OCCIDENTAL CHEMICAL CORPORATION
OLIN CORPORATION

VERIFICATION SAMPLING
DATA SUMMARY REPORT

ACCELERATED REMEDIAL PROGRAM FOR OFF-SITE SOILS
TRIANGULAR AREA NORTH OF BUFFALO AVENUE

102nd STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

NOVEMBER, 1993

FLUOR DANIEL, INC.
Philadelphia Operations Center
Marlton, New Jersey

TABLE OF CONTENTS

SECTION **PAGE**

1.0 INTRODUCTION

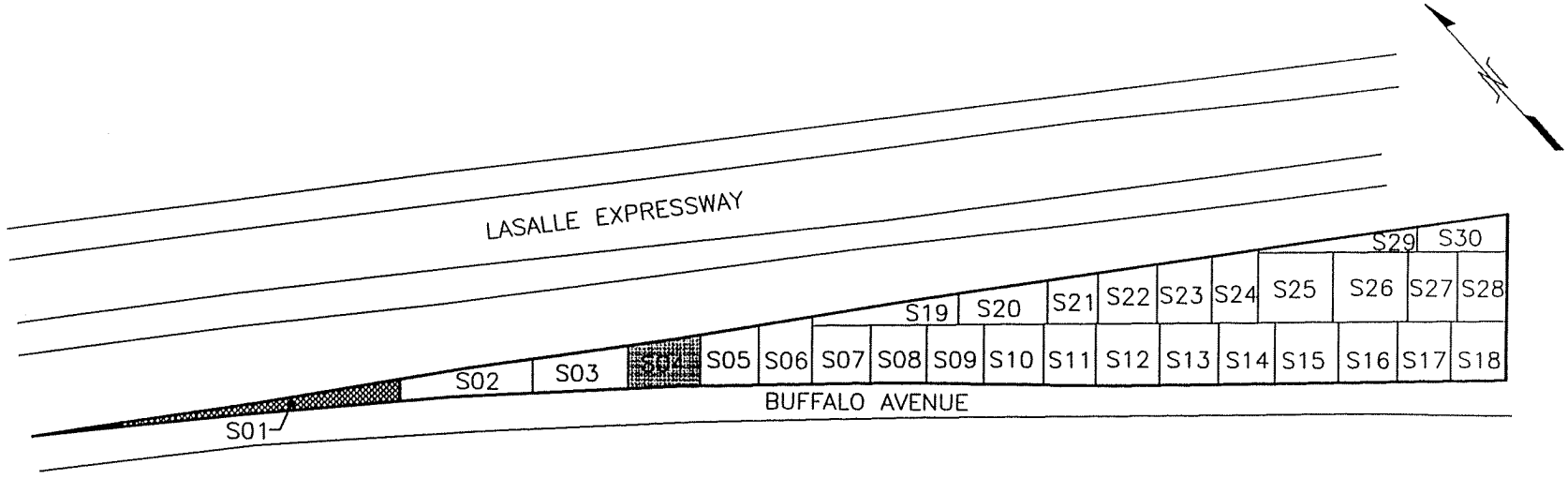
This Data Summary Report provides the results of verification sampling and analysis to determine the limits of excavation for the Accelerated Remedial Program for Off-Site Soils for the Triangular Area North of Buffalo Avenue. These off-site soils constitute a part of Operable Unit One (OU-1) at the 102nd Street Landfill Site (Site). All field and analytical work was completed in compliance with the Remedial Design Document Accelerated Remedial Program for Off-Site soils Triangular Area North of Buffalo Avenue, dated February 19, 1993, including Addendum (RDD). Included as part of the RDD are the Quality Assurance Project Plan (QAPP) and the Sampling and Testing Program (SATP). The following record of field work, analytical testing, and the determination of the Triangular Area excavation depths and limits has been completed in accordance with the RDD.

The objective of the soil sampling program was to determine and finalize the depth of excavation throughout the Triangular Area prior to soil excavation. The survey levels for soil removal were established at 100 μg/kg for each of the organic Site Specific Indicator (SSI) parameters that were determined for this Site. The organic SSI parameters are provided in Table 1.

A sampling grid was presented in the RDD to subdivide the Triangular Area into quadrants that represent approximately 100 cubic yards of soil to be excavated. The volumes were based on an excavation depth of 18 inches. Each grid quadrant was sampled and analyzed to determine the depth of excavation necessary to achieve the survey levels, in increments of 18 inches. Additional rounds of sampling and testing were necessary to finalize depths of excavation in two grid quadrants (S01 and S04). The results were used to delineate the depth of excavation required throughout the Triangular Area. Final depths of excavation are shown on Figure 2.

2.0 FIELD SAMPLING PROGRAM

The field sampling program was started on Thursday, September 9, 1993. The limits of the Triangular Area were surveyed and staked by a licensed New York State surveyor. The individual sampling grid was laid out in the field and the corners of each grid quadrant recorded. The sampling grid coordinates are provided in Appendix A. Figure 1 shows the sampling grid configuration.



LEGEND:

- 18 INCH EXCAVATION DEPTH
- 36 INCH EXCAVATION DEPTH
- 54 INCH EXCAVATION DEPTH

0 120 FT.

NOTE:

1. 5 SOIL SAMPLES WERE OBTAINED FROM EACH AREA AND COMPOSITED.

FLUOR DANIEL

ENGINEERING

OXYCHEM/OLIN REMEDIAL ACTION
102ND STREET LANDFILL SITE
TRIANGULAR AREA
NORTH OF BUFFALO AVENUE

SOIL EXCAVATION DEPTH GRID

1" = 120'-0"

23606100

FIGURE 2 D

F:\WPTF\23606100\SK-02.DWG AMY 11/19/93

TABLE 1

Site Specific Indicator Parameters

Parameter	Action Level (μg/kg)
2-Monochlorotoluene	100
4-Monochlorotoluene	100
1,2-Dichlorobenzene	100
1,4-Dichlorobenzene	100
1,2,3-Trichlorobenzene	100
1,2,4-Trichlorobenzene	100
1,2,3,4-Tetrachlorobenzene	100
1,2,4,5-Tetrachlorobenzene	100
Pentachlorobenzene	100
Hexachlorobenzene	100
Alpha-Hexachlorocyclohexane	100
Beta-Hexachlorocyclohexane	100
Gamma-Hexachlorocyclohexane	100
Delta-Hexachlorocyclohexane	100
2,4-Dichlorophenol	100
2,5-Dichlorophenol	100
2,4,5-Trichlorophenol	100
2,4,6-Trichlorophenol	100

The soil sampling began on Wednesday, September 15, 1993. The initial round of sampling, from the 18-inch and 36-inch depth was completed on Wednesday, September 22, 1993. The procedures described in the SATP of the RDD were followed in the field.

Analytical test results of the 18-inch depth samples indicated that survey levels of 100 μg/kg were exceeded in grid quadrants S01 and S04 (see Section 3). All other grid quadrant results were below survey levels at the 18-inch depth.

The testing of the 36-inch depth samples from grid quadrants S01 and S04 determined that grid quadrant S01 was below survey levels at the 36-inch depth. Analytical test results of the sample collected from grid quadrant S04 indicated that the survey level was exceeded for one compound, beta-hexachlorocyclohexane, in the 36-inch depth composite sample. Verification samples at the 54-inch depth in this quadrant were collected on October 20, 1993.

Analytical test results for sample S04-03, at the 54-inch depth in grid quadrant S04, indicated a beta-hexachlorocyclohexane level of 120 μg/kg. It was believed that the test results for sample S04-03 may have been affected by soil from a shallower depth falling into the open borehole, prior to sample collection, and causing cross-contamination of the sample. Therefore, additional samples were collected from grid quadrant S-04 at the 54-inch depth.

