Method 9060 (b)		28	1	J[1]	Cool
TAL Metals	NYSDEC Metals Methods (a)		26/6 mo (c)	1	J[1]	Cool
Grain Size/Atterberg Limits	ASTM D422/4318			1	K	None
Aqueous Samples						
TCL Volatiles	NYSDEC Method 95-1 (a)		7	2	G	Cool
TCL Semivolatiles	NYSDEC 95-2 (a)	5	40	2	H	Cool
TAL Metals	NYSDEC Metals Methods (a)		26/6 mo (c)	1	I	HNO3
Cyanide	US EPA Method 335		12	1	I	NaOH
PCBs/Pesticides	NYSDEC 95-3 (a)	5	40	2	H	Cool

Notes:

Analytical Methods

(a) NYSDEC Analytical Services Protocol (ASP), October, 1995.

(b) Test Methods for Evaluating Solid Waste, November, 1986, SW-846, Third Edition.

Holding Times

(a) Holding Times presented in calendar days unless otherwise specified. Holding times are calculated from verified time of receipt at the laboratory. Samples must be received by the laboratory within 48 hours of sampling.

(b) Where two holding times are presented, separated by "/", the shorter holding time applies only to certain analytes included on the list.

(c) Holding time for mercury is 26 days; all other inorganics, 6 months.

