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# Remedial Investigation Report for O'Connor Disposal Area

Ringwood Mines/Landfill Site
Ringwood, New Jersey

June 2013

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ARCADIS

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Ringwood Mines/Landfill Site
Ringwood, New Jersey

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## Executive Summary

ARCADIS US, Inc (ARCADIS), on behalf of the Ford Motor Company (Ford), is submitting this Draft Remedial Investigation Report (RIR) for the O'Connor Disposal Area (OCDA) to the United States Environmental Protection Agency (USEPA) and has been prepared in accordance with the *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*, EPA/540/G-89/004 dated October 1988 as well as the Administrative Order on Consent for the Ringwood Mines/Landfill Site, dated May 2010 (USEPA 1988, USEPA 2010a). The Site is located in the Borough of Ringwood in Passaic County, New Jersey (Site).

The USEPA and Ford entered into an Administrative Order on Consent (AOC) in 2005 which has been superseded by the May 2010 AOC. The May 2010 AOC is attached as Appendix A. The AOC separates the Site into four Areas of Concern (AC) which include the Peters Mine Pit Area, the Cannon Mine Pit (CMP) Area, the OCDA, and site-related Groundwater. It is required that each AC have an approved Final Technical Memorandum, a Final Pathway Analysis Report, a Final Baseline Human Health Risk Assessment, and a Final Ecological Risk Assessment.

The purpose of this RIR was to provide the geologic and hydrogeologic background information for the OCDA, outline the results of previous investigations, and provide an overview of the required deliverables under the 2010 AOC. This included a Baseline Human Health Risk Assessment (BHHRA) and an Ecological Risk Assessment (ERA). Both of these documents were submitted to the USEPA under separate cover. In conjunction with the BHHRA and ERA, this RIR determined the nature and extent of impacts and any potential threat to public health, welfare, or the environment caused by the release, or threatened release, of hazardous substances or pollutants from the OCDA.

Data generated during the RI have been incorporated into the Conceptual Site Model (CSM) for the Site, including the hydrogeologic component outlined under the Site-Related Groundwater RIR to be submitted under separate cover. Results of OCDA investigation activities were previously submitted to the USEPA and New Jersey Department of Environmental Protection (NJDEP) under separate cover in the December 23, 2008 Draft Technical Memorandum and July 8, 2011 Draft Technical Memorandum - O'Connor Disposal Area Supplemental Test Trench Investigation. These documents are incorporated into this RIR by reference. The results of this RI indicate that:

**Surface Soil Quality**

- Surface soils in the vicinity of the OCDA are predominately soil intermixed with a variety of waste materials, mine wastes, and some paint sludge; however, surface soil analytical results generally indicate that only trace concentrations of certain volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs) are reported above the NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS).

- Arsenic was reported at concentrations above its RDCSRS; but that is not unexpected due to the quantity of mine tailings placed within the OCDA during prior mining operations. Paint sludge found in the OCDA is another potential source of arsenic found in surface soil; however, 2,200 tons of paint sludge was recently removed through targeted removal and off-site disposal activities;

- Of the 23 metals on the Target Analyte List, one or more were detected at each soil sample location at concentrations above their respective NJDEP Impact to Groundwater Default Soil Screening Level, including aluminum, beryllium, cadmium, lead, manganese, and mercury.

- For surface soil samples collected within the wetlands area, there were no VOC, SVOC, PCB or pesticide exceedances and the low effect level (LEL) was exceeded for cadmium, copper, lead, nickel and zinc in one sample and the LEL for copper and the severe effect level for arsenic were exceeded in the second sample.

**Fill Material Content and Quality-**

- Conceptual cross-sections of the OCDA based on all available boring logs depicting the estimated depth and width of the OCDA and general fill type characterization are provided in Appendix D.

- As shown, a variety of miscellaneous waste materials and some paint sludge deposits were encountered along with historical mine waste materials (i.e., tailings and waste rock) with analytical results from samples of fill material reflecting the wide range of fill material/debris encountered.

- The OCDA contents consist primarily of miscellaneous solid waste intermixed with fill cover soils, some minor amounts of mine tailings of various size fractions

ranging from coarse sand to very fine sand and mine waste rock overlying rock rubble.

- Targeted paint sludge removal activities conducted during 2010 and earlier events removed for off-site disposal over 2,200 tons of paint sludge from the OCDA, along with six drums of waste materials. Based on the results of test pits and trenches, these removal actions have addressed the majority of paint sludge within this area and all drums identified during the OCDA investigation activities.