The additional samples from the 54-inch depth in grid quadrant S04 were collected on November 2, 1993. A total of seven discrete samples were collected at the 54-inch depth and were tested individually to produce seven test results. All analytical testing protocols were adhered to. The analytical test results were below survey levels for all seven samples.

The results of all analytical testing are presented in Section 3.0.

2.1 SOIL SAMPLING PROCEDURES

Soil sampling locations in the individual grid quadrants were evenly distributed. Some sample locations were controlled by physical accessibility and restrictions caused by foundation slabs or surface debris. Soil samples were collected employing both of the sampling methodologies presented in the SATP. During the initial sampling event, in grid quadrants S06 through S30, the samples were collected using a drill rig to advance the boring and a split-spoon sampler to collect the samples. In grid quadrants S01 through S05 access was restricted due to the close

proximity of Buffalo Avenue, overhead power lines and heavy brush. Samples were collected in these grid quadrants using a power auger to advance the boring and a hand auger to collect the samples.

Samples were collected by advancing hollow-stem augers to a depth of 18 inches below grade. The sample was collected from a depth of 18 inches to 24 inches using a split-spoon sampler. The sample was removed from the split-spoon sampler, screened with a photoionization detector, described in a field logbook, and placed in a stainless steel bowl for compositing. The borehole was then advanced to a depth of 36 inches below grade and a second sample was collected from the 36-inch to 42-inch interval. This sample was also placed in a stainless steel bowl for compositing. In some instances, the split-spoon was advanced an additional six inches to collect the necessary sample volume.

This procedure was repeated at the five boreholes within a given grid quadrant until all five samples had been collected for each level (18 inches and 36 inches). Samples were then composited in a stainless steel bowl, using a stainless steel spoon. After each sample was thoroughly homogenized, two four-ounce jars were filled by packing soil and leaving no head space at the top of the jar. The upper sample for each grid quadrant (18 inches to 24 inches) was designated 01, and the lower sample (36 inches to 42 inches) was designated 02. For grid quadrant S01 these samples were designated S01-01 and S01-02, respectively.

All samples were screened with an Hnu photoionization detector (PID) and no volatile organic compounds were detected in any boreholes or in the work area. No staining of the soil or odors were encountered during the boring program. The boreholes were filled with a bentonite-cement grout mixture.

The October 20, 1993 sampling activity to collect a composite sample (S04-03) from the interval of 54 inches to 60 inches from grid quadrant S04 was accomplished using the procedures described above.

The November 2, 1993 sampling program used hollow-stem augers and split-spoon sampling procedures described above were used to recover samples from the interval of 54 inches to 60 inches below ground surface. Each sample was placed in two four-ounce sample jars. The split spoon sampler was decontaminated between borings and a clean auger was used in place of the previous auger.

2.2 FIELD DECONTAMINATION PROCEDURES

All drilling and sampling equipment was cleaned and decontaminated before moving onto the site and at the completion of each grid quadrant. Equipment was decontaminated at the Occidental Chemical Corporation (OxyChem) Buffalo Avenue Plant, S Area decontamination station.

Cleaning and decontamination consisted of a high pressure steam wash of the back of the drill rig, the augers, the split-spoons, and the stainless steel bowls and spoons. The split-spoons, bowls and spoons were triple rinsed with commercially available distilled water. For each grid quadrant there were two split-spoon samplers, one utilized for the 18-inch sample and a second utilized for the 36-inch sample. These were kept physically separated during sampling.

When necessary, at the discretion of the field sampling team, the split-spoons and stainless steel bowls were decontaminated in the field using Alconox and tap water, and triple rinsed with commercially available distilled water. Decontamination rinses were contained in a closed container for transfer to the S Area decontamination station for treatment by OxyChem.

At the completion of each sampling program, the drill rig was decontaminated at the S Area prior to demobilizing.

3.0 ANALYTICAL TESTING

All laboratory analytical work was performed in accordance with the approved Quality Assurance Project Plan (QAPP) of the RDD. The samples were analyzed for the organic SSI parameters (see Table 1) at a detection level of 100 μg/kg.

Volatile organic compounds were analyzed using EPA Method 8240 and semi-volatile organic compounds were analyzed by the high boiler method which is described in Milestone Report #9, Appendix C, Quality Assurance Plan for the Site Specific Indicators, 102nd Street Landfill Site, July 18, 1986. When positive results were obtained using the high boiler method, the samples were then analyzed by GC/MS to confirm the presence of these compounds. If the presence of the compound was not confirmed by GC/MS the values have not been reported as above survey limits.

3.1 ANALYTICAL RESULTS

All of the analytical test results for the organic SSI parameters at the 18-inch depth were below the survey levels of 100 ug/kg with the exception of grid quadrants S01 and S04. Sample S01-01 had hexachlorobenzene at a concentration of 110 μg/kg and beta-hexachlorocyclohexane at a concentration of 360 μg/kg. Sample S04-01 had beta-hexachlorocyclohexane at a concentration of 340 μg/kg. Results above survey levels in these two grid quadrants required the testing of the samples from the 36-inch depth (S01-02 and S04-02).

In grid quadrant S01, the composite sample from the 36-inch depth (S01-02) was analyzed and found to be below survey levels. In grid quadrant S04, the 36-inch composite sample (S04-02) was above the survey level for beta-hexachlorocyclohexane at a concentration of 150 ug/kg. Grid quadrant S04 was resampled at a depth of 54 inches to 60 inches to determine organic SSI concentrations at that depth. The composite sample S04-03 had a concentration of beta-hexachlorocyclohexane at 120 μg/kg. It was believed that the test results for sample S04-03 may have been affected by soil from a shallower depth falling into the open borehole, prior to sample collection, and causing cross-contamination of the sample. The grid quadrant was resampled to confirm the initial 54-inch test results. Seven discrete samples were collected and tested individually to determine organic SSI concentrations. All analytical results in this final round of testing were found to be below SSI survey levels.

A summary of analytical test results for all samples is provided in Table 2.

3.2 DATA VALIDATION

An independent validation of the analytical results was conducted for OxyChem. The data presented in this Data Summary Report has been through rigorous quality assurance protocols and is the result of that data validation. The Data Validation Report is presented as Appendix B of this report.

4.0 SUMMARY OF FINDINGS

Excavation of soils at the Triangular Area will be completed to a depth of 18 inches throughout the site with the exceptions of grid quadrants S01 and S04. Grid quadrant S01 will be excavated to a depth of 36 inches. Grid quadrant S04 will be excavated to a depth of 54 inches. Figure 2 shows the grid quadrant locations and the corresponding depth of excavation at each grid. Survey coordinates of the corners of the grid quadrants are provided in Appendix A of this report.