Container Types

G - 40 ml glass, Teflon septum cap liner

H - 1000 ml glass, Teflon cap liner

I - 500 ml, polyethylene, Teflon cap liner

J - 8 oz. wide mouth glass, Teflon cap liner

K - 32 oz. wide mouth glass, plastic or metal cap

L - 4 oz. amber, Teflon cap liner

Preservatives

Cool - Cool to 4 degrees Celsius

HNO3 - Nitric Acid to <2 pH

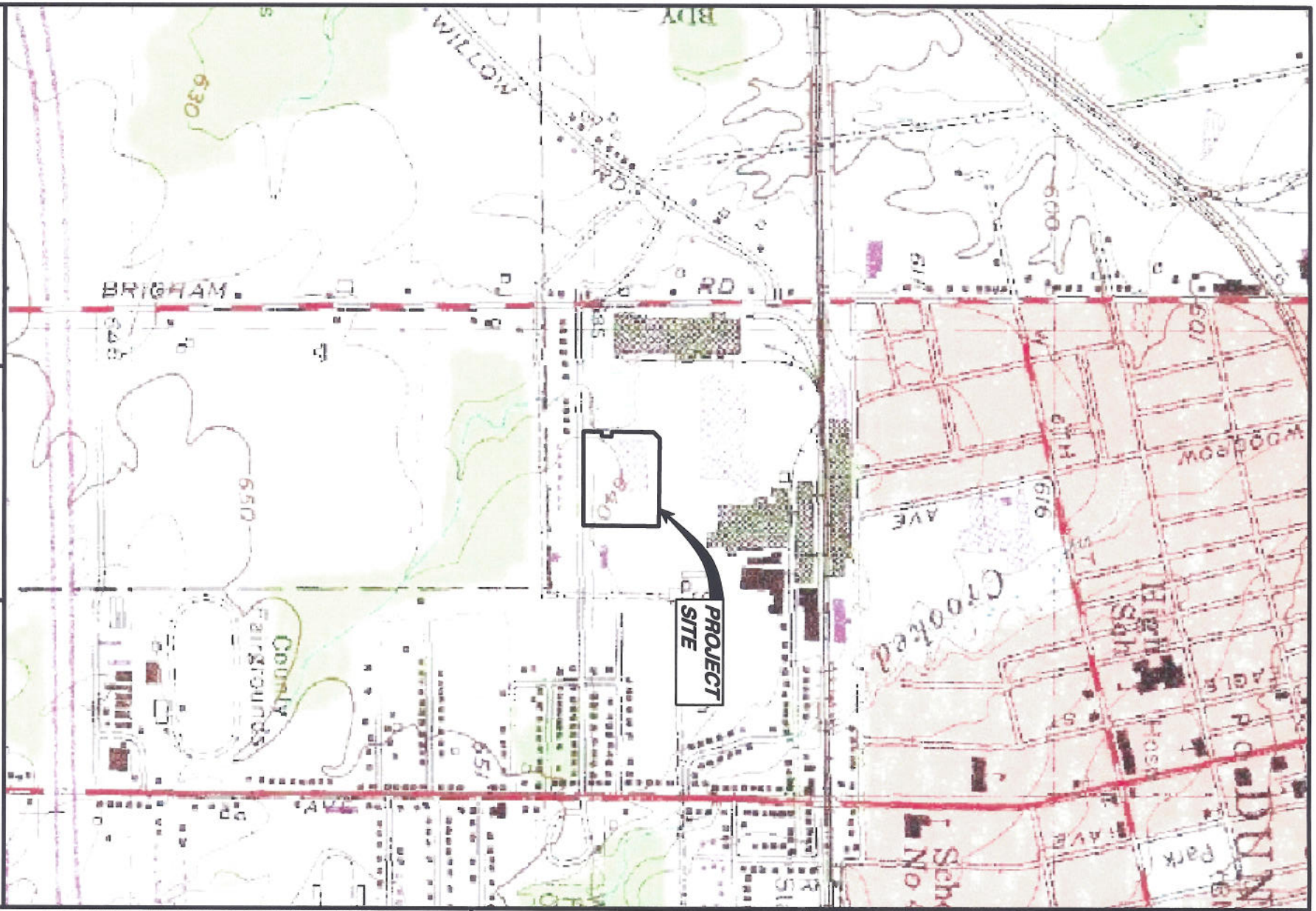
NaOH - Sodium Hydroxide to >12pH

HCl - Hydrochloric acid to pH<2

1) Only two containers are required when collecting samples for all of the indicated analytes.

FIGURES

NOTE:
BASE MAP ADAPTED FROM U.S.G.S. TOPOGRAPHIC MAPS DOWNLOADED FROM TERRASERVER.MICROSOFT.COM



SPECIAL METALS CORPORATION
DUNKIRK FACILITY
100 WILLOWBROOK AVENUE
DUNKIRK, NEW YORK
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FIELD ACTIVITIES PLAN