- Analytical results from samples collected within the OCDA indicate that sporadic exceedances of the New Jersey Residential Direct Contact Soil Cleanup Criteria (RDCSCC) and/or Impact-to-Groundwater Soil Remediation Standard (IGWSRS) in fill material samples from the base of trenches within the OCDA respect to polycyclic aromatic hydrocarbons (PAHs) and metals and to a lesser extent PCBs although the data indicate a sporadic distribution with no recognizable or meaningful pattern.

**Groundwater Occurrence, Movement, and Quality**

- Groundwater was encountered in the overburden at various depths in the test trenches and test pits within the OCDA and ranges from approximately three feet bgs to 16 feet bgs.

- In most cases, groundwater was encountered in either native soil or mine tailings, with the exception of locations OC-ITP-06 (14.5 feet below land surface [bls]) and OC-ITP-07 (12.5 feet bls) where perched water or groundwater was encountered in areas that contained fill and rubbish material. In addition, waste materials were found in contact with groundwater during the 2010 installation of test trenches #1, #3, #5, #6, #7, and #8.

- Although there are no bedrock or lower aquifer monitoring wells within the OCDA, data from the PMP Area located to the northwest of the OCDA indicates that the groundwater flow gradient in the bedrock is generally to the southeast.

- Groundwater elevation data from the shallow overburden wells monitored over the course of the RI indicate a groundwater flow gradient to the southeast and sub-parallel to the Park Brook which has remained generally consistent over the

course of monitoring which was confirmed during the supplemental RI activities conducted in 2012.

- There is a minor upward vertical gradient observed between well pair OB-14A and OB-14B.

- Dissolved oxygen (DO) levels in groundwater are higher in wells located upgradient of the OCDA and lower at wells located within and immediately downgradient of the OCDA wells where the redox potential is also generally low or negative, which, coupled with other indicator parameters, is reflective of mildly reducing to reducing groundwater geochemical conditions.

- The documented reduction in DO concentrations in groundwater between the upgradient and downgradient wells within the OCDA wells confirms that the natural oxidation of organic matter in the fill in contact with groundwater is occurring. The data also indicate that aerobic microbial activity is also taking place as more oxygenated groundwater flows into the OCDA, interacts with organic materials present within the fill, and flows beyond the OCDA into Park Brook.

- The analytical results from groundwater sampling events conducted over the course of the RI indicate no VOCs, SVOCs, pesticides, or PCBs in groundwater within and downgradient of the OCDA at concentrations above their respective NJDEP Groundwater Quality Standard (GWQS) or the USEPA Maximum Concentration Limits.

- Groundwater quality in the overburden water bearing zone remains essentially unchanged from previous sampling events; constituents of concern related to paint sludge, such as benzene, toluene, ethylbenzene, and xylenes (BTEX) and lead, are not present in the groundwater in any consistent pattern or in high concentrations indicative of a “hot” spot source.

- Various concentrations of total metals have been reported in unfiltered samples at concentrations above their respective GWQS, including aluminum, arsenic, iron, lead and manganese, with dissolved phase iron and manganese reflective of the reducing groundwater geochemical conditions and sporadic but infrequent detections of dissolved arsenic.

- Even though groundwater exhibits reducing conditions at several well locations within the OCDA and arsenic is soluble under such conditions, arsenic is not elevated across the OCDA which indicates that arsenic is not available for dissolution in groundwater.

- Note that, inconsistent with prior groundwater sampling rounds, arsenic was reported in the filtered sample at a concentration above the NJDEP GWQS at OB-16 during the May 2011 event; however, as anticipated, there was no dissolved-phase arsenic detected during the April/May 2012 groundwater sampling event.

- The data generated over the past six years of groundwater quality monitoring upgradient, within and downgradient of the OCDA indicate that there is no adverse impact to groundwater quality associated with the OCDA. Although arsenic concentrations have been consistently reported above the GWQS at OB-16 in unfiltered samples. Arsenic is sensitive to redox conditions and is not prevalent in the dissolved form indicating that these total concentrations are most likely representative of elevated groundwater turbidity and the occurrence of fine particulates in the saturated soil/groundwater system. Overall, groundwater quality and flow conditions have been adequately characterized and groundwater monitoring utilizing the existing network of wells in the area will continue as part of the Site-Related Groundwater AC and as necessary with respect to the final remedy for the OCDA itself.

**Surface Water Occurrence, Movement and Quality**

· The Park Brook is located to the east and southeast of the OCDA as shown in Figure 2.

· Surface water gauging coupled with multiple rounds of groundwater elevation monitoring at wells located throughout the OCDA confirm that groundwater in the overburden flows to the east/southeast and discharges to the Park Brook.

· The analytical results of surface water sampling conducted from 2006 through 2012 indicate no VOCs, PCBs, or metals at concentrations above their respective NJDEP Surface Water Quality Standards (SWQS) within the Park Brook. The laboratory method detection limits for arsenic and benzene are above the SWQS; however, these constituents were not reported at concentrations above the laboratory method detection limits at any of the OCDA surface water sample locations.