TABLE 2
ANALYTICAL RESULTS SUMMARY
TRIANGULAR AREA VERIFICATION SAMPLING
102ND STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

Sample I.D. Collection Date	Units	S01-01 09/22/93	S01-02 09/22/93	S02-01 09/22/93	S03-01 09/21/93	S04-01 09/21/93	S04-02 09/21/93	S04-03 10/20/93
Depth	inches	18	36	18	18	18	36	54
SSI High Boiler Semi-Volatiles								
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	110	ND100	ND100	ND100	ND100	ND100	ND100
alpha-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
beta-hexachlorocyclohexane	µg/kg	360	ND100	ND100	ND100	340	150	120
gamma-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
delta-hexachlorocyclehexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles								
2-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
4-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100

TABLE 2 (Con't)
ANALYTICAL RESULTS SUMMARY
TRIANGULAR AREA VERIFICATION SAMPLING
102ND STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

Sample I.D. Collection Date	Units	S04-04A1 11/02/93	S04-04B1 11/02/93	S04-04C1 11/02/93	S04-04D1 11/02/93	S04-04E1 11/02/93	S04-04F1 11/02/93	S04-04G1 11/02/93
Depth	inches	54	54	54	54	54	54	54
SSI High Boiler Semi-Volatiles								
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
alpha-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
beta-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
gamma-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
delta-hexachlorocyclehexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles								
2-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
4-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100

TABLE 2 (Con't)
ANALYTICAL RESULTS SUMMARY
TRIANGULAR AREA VERIFICATION SAMPLING
102ND STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

Sample I.D. Collection Date	Units	S05-01 09/21/93	S06-01 09/17/93	S07-01 09/17/93	S08-01 09/17/93	S09-01 09/17/93	S10-01 09/16/93	S11-01 09/16/93
Depth	inches	18	18	18	18	18	18	18
SSI High Boiler Semi-Volatiles								
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
alpha-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
beta-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
gamma-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
delta-hexachlorocyclehexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles								
2-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
4-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100

TABLE 2 (Con't)
ANALYTICAL RESULTS SUMMARY
TRIANGULAR AREA VERIFICATION SAMPLING
102ND STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

Sample I.D. Collection Date	Units	S12-01 09/16/93	S13-01 09/16/93	S14-01 09/16/93	S15-01 09/16/93	S16-01 09/15/93	S17-01 09/15/93	S18-01 09/15/93
Depth	inches	18	18	18	18	18	18	18
SSI High Boiler Semi-Volatiles								
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
alpha-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
beta-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
gamma-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
delta-hexachlorocyclehexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles								
2-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
4-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100

TABLE 2 (Con't)
ANALYTICAL RESULTS SUMMARY
TRIANGULAR AREA VERIFICATION SAMPLING
102ND STREET LANDFILL SITE
NIAGARA FALLS, NEW YORK

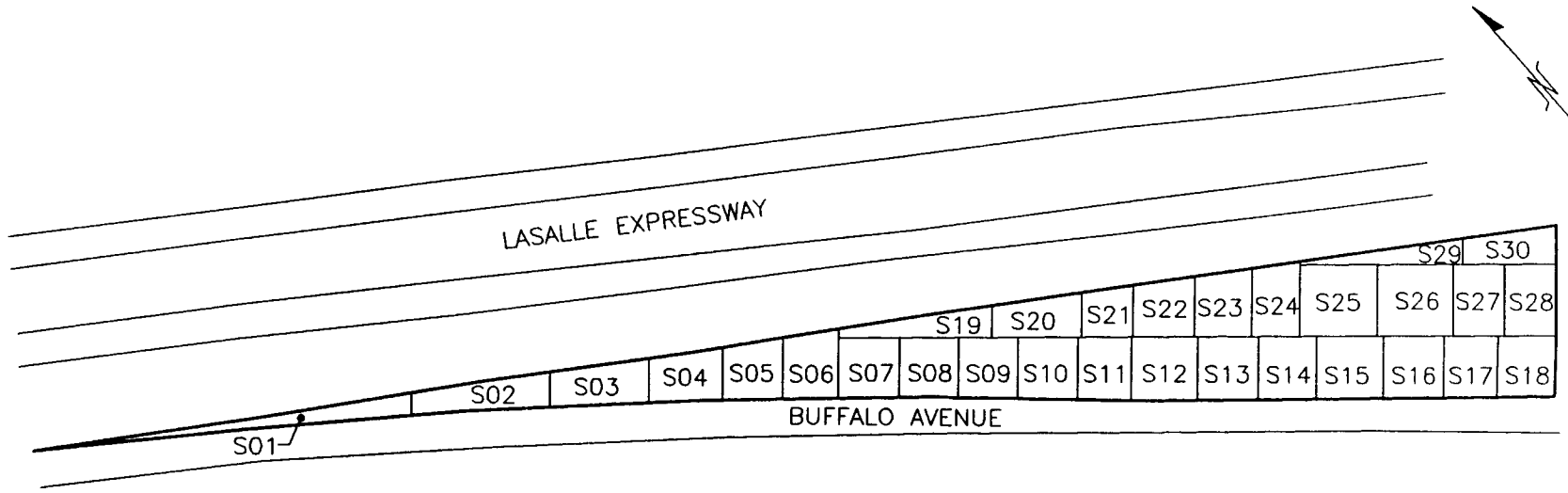
Sample I.D. Collection Date	Units	S19-01 09/20/93	S20-01 09/20/93	S21-01 09/20/93	S22-01 09/20/93	S23-01 09/20/93	S24-01 09/18/93	S25-01 09/18/93
Depth	inches	18	18	18	18	18	18	18
SSI High Boiler Semi-Volatiles								
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
alpha-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
beta-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
gamma-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
delta-hexachlorocyclehexane	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles								
2-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
4-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100

TABLE 2 (Con't)
ANALYTICAL RESULTS SUMMARY
TRIANGULAR AREA VERIFICATION SAMPLING

Sample I.D. Collection Date	Units	S26-01 09/18/93	S27-01 09/18/93	S28-01 09/18/93	S29-01 09/21/93	S30-01 09/21/93
Depth	inches	18	18	18	18	18
SSI High Boiler Semi-Volatiles						
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100
alpha-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100
beta-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100
gamma-hexachlorocyclohexane	µg/kg	ND100	ND100	ND100	ND100	ND100
delta-hexachlorocyclehexane	µg/kg	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100
SSI Volatiles						
2-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100
4-Monochlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100

Notes:

ND Non-detect at the associated value
SSI Site Specific Indicators



NOTE:

1. 5 SOIL SAMPLES WERE OBTAINED FROM EACH AREA AND COMPOSITED.

0 120 FT.

FLUOR DANIEL

ENGINEERING

OXYCHEM/OLIN REMEDIAL ACTION
102ND STREET LANDFILL SITE
TRIANGULAR AREA
NORTH OF BUFFALO AVENUE

COMPOSITE SAMPLING GRID

1" = 120'-0"

23606100

FIGURE 1 D

F:\MPIT\23606100\SK-01.DWG AMV 11/19/93

APPENDIX A

SAMPLING GRID SURVEY COORDINATES

APPENDIX A

SAMPLING GRID COORDINATES

GRID #	NORTHWEST CORNER		NORTHEAST CORNER		SOUTHWEST CORNER		SOUTHEAST CORNER	
	NORTH	EAST	NORTH	EAST	NORTH	EAST	NORTH	EAST
1	1121044.7000	401357.0000	1120932.2894	401648.4493	1121044.7000	401357.0000	1120909.3940	401635.2470
2	1120932.2894	401648.4493	1120894.6225	401737.5462	1120909.3940	401635.2470	1120863.5381	401719.6218
3	1120894.6225	401737.5462	1120862.8264	401800.0155	1120863.5381	401719.6218	1120828.3077	401780.1107
4	1120862.8264	401800.0155	1120841.2221	401847.5835	1120828.3077	401780.1107	1120801.9379	401824.9308
5	1120841.2221	401847.5835	1120823.5198	401890.4755	1120801.9379	401824.9308	1120778.7863	401864.6806
6	1120823.5198	401890.4755	1120808.8962	401925.9081	1120778.7863	401864.6806	1120759.6611	401897.5174
7	1120795.6349	401918.2611	1120774.5683	401954.5958	1120759.6611	401897.5174	1120738.5227	401933.8106
8	1120774.5683	401954.5958	1120753.5016	401990.9304	1120738.5227	401933.8106	1120717.3843	401970.1039
9	1120753.5016	401990.9304	1122732.4350	402027.2651	1120717.3843	401970.1039	1120696.2460	402006.3972
10	1122732.4350	402027.2651	1120711.3684	402063.5998	1120696.2460	402006.3972	1120675.1076	402042.6905
11	1120711.3684	402063.5998	1120690.3018	402099.9344	1120675.1076	402042.6905	1120653.9692	402078.9837
12	1120690.3018	402099.9344	1120669.2352	402136.2691	1120653.9692	402078.9837	1120632.8507	402115.2885
13	1120669.2352	402136.2691	1120648.1685	402172.6037	1120632.8507	402115.2885	1120611.7841	402151.6232
14	1120648.1685	402172.6037	1120627.1019	402208.9384	1120611.7841	402151.6232	1120590.7175	402187.9578
15	1120627.1019	402208.9384	1120606.0353	402245.2731	1120590.7175	402187.9578	1120569.6509	402224.2925