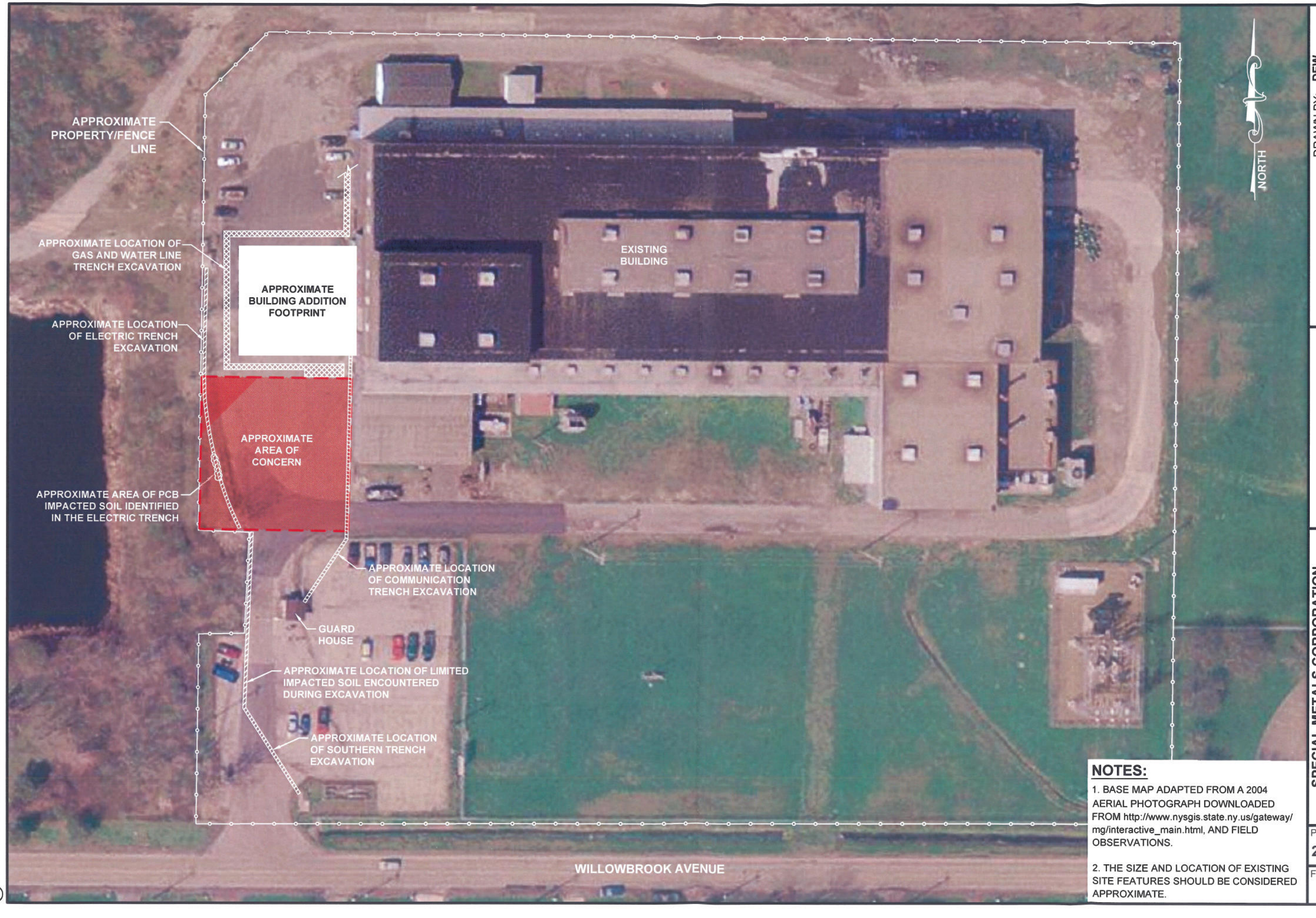
LOCUS PLAN

SCALE IN FEET
0 500 1000 2000

DRAWN BY: **DEW**
DATE: **MARCH 2007**

GZA GeoEnvironmental of New York

PROJECT No. **21.0056196.20**
FIGURE No. **1**



NOTES:

1. BASE MAP ADAPTED FROM A 2004 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/mg/interactive_main.html, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

DRAWN BY: DEW

DATE: MARCH 2007

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 30 60 120

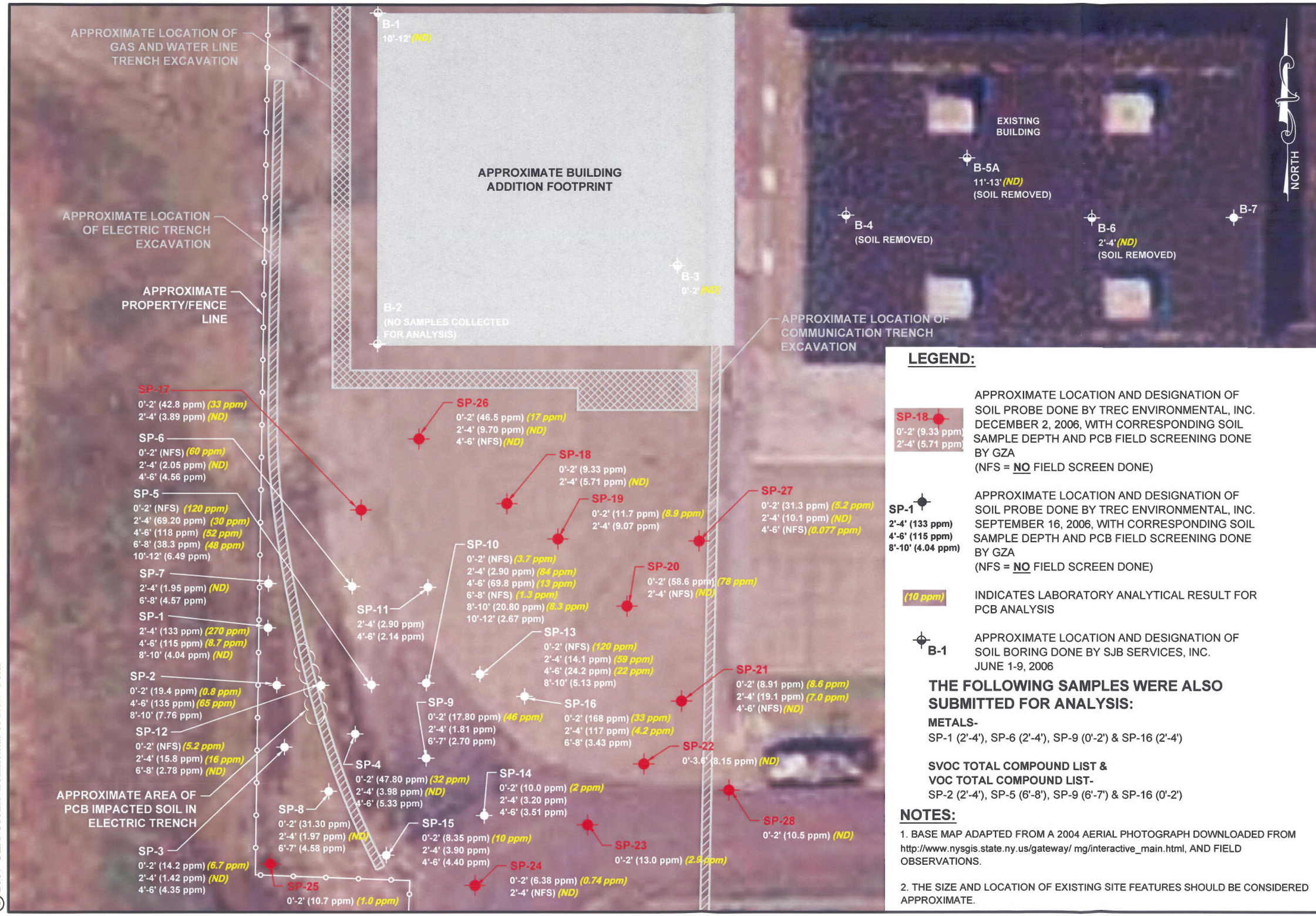
SPECIAL METALS CORPORATION
DUNKIRK FACILITY
100 WILLOWBROOK AVENUE
DUNKIRK, NEW YORK

REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FIELD ACTIVITIES PLAN

OVERALL SITE PLAN AND AREA OF CONCERN

PROJECT No.
21.0056196.20

FIGURE No.
2



LEGEND:

SP-18 0'-2' (9.33 ppm) 2'-4' (5.71 ppm) — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE DONE BY TREC ENVIRONMENTAL, INC. DECEMBER 2, 2006, WITH CORRESPONDING SOIL SAMPLE DEPTH AND PCB FIELD SCREENING DONE BY GZA
(NFS = NO FIELD SCREEN DONE)

SP-1 2'-4' (133 ppm) 4'-6' (115 ppm) 8'-10' (4.04 ppm) — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE DONE BY TREC ENVIRONMENTAL, INC. SEPTEMBER 16, 2006, WITH CORRESPONDING SOIL SAMPLE DEPTH AND PCB FIELD SCREENING DONE BY GZA
(NFS = NO FIELD SCREEN DONE)

(10 ppm) — INDICATES LABORATORY ANALYTICAL RESULT FOR PCB ANALYSIS

B-1 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL BORING DONE BY SJB SERVICES, INC. JUNE 1-9, 2006

THE FOLLOWING SAMPLES WERE ALSO SUBMITTED FOR ANALYSIS:

METALS-
SP-1 (2'-4'), SP-6 (2'-4'), SP-9 (0'-2') & SP-16 (2'-4')

SVOC TOTAL COMPOUND LIST & VOC TOTAL COMPOUND LIST-
SP-2 (2'-4'), SP-5 (6'-8'), SP-9 (6'-7') & SP-16 (0'-2')

NOTES:

1. BASE MAP ADAPTED FROM A 2004 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/ mg/interactive_main.html, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

APPROXIMATE SCALE IN FEET: 0, 10, 20, 40

DRAWN BY: DEW
DATE: MARCH 2007

GZA GeoEnvironmental of New York

SPECIAL METALS CORPORATION
DUNKIRK FACILITY
100 WILLOWBROOK AVENUE
DUNKIRK, NEW YORK
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FIELD ACTIVITIES PLAN
FIELD SCREEN vs. LAB ANALYSIS PLAN