APPENDIX A - Continued

SAMPLING GRID COORDINATES

GRID #	NORTHWEST CORNER		NORTHEAST CORNER		SOUTHWEST CORNER		SOUTHEAST CORNER	
	NORTH	EAST	NORTH	EAST	NORTH	EAST	NORTH	EAST
16	1120606.0353	402245.2731	1120584.9687	402281.6077	1120569.6509	402225.2925	1120548.5843	402260.6271
17	1120584.9687	402281.6077	1120563.9021	402317.9424	1120548.5843	402260.6271	1120527.5176	402296.9618
18	1120563.9021	402317.9424	1120541.7824	402356.0932	1120527.5176	402296.9618	1120505.4478	402335.0267
19	1120808.8962	401925.9081	1120763.7217	402029.1453	1120795.6349	401918.2611	1120739.4572	402015.1535
20	1120763.7217	402029.1453	1120737.4379	402085.5585	1120739.4572	402015.1535	1120708.3589	402068.7904
21	1120737.4379	402085.5585	1120720.4807	402121.9540	1120708.3589	402068.7904	1120688.2954	402103.3949
22	1120720.4807	402121.9540	1120704.5266	402158.9281	1120688.2954	402103.3949	1120668.2320	402137.9993
23	1120704.5266	402158.9281	1120689.6499	402196.5234	1120668.2320	402137.9993	1120648.1685	402172.6037
24	1120689.6499	402196.5234	1120674.1382	402226.8265	1120648.1685	402172.6037	1120631.1146	402202.0175
25	1120674.1382	402226.8265	1120647.6628	402272.7400	1120631.1146	402202.0175	1120604.3481	402247.7632
26	1120647.6628	402272.7400	1120621.1874	402318.6536	1120604.3481	402247.7632	1120577.8727	402293.6767
27	1120621.1874	402318.6536	1120603.2042	402349.8401	1120577.8727	402293.6767	1120559.8894	402324.8633
28	1120603.2042	402349.8401	1120585.0378	402381.1725	1120559.8894	402324.8633	1120541.7824	402356.0932
29	1120684.3915	402209.8123	1120634.7683	402333.4108	1120684.3915	402209.8123	1120618.2517	402323.8868
30	1120634.7683	402333.4108	1120609.0167	402394.7482	1120618.2517	402323.8868	1120585.0378	402381.1725

APPENDIX B

DATA VALIDATION REPORT

QUALITY ASSURANCE/QUALITY CONTROL REVIEW
102nd STREET REMEDIATION
OCCIDENTAL CHEMICAL CORPORATION
NIAGARA FALLS, NEW YORK
SEPTEMBER 1993

TABLE OF CONTENTS

LIST OF TABLES
(Following Report)

1.0 EXECUTIVE SUMMARY

Environmental soil samples were collected in support of the 102nd Street Remediation Project during September 1993. All soils were analyzed for Site Specific Indicators (SSI) using method SW-846 8240 for volatile compounds and an Occidental Chemical Corporation (OxyChem) high boiler method for semi-volatile compounds. With the exception of hexachlorobenzene and 2,4-dichlorophenol in sample S21-01, all data has been judged to be acceptable without qualification. Hexachlorobenzene and 2,4-dichlorophenol results for S21-01 have been rejected in the following Quality Assurance/Quality Control (QA/QC) review due to exceedingly low matrix spike recoveries.

All SSI compounds specified in the Quality Assurance Project Plan (QAPP), except for mercury, were reported in the data packages assessed herein. Percent solids results ranged from 79-92 percent, indicating good representation of the analytical results for all samples.

During GC/ECD analysis various samples and method blanks yielded concentrations of 2,4-dichlorophenol and 2,5-dichlorophenol; however, after reanalysis via GC/MS neither compound was confirmed to be present and therefore not reported. All analytical results are presented in Table 1.

2.0 QUALITY ASSURANCE/QUALITY CONTROL REVIEW

Analytical services for Occidental Chemical Corporation (OxyChem)/Fluor Daniel were provided by Recra Environmental, Incorporated (Recra).

Thirty (30) samples were collected in September 1993 in support of the 102nd Street Remediation Project, Niagara Falls, New York. Samples were submitted to the laboratory for the following analyses:

Selected Volatile Organic Compounds (VOCs)	USEPA SW-846 Method 8240
Selected Semi-Volatile Compounds	Modified Occidental Chemical Corporation High Boiler Method - GC/ECD

Method 8240 is referenced from "Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition", September 1986. The OxyChem Modified High Boiler method has been modified from Methods 3540 and 8120, "Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition", September 1986.

The Quality Assurance/Quality Control (QA/QC) criteria by which these data have been assessed are outlined in the aforementioned methods and the following documents:

i) "National Functional Guidelines for Organic Data Review", December 1990 (revised June 1991); and

ii) Attachment C, "Quality Assurance Project Plan", referenced from the Remedial Design Document for Off-Site Soils at 102nd Street Landfill Site, Niagara Falls, New York.

Item i) will hereinafter be referred to as the "Guidelines". Item ii) will hereinafter be referred to as the QAPP. The data quality assurance and validation is presented in the subsections which follow.

In the instances where the "Guidelines" require qualification of ND values as estimated (data qualifier J), professional judgment was used instead to reject or accept the ND result for its intended use. Therefore, the J qualifier was not used on ND results herein.

3.0 HOLDING TIMES

Based on the criteria outlined in the QAPP, the following holding time information was assessed:

High Boiler/Semi-Volatiles	7 days from collection to extraction 30 days from extraction to analysis
Volatiles	7 days from collection to analysis

Comparison of the collection dates of all samples (from the notation appearing on the Chain of Custody documents) with the reported dates of extraction and/or analysis indicated that all samples were extracted and/or analyzed within the established holding times. Table 2 presents collection, extraction, analysis and holding time information for all samples.

4.0 INTERNAL STANDARD PERFORMANCE

The purpose of assessing the internal standard recoveries was to ensure that gas chromatograph/mass spectrometer (GC/MS) sensitivity and response remained stable during each analytical sequence.

In accordance with the Guidelines, internal standard area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated calibration standard. All investigative samples submitted for selected volatiles showed acceptable internal standard recoveries. Internal standard recoveries are presented in Table 3 for all samples. Internal standards were not evaluated for high boiler/semi-volatile analysis.

5.0 METHOD BLANK ANALYSES

The purpose of assessing the results of method blank analyses was to determine the existence and magnitude of sample contamination. Method blanks were analyzed at a minimum frequency of one per analytical batch (per extraction or analysis set).