PROJECT No.
21.0056196.20

FIGURE No.
3

APPROXIMATE LOCATION OF GAS AND WATER LINE TRENCH EXCAVATION

APPROXIMATE BUILDING ADDITION FOOTPRINT

EXISTING BUILDING

NORTH

APPROXIMATE PROPERTY/FENCE LINE

APPROXIMATE AREA OF SOIL EXCAVATION TO BE DISPOSED OF AS HAZARDOUS WASTE

APPROXIMATE LOCATION OF ELECTRIC TRENCH EXCAVATION

APPROXIMATE AREA OF SOIL TO BE EXCAVATED FROM 2 FEET TO APPROXIMATELY 8 FEET BELOW GROUND SURFACE

APPROXIMATE AREA OF PCB IMPACTED SOIL IDENTIFIED IN THE ELECTRIC TRENCH

APPROXIMATE LOCATION OF COMMUNICATION TRENCH EXCAVATION

SP-1 SP-2 SP-3 SP-4 SP-5 SP-6 SP-7 SP-8 SP-9 SP-10 SP-11 SP-12 SP-13 SP-14 SP-15 SP-16 SP-17 SP-18 SP-19 SP-20 SP-21 SP-22 SP-23 SP-24 SP-25 SP-26 SP-27 SP-28

LEGEND:

SP-23 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE DONE BY TREC ENVIRONMENTAL, INC. DECEMBER 2, 2006

SP-14 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL PROBE DONE BY TREC ENVIRONMENTAL, INC. SEPTEMBER 16, 2006

B-1 — APPROXIMATE LOCATION AND DESIGNATION OF SOIL BORING DONE BY SJB SERVICES, INC. JUNE 1-9, 2006

NOTES:

1. BASE MAP ADAPTED FROM A 2004 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/ mg/interactive_main.html, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

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APPROXIMATE SCALE IN FEET

0 10 20 40

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100 WILLOWBROOK AVENUE
DUNKIRK, NEW YORK
REMEDIAL INVESTIGATION/FEASIBILITY STUDY
FIELD ACTIVITIES PLAN
PCB SOIL REMEDIATION EXCAVATION PLAN

PROJECT No.
21.0056196.20

FIGURE No.
4

APPROXIMATE PROPERTY/FENCE LINE

APPROXIMATE LOCATION OF GAS AND WATER LINE TRENCH EXCAVATION

APPROXIMATE BUILDING ADDITION FOOTPRINT

APPROXIMATE LOCATION OF ELECTRIC TRENCH EXCAVATION

APPROXIMATE AREA OF CONCERN

APPROXIMATE AREA OF PCB IMPACTED SOIL IDENTIFIED IN THE ELECTRIC TRENCH

EXISTING BUILDING

APPROXIMATE LOCATION OF COMMUNICATION TRENCH EXCAVATION

GUARD HOUSE

APPROXIMATE LOCATION OF LIMITED IMPACTED SOIL ENCOUNTERED DURING EXCAVATION

APPROXIMATE LOCATION OF SOUTHERN TRENCH EXCAVATION

WILLOWBROOK AVENUE

NORTH

NOTES:

APPROXIMATE LOCATION OF PROPOSED MONITORING WELL

APPROXIMATE LOCATION OF PROPOSED SOIL PROBE

NOTES:

1. BASE MAP ADAPTED FROM A 2004 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/mg/interactive_main.html, AND FIELD OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

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APPROXIMATE SCALE IN FEET

0 30 60 120

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100 WILLOWBROOK AVENUE, DUNKIRK, NEW YORK

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

FIELD ACTIVITIES PLAN

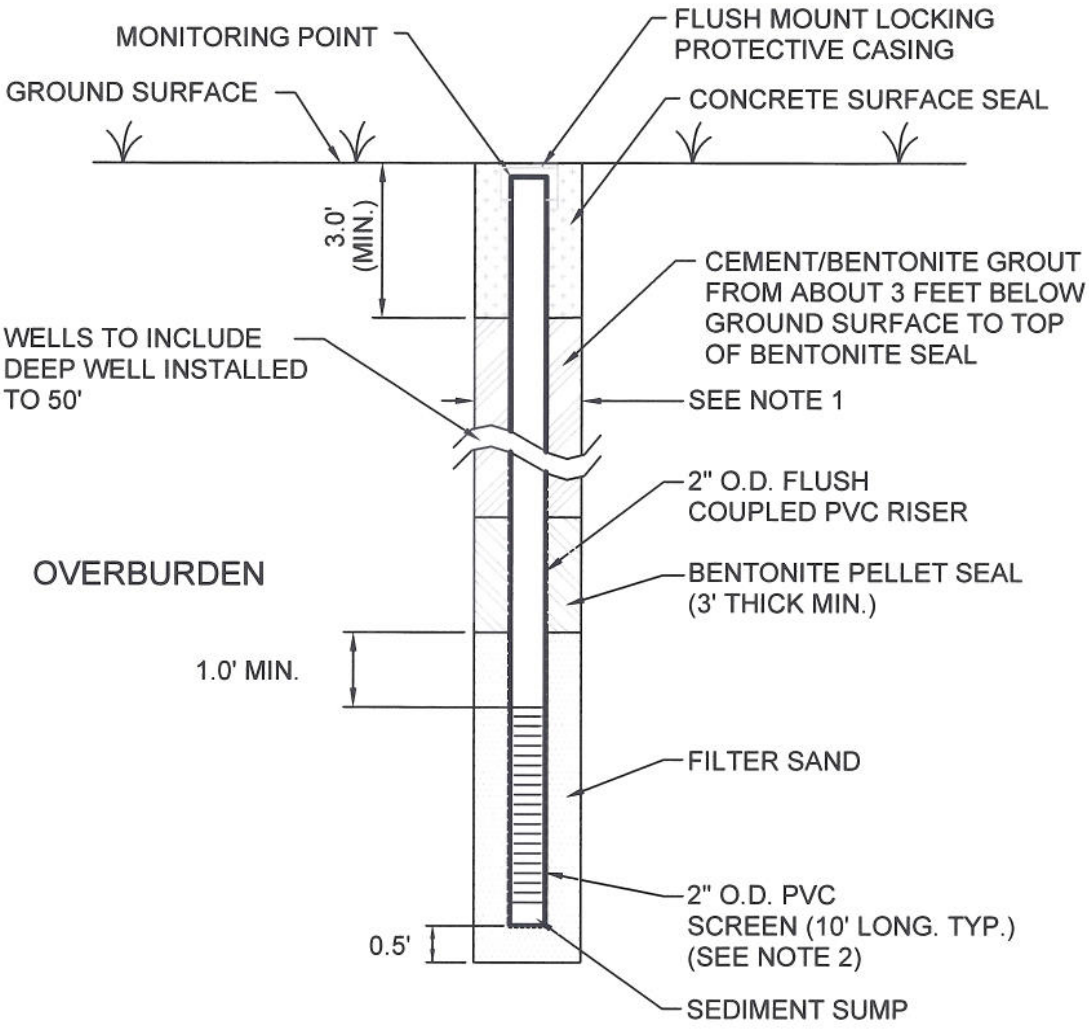
REMEDIAL INVESTIGATION EXPLORATION LOCATION PLAN

PROJECT No.

21.0056196.20

FIGURE No.

5



NOTES:

1. OVERBURDEN DRILLED WITH 4-1/4 INCH HOLLOW STEM AUGERS ON A ROTARY RIG.

2. WELL SCREEN SHALL BE 0.01 INCH FACTORY SLOTTED.

DRAWN BY: DEW

DATE: MARCH 2007

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SCALE IN FEET

NOT TO SCALE

SPECIAL METALS CORPORATION

DUNKIRK FACILITY

100 WILLOWBROOK AVENUE, DUNKIRK, NEW YORK

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

FIELD ACTIVITIES PLAN

PROPOSED OVERBURDEN MONITORING WELL INSTALLATION DIAGRAM

PROJECT No.

21.0056196.20

FIGURE No.

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