All method blanks for volatile and high boiler/semi-volatile analyses yielded non-detected concentrations of the analytes of interest. This indicated that the potential for contamination attributable to laboratory conditions and/or procedures was minimal during these analyses. Table 4 presents all relevant method blank results.

6.0 SURROGATE SPIKE RECOVERIES

In accordance with Method 8240, the surrogate compounds toluene-d_8, bromofluorobenzene, and 1,2-dichloroethane-d_4 were added to those samples submitted for selected volatile compound analysis prior to analysis. The surrogate compounds were added to monitor laboratory performance on an individual sample basis.

All investigative samples showed surrogate spike recoveries within the method control limits. This indicated satisfactory laboratory performance was achieved on an individual sample basis during volatile analysis. Table 5 presents all surrogate spike recoveries. Surrogates were not added to samples analyzed by high boiler/semi-volatile analysis, therefore were not evaluated.

7.0 MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) ANALYSES

The recoveries of MS/MSD analyses were used to assess the analytical accuracy on an individual sample basis while the percent reproducibility (RPD) between MS and MSD was evaluated as an indicator of analytical precision achieved for that sample. MS/MSD analyses were performed at a minimum frequency of one per 20 investigative samples.

Samples S16-01 and S21-01 were analyzed as MS/MSD samples for volatiles and high boiler/semi-volatile analyses. Table 6 presents all MS/MSD recoveries and RPD values for MS/MSD analyses. For sample S16-01, 2,4-dichlorophenol yielded outlying MSD recovery; however, due to acceptable MS recovery sample results were not qualified.

Sample S21-01 yielded outlying MS and MSD recoveries for 2,4-dichlorophenol and hexachlorobenzene. Due to the extreme exceedance of these recoveries, the analytical results for these compounds were qualified as unusable. Low recoveries are possibly due to non-homogeneity of the soil sample or poor spiking procedures. However, the remaining MS/MSD compounds yielded acceptable recoveries.

8.0 FIELD QA/QC

Trip blanks were not submitted to the laboratory for analysis, therefore possibility of field contamination could not be evaluated.

9.0 CONCLUSION

Based on this QA/QC review, these data, with the exception noted herein, are judged acceptable without qualification.

TABLE 1

ANALYTICAL RESULTS SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
SEPTEMBER 1993

Sample I.D. *Collection Date*	*units*	*S01-01* *09/22/93*	*S02-01* *09/22/93*	*S03-01* *09/21/93*	*S04-01* *09/21/93*	*S05-01* *09/21/93*	*S06-01* *09/17/93*	*S07-01* *09/17/93*	*S08-01* *09/17/93*
SSI High Boiler Semi-Volatiles									
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	110	ND100	ND100	ND100	ND100	ND100	ND100	ND100
alpha-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
beta-BHC	µg/kg	363	ND100	ND100	344	ND100	ND100	ND100	ND100
gamma-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
delta-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles									
o-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
p-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100

TABLE 1

ANALYTICAL RESULTS SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
SEPTEMBER 1993

Sample I.D. *Collection Date*	*units*	*S09-01* *09/17/93*	*S10-01* *09/16/93*	*S11-01* *09/16/93*	*S12-01* *09/16/93*	*S13-01* *09/16/93*	*S14-01* *09/16/93*	*S15-01* *09/16/93*	*S16-01* *09/15/93*
SSI High Boiler Semi-Volatiles									
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
alpha-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
beta-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
gamma-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
delta-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles									
o-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
p-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100

TABLE 1

ANALYTICAL RESULTS SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
SEPTEMBER 1993

Sample I.D. *Collection Date*	*units*	*S17-01* *09/15/93*	*S18-01* *09/15/93*	*S19-01* *09/20/93*	*S20-01* *09/20/93*	*S21-01* *09/20/93*	*S22-01* *09/20/93*	*S23-01* *09/20/93*	*S24-01* *09/18/93*
SSI High Boiler Semi-Volatiles									
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	R	ND100	ND100	ND100
alpha-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
beta-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
gamma-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
delta-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	R	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles									
o-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
p-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100	ND100	ND100

TABLE 1

ANALYTICAL RESULTS SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
SEPTEMBER 1993

Sample I.D. *Collection Date*	*units*	*S25-01* *09/18/93*	*S26-01* *09/18/93*	*S27-01* *09/18/93*	*S28-01* *09/18/93*	*S29-01* *09/21/93*	*S30-01* *09/21/93*
SSI High Boiler Semi-Volatiles							
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
alpha-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
beta-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
gamma-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
delta-BHC	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
SSI Volatiles							
o-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
p-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100	ND100	ND100

Notes:
ND Non-detect at the associated value
R Data is unusable
SSI Site Specific Indicators

TABLE 2

SAMPLE HOLDING TIME SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NY
SEPTEMBER 1993

Sample I.D.	*Method*	*Date Collected*	*Date Extracted*	*Date Analyzed*	*# of Days to Extraction*	*# of Days to Analysis*
S01-01	High Boiler	09/22/93	09/24/93	09/25/93	2	1
	Volatiles	09/22/93	-	09/23/93	-	1
S02-01	High Boiler	09/22/93	09/24/93	09/25/93	2	1
	Volatiles	09/22/93	-	09/23/93	-	1
S03-01	High Boiler	09/21/93	09/24/93	09/25/93	3	1
	Volatiles	09/21/93	-	09/22/93	-	1
S04-01	High Boiler	09/21/93	09/24/93	09/25/93	3	1
	Volatiles	09/21/93	-	09/22/93	-	1
S05-01	High Boiler	09/21/93	09/24/93	09/25/93	3	1
	Volatiles	09/21/93	-	09/22/93	-	1
S06-01	High Boiler	09/17/93	09/21/93	09/22/93	4	1
	Volatiles	09/17/93	-	09/20/93	-	3
S07-01	High Boiler	09/17/93	09/21/93	09/22/93	4	1
	Volatiles	09/17/93	-	09/20/93	-	3
S08-01	High Boiler	09/17/93	09/21/93	09/22/93	4	1
	Volatiles	09/17/93	-	09/20/93	-	3
S09-01	High Boiler	09/17/93	09/21/93	09/22/93	4	1
	Volatiles	09/17/93	-	09/20/93	-	3
S10-01	High Boiler	09/16/93	09/18/93	09/18/93	2	0
	Volatiles	09/16/93	-	09/17/93	-	1
S11-01	High Boiler	09/16/93	09/18/93	09/19/93	2	1
	Volatiles	09/16/93	-	09/17/93	-	1
S12-01	High Boiler	09/16/93	09/18/93	09/19/93	2	1
	Volatiles	09/16/93	-	09/17/93	-	1
S13-01	High Boiler	09/16/93	09/18/93	09/19/93	2	1
	Volatiles	09/16/93	-	09/17/93	-	1
S14-01	High Boiler	09/16/93	09/18/93	09/19/93	2	1
	Volatiles	09/16/93	-	09/17/93	-	1
S15-01	High Boiler	09/16/93	09/18/93	09/19/93	2	1
	Volatiles	09/16/93	-	09/17/93	-	1
S16-01	High Boiler	09/15/93	09/18/93	09/18/93	3	0
	Volatiles	09/15/93	-	09/17/93	-	2

TABLE 2

SAMPLE HOLDING TIME SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NY
SEPTEMBER 1993

Sample I.D.	*Method*	*Date Collected*	*Date Extracted*	*Date Analyzed*	*# of Days to Extraction*	*# of Days to Analysis*
S17-01	High Boiler	09/15/93	09/18/93	09/18/93	3	0
	Volatiles	09/15/93	-	09/17/93	-	2
S18-01	High Boiler	09/15/93	09/18/93	09/19/93	3	1
	Volatiles	09/15/93	-	0917/93	-	2
S19-01	High Boiler	09/20/93	09/24/93	09/25/93	4	1
	Volatiles	09/20/93	-	09/22/93	-	2
S20-01	High Boiler	09/20/93	09/24/93	09/24/93	4	0
	Volatiles	09/20/93	-	09/22/93	-	2
S21-01	High Boiler	09/20/93	09/24/93	09/24/93	4	0
	Volatiles	09/20/93	-	09/22/93	-	2
S22-01	High Boiler	09/20/93	09/22/93	09/24/93	2	2
	Volatiles	09/20/93	-	09/22/93	-	2
S23-01	High Boiler	09/20/93	09/22/93	09/24/93	2	2
	Volatiles	09/20/93	-	09/22/93	-	2
S24-01	High Boiler	09/18/93	09/21/93	09/22/93	3	1
	Volatiles	09/18/93	-	09/20/93	-	2
S25-01	High Boiler	09/18/93	09/21/93	09/22/93	3	1
	Volatiles	09/18/93	-	09/20/93	-	2
S26-01	High Boiler	09/18/93	09/21/93	09/22/93	3	1
	Volatiles	09/18/93	-	09/20/93	-	2
S27-01	High Boiler	09/18/93	09/21/93	09/22/93	3	1
	Volatiles	09/18/93	-	09/20/93	-	2
S28-01	High Boiler	09/18/93	09/21/93	09/22/93	3	1
	Volatiles	09/18/93	-	09/20/93	-	2
S29-01	High Boiler	09/21/93	09/24/93	09/25/93	3	1
	Volatiles	09/21/93	-	09/22/93	-	1
S30-01	High Boiler	09/20/93	09/24/93	09/25/93	4	1

TABLE 3

INTERNAL STANDARD RECOVERY SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NY
SEPTEMBER 1993

Sample I.D.	*Bromochloromethane (% Recovery)*	*1,4-Difluorobenzene (% Recovery)*	*Chlorobenzene-D5 (% Recovery)*
S01-01	95	89	89
S02-01	104	100	96
S03-01	88	85	82
S04-01	97	90	86
S05-01	90	87	85
S06-01	94	87	84
S07-01	104	98	95
S08-01	90	86	82
S09-01	112	98	91
S10-01	95	80	70
S11-01	81	69	60
S12-01	95	90	87
S13-01	88	78	76
S14-01	94	84	82
S15-01	83	78	74
S16-01	79	77	75
S16-01 MS	117	112	103
S16-01 MSD	106	94	92
S17-01	99	89	86
S18-01	103	98	94
S19-01	101	95	92
S20-01	99	99	98
S21-01	85	80	77
S21-01 MS	93	89	83
S21-01 MSD	83	70	64
S22-01	83	71	64
S23-01	88	71	64
S24-01	91	77	71
S25-01	81	69	62
S26-01	90	75	67
S27-01	82	71	65
S28-01	94	75	65
S29-01	82	68	59
S30-01	78	66	57
Method Blank (09/17/93)	100	100	100
Method Blank (09/20/93)	92	84	82
Method Blank (09/22/93)	97	95	93
Method Blank (09/23/93)	95	87	86
QC Limits:	(50-200)	(50-200)	(50-200)

Notes:
MS Matrix Spike
MSD Matrix Spike Duplicate

TABLE 4

METHOD BLANK ANALYSIS
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NY
SEPTEMBER 1993

SSI High Boiler - Semi-Volatiles

Compound	*Extraction Date* / *units*	*Method Blank 09/18/93*	*Method Blank 09/21/93*	*Method Blank 9/22/93*	*Method Blank 09/24/93*
1,2,3-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100
1,2,4-Trichlorobenzene	µg/kg	ND100	ND100	ND100	ND100
1,2,3,4-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100
1,2,4,5-Tetrachlorobenzene	µg/kg	ND100	ND100	ND100	ND100
Pentachlorobenzene	µg/kg	ND100	ND100	ND100	ND100
Hexachlorobenzene	µg/kg	ND100	ND100	ND100	ND100
alpha-BHC	µg/kg	ND100	ND100	ND100	ND100
beta-BHC	µg/kg	ND100	ND100	ND100	ND100
gamma-BHC	µg/kg	ND100	ND100	ND100	ND100
delta-BHC	µg/kg	ND100	ND100	ND100	ND100
2,5-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100
2,4-Dichlorophenol	µg/kg	ND100	ND100	ND100	ND100
2,4,5-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100
2,4,6-Trichlorophenol	µg/kg	ND100	ND100	ND100	ND100

SSI - Volatiles

Compound	*Analysis Date* / *units*	*Method Blank 09/17/93*	*Method Blank 09/20/93*	*Method Blank 09/22/93*	*Method Blank 09/23/93*
o-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100
p-Chlorotoluene	µg/kg	ND100	ND100	ND100	ND100
1,2-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100
1,4-Dichlorobenzene	µg/kg	ND100	ND100	ND100	ND100

Notes:
ND Non-detect at the associated value

TABLE 5

SURROGATE SPIKE RECOVERY SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NY
SEPTEMBER 1993

Sample I.D.	*1,2-Dichloroethane-D4 (% Recovery)*	*Toluene-D8 (% Recovery)*	*p-Bromofluorobenzene (% Recovery)*
S01-01	100	100	100
S02-01	95	100	103
S03-01	100	99	102
S04-01	94	100	99
S05-01	96	99	98
S06-01	97	101	100
S07-01	99	100	96
S08-01	98	100	99
S09-01	101	100	98
S10-01	96	103	100
S11-01	98	99	104
S12-01	98	102	101
S13-01	94	101	92
S14-01	92	104	91
S15-01	98	106	89
S16-01	95	100	102
S16-01 MS	91	102	93
S16-01 MSD	94	101	98
S17-01	99	102	100
S18-01	104	99	99
S19-01	96	103	97
S20-01	100	102	91
S21-01	98	103	90
S21-01 MS	99	100	97
S21-01 SD	97	99	98
S22-01	97	99	102
S23-01	101	101	97
S24-01	100	103	93
S25-01	96	102	94
S26-01	98	106	93
S27-01	90	103	92
S28-01	95	102	96
S29-01	97	104	94
S30-01	94	102	96
Method Blank (09/17/93)	95	105	86
Method Blank (09/20/93)	84	108	93
Method Blank (09/22/93)	95	108	88
Method Blank (09/23/93)	97	107	95
Method QC Limits:	(70-121)	(81-117)	(74-121)

TABLE 6

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RESULTS
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIAITON
NIAGARA FALLS, NY
SEPTEMBER 1993

Parameter	*Compound*	*S16-01 MS Recovery (% Recovery)*	*S16-01 MSD Recovery (% Recovery)*	*RPD*	*S21-01 MS Recovery (% Recovery)*	*S21-01 MSD Recovery (% Recovery)*	*RPD*	*QC Limits (1)*
SSI High Boiler Semi-Volatiles	2,4-Dichlorophenol	104	45*	79*	192*	17*	167*	51-135 (20)
	2,4,5-Trichlorophenol	24	22	9	74	66	11	12-146 (20)
	1,2,3-Trichlorobenzene	85	88	3	99	100	1	43-123 (20)
	1,2,3,4-Tetrachlorobenzene	95	97	2	105	105	0	42-122 (20)
	Pentachlorobenzene	96	98	2	109	109	0	56-118 (20)
	Hexachlorobenzene	97	99	2	0*	0*	0	53-137 (20)
	gamma-BHC	104	108	4	110	112	2	47-125 (20)
SSI Volatiles	o-Chlorotoluene	100	96	4	85	89	4	NA (20)
	p-Chlorotoluene	112	126	12	89	107	18	NA (20)
	1,2-Dichlorobenzene	96	96	0	89	100	12	NA (20)
	1,4-Dichlorobenzene	92	96	4	85	96	12	NA (20)

Notes:
* Indicates result is outside QC limits
(1) QC Limits established by the laboratory.
Parenthesis ( ) indicate control limits for RPD
NA Not Available
RPD Relative Percent Difference

QUALITY ASSURANCE/QUALITY CONTROL REVIEW
102nd STREET REMEDIATION
OCCIDENTAL CHEMICAL CORPORATION
NIAGARA FALLS, NEW YORK
NOVEMBER 1993

TABLE OF CONTENTS

LIST OF TABLES
(Following Report)

1.0 EXECUTIVE SUMMARY

Environmental soil samples were collected in support of the 102nd Street Remediation Project during October and November 1993. All soils were analyzed for Site Specific Indicators (SSI) using method SW-846 8240 for volatile compounds and an Occidental Chemical Corporation (OxyChem) high boiler method for semi-volatile compounds.

All SSI compounds specified in the Quality Assurance Project Plan (QAPP), except for mercury, were reported in the data package assessed herein. Upon completion of the QA/QC review, all analytical data were deemed acceptable without qualification.

Analytical results were non-detect for all investigative samples except for sample S04-03 comp which contained 120 µg/kg beta-BHC.

It should be noted that analysis of all samples, spikes and the method blanks using the GC/ECD method for high boiler/semi-volatile compounds yielded peaks that matched the retention times for 2,4 and 2,5-dichlorophenol. When the samples, etc. were reanalyzed by GC/MS, however, it was determined that these peaks were not dichlorophenols and all results for these compounds were reported as non-detect.

2.0 QUALITY ASSURANCE/QUALITY CONTROL REVIEW

Analytical services for Occidental Chemical Corporation (OxyChem)/Fluor Daniel were provided by Recra Environmental, Incorporated (Recra).

Eight (8) samples were collected in October and November 1993 in support of the 102nd Street Remediation Project, Niagara Falls, New York. Samples were submitted to the laboratory for the following analyses:

Selected Volatile Organic Compounds (VOCs)	USEPA SW-846 Method 8240
Selected Semi-Volatile Compounds	Modified Occidental Chemical Corporation High Boiler Method - GC/ECD

Method 8240 is referenced from "Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition", September 1986. The OxyChem Modified High Boiler method has been modified from Methods 3540 and 8120, "Test Methods for Evaluating Solid Waste, USEPA SW-846, 3rd Edition", September 1986. A summary of the analytical results is presented in Table 1.

The Quality Assurance/Quality Control (QA/QC) criteria by which these data have been assessed are outlined in the aforementioned methods and the following documents:

i) "National Functional Guidelines for Organic Data Review", December 1990 (revised June 1991); and

ii) Attachment C, "Quality Assurance Project Plan", referenced from the Remedial Design Document for Off-Site Soils at 102nd Street Landfill Site, Niagara Falls, New York.

Item i) will hereinafter be referred to as the "Guidelines". Item ii) will hereinafter be referred to as the QAPP. The data quality assurance and validation is presented in the subsections which follow.

3.0 HOLDING TIMES

Based on the criteria outlined in the QAPP, the following holding time information was assessed:

High Boiler/Semi-Volatiles	7 days from collection to extraction 30 days from extraction to analysis
Volatiles	7 days from collection to analysis

Comparison of the collection dates of all samples (from the notation appearing on the Chain of Custody documents) with the reported dates of extraction and/or analysis indicated that all samples were extracted and/or analyzed within the established holding times. A summary of sample holding times is presented in Table 2.

4.0 INTERNAL STANDARD PERFORMANCE - VOLATILES ANALYSIS

To ensure that changes in GC/MS response and sensitivity do not affect sample analysis results, internal standards are added to each sample prior to analysis. All results are then calculated as a ratio of the internal standard response. In accordance with the "Guidelines", internal standard area counts must not vary by more than a factor of two (-50 percent to +100 percent) from the associated calibration standard.

A summary of internal standard recoveries for the volatile analysis of the investigative samples is presented in Table 3. All recoveries met the above criteria indicating acceptable overall analytical efficiency.

5.0 METHOD BLANK ANALYSES

The purpose of assessing method blank analyses data is to determine the existence and magnitude of contamination introduced by the laboratory. Method blanks were prepared and analyzed as samples for volatile and high boiler/semi-volatile analyses. A summary of the results is presented in Table 4.

All method blanks analyzed for volatiles and high boiler/semi-volatiles yielded non-detect concentrations of the analytes of interest. Laboratory contamination was therefore not a factor during this study.

6.0 SURROGATE SPIKE RECOVERIES

In order to assess the effects of individual sample matrices on analytical efficiency, all samples and blanks analyzed by Method 8240 for volatile organic compounds are spiked with surrogate compounds prior to analysis. Percent recoveries are then compared to method control limits to evaluate analytical efficiency.

In accordance with Method 8240, the surrogate compounds toluene-d_8, bromofluorobenzene, and 1,2-dichloroethane-d_4 were added to all samples submitted for volatile compound analysis. A summary of the surrogate recoveries reported for all investigative samples is presented in Table 5.

All surrogate spike recoveries were within the method control limits. This indicates satisfactory laboratory performance was achieved on an individual sample basis during volatile analysis. Surrogates were not added to samples submitted for high boiler/semi-volatile analysis.

7.0 MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) ANALYSES

The recoveries of MS/MSD analyses are used to determine the effects of sample matrices on analytical accuracy. MS/MSD samples are prepared and analyzed at a minimum frequency of one per 20 investigative samples. The relative percent difference (RPD) between the MS and MSD analyses indicates the quality of the analytical precision achieved.

For the volatiles analysis, general control limits of 75 to 125 percent were used to evaluate MS/MSD recoveries, while laboratory control limits were employed for high boiler/semi-volatile analysis. RPD values were evaluated against a general control limit of 20 percent.

MS/MSD analyses were performed on sample S04-04G1. A summary of the MS/MSD analysis results is presented in Table 6.

Due to the presence of an interference peak that coeluted with 2,4-dichlorophenol, MS/MSD recoveries were not available for this compound. All remaining MS/MSD recoveries and RPD values reported for both volatiles and high boiler/semi-volatiles analyses were within the associated control limits indicating acceptable accuracy and precision.

8.0 BLANK SPIKE ANALYSES

Blank spikes are prepared and analyzed as samples to assess the analtyical efficiences of the methods employed, independent of sample matrix effects. Blank spike analyses were performed for both volatiles and high boiler/semi-volatiles. A summary of the analytical results is attached as Table 7.

All blank spike recoveries were evaluated against general control limits of 75 to 125 percent. Due to the presence of an interference peak that coeluted with 2,4-dichlorophenol, a spike recovery was not available for that compound. All remaining blank spike recoveries were within the control limits of 75 to 125 percent indicating acceptable analytical accuracy.

9.0 CONCLUSION

Based on this QA/QC review, these data are judged acceptable without qualification.

TABLE 1

ANALYTICAL RESULTS SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
OCTOBER/NOVEMBER 1993

Sample I.D.	*S04-04A1*	*S04-04B1*	*S04-04C1*	*S04-04D1*	*S04-04E1*	*S04-04F1*	*S04-04G1*	*S04-03 COMP*
Collection Date	*11/2/93*	*11/2/93*	*11/2/93*	*11/2/93*	*11/2/93*	*11/2/93*	*11/2/93*	*10/20/93*
Units	*µg/kg*	*µg/kg*	*µg/kg*	*µg/kg*	*µg/kg*	*µg/kg*	*µg/kg*	*µg/kg*
SSI Volatiles								
o-Chlorotoluene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
p-Chlorotoluene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
1,2-Dichlorobenzene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
1,4-Dichlorobenzene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
SSI High Boiler Semi-volatiles								
1,2,3-Trichlorobenzene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
1,2,4-Trichlorobenzene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
1,2,3,4-Tetrachlorobenzene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
1,2,4,5-Tetrachlorobenzene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
Pentachlorobenzene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
Hexachlorobenzene	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
alpha-BHC	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
beta-BHC	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	120
gamma-BHC	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
delta-BHC	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
2,5-Dichlorophenol	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
2,4-Dichlorophenol	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
2,4,5-Trichlorophenol	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100
2,4,6-Trichlorophenol	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100	ND 100

Notes:
ND Non-detect at the associated value.
SSI Site Specific Indicators

TABLE 2

SAMPLE HOLDING TIME SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
OCTOBER/NOVEMBER 1993

Sample ID	*Collection Date*	*Extraction Date*	*Analysis Date*	*Holding Time to Extraction (days)*	*Holding Time to Analysis (days)*
SSI Volatiles					Acceptance Criteria 7
S04-04A1	11/2/93	NA	11/3/93	NA	1
S04-04B1	11/2/93	NA	11/3/93	NA	1
S04-04C1	11/2/93	NA	11/3/93	NA	1
S04-04D1	11/2/93	NA	11/3/93	NA	1
S04-04E1	11/2/93	NA	11/3/93	NA	1
S04-04F1	11/2/93	NA	11/3/93	NA	1
S04-04G1	11/2/93	NA	11/3/93	NA	1
S04-03 COMP	10/20/93	NA	10/21/93	NA	1
SSI High Boiler Semi-volatiles				Acceptance Criteria 7	Acceptance Criteria 30
S04-04A1	11/2/93	11/3/93	11/3/93	1	0
S04-04B1	11/2/93	11/3/93	11/3/93	1	0
S04-04C1	11/2/93	11/3/93	11/3/93	1	0
S04-04D1	11/2/93	11/3/93	11/3/93	1	0
S04-04E1	11/2/93	11/3/93	11/3/93	1	0
S04-04F1	11/2/93	11/3/93	11/3/93	1	0
S04-04G1	11/2/93	11/3/93	11/3/93	1	0
S04-03 COMP	10/20/93	10/21/93	10/22/93	1	1

Notes:
SSI Site Specific Indicators
NA Not applicable

TABLE 3

INTERNAL STANDARD RECOVERY SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
OCTOBER/NOVEMBER 1993

Sample I.D.	*Percent Recovery*		
Acceptance Criteria	*Bromochloromethane* 50 - 200	*1,4-Difluorobenzene* 50 - 200	*Chlorobenzene-d5* 50 - 200
S04-04A1	100	90	91
S04-04B1	93	90	90
S04-04C1	96	85	89
S04-04D1	89	77	78
S04-04E1	97	88	87
S04-04F1	90	86	85
S04-04G1	95	96	94
S04-03 COMP	95	100	98

TABLE 4

METHOD BLANKS ANALYSES SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
OCTOBER/NOVEMBER 1993

Lab I.D.	*VBLK07*	*VBLK96*
Analysis Date	*11/3/93*	*10/21/93*
Units	*µg/kg*	*µg/kg*
SSI Volatiles		
o-Chlorotoluene	ND 100	ND 100
p-Chlorotoluene	ND 100	ND 100
1,2-Dichlorobenzene	ND 100	ND 100
1,4-Dichlorobenzene	ND 100	ND 100

Lab I.D.	*ARO12013*	*ARO11917*
Extraction Date	*11/3/93*	*10/21/93*
Units	*µg/kg*	*µg/kg*
SSI High Boiler Semi-volatiles		
1,2,3-Trichlorobenzene	ND 100	ND 100
1,2,4-Trichlorobenzene	ND 100	ND 100
1,2,3,4-Tetrachlorobenzene	ND 100	ND 100
1,2,4,5-Tetrachlorobenzene	ND 100	ND 100
Pentachlorobenzene	ND 100	ND 100
Hexachlorobenzene	ND 100	ND 100
alpha-BHC	ND 100	ND 100
beta-BHC	ND 100	ND 100
gamma-BHC	ND 100	ND 100
delta-BHC	ND 100	ND 100
2,5-Dichlorophenol	ND 100	ND 100
2,4-Dichlorophenol	ND 100	ND 100
2,4,5-Trichlorophenol	ND 100	ND 100
2,4,6-Trichlorophenol	ND 100	ND 100

Notes:
SSI Site Specific Indicators
ND Non-detect at associated value.

TABLE 5

SURROGATE SPIKE RECOVERY SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
OCTOBER/NOVEMBER 1993

		Percent Recovery	
Sample I.D.	*1,2-Dichloroethane-d4*	*Toluene-d8*	*p-Bromofluorobenzene*
Acceptance Criteria	*70-121*	*81-117*	*74-121*
S04-04A1	91	96	94
S04-04B1	105	97	98
S04-04C1	92	98	98
S04-04D1	91	97	98
S04-04E1	90	97	100
S04-04F1	95	98	94
S04-04G1	103	96	97
S04-03 COMP	103	105	97

TABLE 6

MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSES SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
OCTOBER/NOVEMBER 1993

Sample ID	*S04-04G1*			
	MS Recovery (percent)	*MSD Recovery (percent)*	*RPD*	*QC Limits (percent)*
SSI Volatiles				
o-Chlorotoluene	84	83	1	75-125 (20)
p-Chlorotoluene	96	88	9	75-125 (20)
1,2-Dichlorobenzene	84	83	1	75-125 (20)
1,4-Dichlorobenzene	84	83	1	75-125 (20)
SSI High Boiler Semi-volatiles				
2,4-Dichlorophenol	I	I	NA	51-135 (20)
2,4,5-Trichlorophenol	100	100	0	12-146 (20)
1,2,3-Trichlorobenzene	100	100	0	43-123 (20)
1,2,3,4-Tetrachlorobenzene	106	106	0	42-122 (20)
Pentachlorobenzene	112	112	0	56-118 (20)
Hexachlorobenzene	106	106	0	53-137 (20)
gamma-BHC (Lindane)	106	106	0	47-125 (20)

Notes:
SSI Site Specific Indicators
MS Matrix Spike
MSD Matrix Spike Duplicate
I Result unavailable due to sample matrix interference.

TABLE 7

BLANK SPIKE ANALYSES SUMMARY
OCCIDENTAL CHEMICAL CORPORATION
102ND STREET REMEDIATION
NIAGARA FALLS, NEW YORK
OCTOBER/NOVEMBER 1993

	BS Recovery (percent)	*QC Limits (percent)*
SSI Volatiles		
o-Chlorotoluene	84	75-125
p-Chlorotoluene	96	75-125
1,2-Dichlorobenzene	84	75-125
1,4-Dichlorobenzene	84	75-125
SSI High Boiler Semi-volatiles		
2,4-Dichlorophenol	I	75-125
2,4,5-Trichlorophenol	100	75-125
1,2,3-Trichlorobenzene	100	75-125
1,2,3,4-Tetrachlorobenzene	106	75-125
Pentachlorobenzene	112	75-125
Hexachlorobenzene	106	75-125
gamma-BHC (Lindane)	106	75-125

Notes:
SSI Site Specific Indicators
BS Blank Spike
I Result unavailable due to sample matrix interference.