## 1. Introduction

ARCADIS U.S. Inc. (ARCADIS), on the behalf of Ford Motor Company, has prepared this Draft Remedial Investigation Report (RIR) for the OCDA at the Ringwood Mines/Landfill Site (Site) located in Ringwood, New Jersey (Figure 1). The location of the OCDA within the Ringwood Site is shown on Figure 2. The details of previous investigation activities and findings, along with summaries of all field data and analytical results, are provided in accordance with the United States Environmental Protection Agency (USEPA)-approved Work Plan for the Investigation of the OCDA dated September 12, 2006. The OCDA and investigation locations are shown on Figure 3.

### 1.1 Site Background

The Ringwood Mines/Landfill Site comprises approximately 500 acres and is 0.5 mile wide and approximately 1.5 miles long. The Site consists of moderately rugged forested areas, open areas of overgrown vegetation, abandoned mine shafts and surface pits, an air shaft, a closed municipal landfill, small surficial depositional areas, automobile carcasses, a municipal recycling center, the Ringwood Borough Garage, residential properties, and the Ringwood State Park which is located north and east of the Site (Woodward-Clyde Consultants [WCC] 1988).

### 1.2 Previous Investigations and Sampling

The OCDA was used during the period of active mine operations as a "slime pond" for the settlement of waste mine tailings from the wet ore processing operations. Note that "slime" is a mining industry term that refers to silt-size and finer tailings. Based on visual inspection of the OCDA, the slime pond berm is still present along the eastern perimeter of OCDA. From 1967 until 1971, O'Connor Trucking and Haulage Company had a contractual arrangement with Ringwood Realty Corporation, a former subsidiary of Ford, to dispose of plant trash, paint sludge, and other non-liquid plant wastes from the former Mahwah Assembly Plant at three locations at the Site, including the Peters Mine Pit (PMP) Area, the Cannon Mine Pit (CMP) Area, and the OCDA.

The OCDA was used towards the end of the fourth year period of O'Connor's use of the Site because, based on review of existing documents, the PMP Area was full.

As part of the 1984 to 1988 Remedial Investigation (RI) conducted by WCC, a total of four test pits (designated TP-15, 16, 17, and 18) were excavated in the OCDA to

depths of up to 10 feet below ground surface (bgs). Because the test pits extended no deeper than 10 feet bgs, none of the test pits fully penetrated the fill material. Visual observations made by WCC during the excavation of these test pits indicated that subsurface debris within the OCDA included plastic, wood, rubber, and cardboard refuse along with mine tailings.

Screening for volatile organic compounds (VOCs) using a photoionization detector (PID) indicated that VOCs were reported in soil and/or fill material samples at only one test pit locations (specifically TP-16) at a concentration greater than 5 parts per million (ppm) by volume. Paint sludge was not encountered in any of the test pits excavated during the RI. The analytical results of a composite sample obtained during test pitting activities indicated that only acetone, a common lab contaminant, was reported at a concentration of 13 microgram per kilogram (µg/kg), which is below the New Jersey Residential Direct Contact Soil Cleanup Criteria (RDCSCC) for soil in affect at that time.

In October 1989, paint sludge was encountered within the southern section of the OCDA during clearing activities associated with the installation of three radio towers. In response to these findings, an estimated 600 cubic yards of paint sludge and 54 drum remnants were subsequently removed and disposed off site by Ford during 1990 to 1991.

As a result of these drum remnants being found, a magnetic survey was conducted in 1991 to evaluate the potential nature and extent of subsurface metallic objects within the OCDA. USEPA indicated that the survey interpretation should focus on magnetic anomalies indicative of a 10-drum cluster. After correcting for surface metallic debris, four areas were identified as requiring further investigation. Two of the areas were isolated and located in the southwestern corner of the OCDA, with the other two locations in the center of the area.

Test pits were excavated in each of these four areas on March 10, 1992 to assess whether drums, drum remnants, or paint sludge were present within the fill material. Each test pit was excavated to a depth intercepting native soil or mine tailings, with completion depths ranging from five to 8 feet below grade. No drums, drum remnants, or paint sludge were encountered in any of the four test pits.

Three monitoring wells (OB-16, OB-17, and OB-18) were subsequently installed to the east (hydraulically downgradient) of the projected edge of the OCDA to evaluate potential impacts to groundwater from these areas. Results of groundwater sampling in these and other wells in the vicinity of the OCDA are described in Section 2.6 below.

In response to the discovery of additional paint sludge in the vicinity of the 1991 removal area, an additional 100 cubic yards of paint sludge were removed from the southeast corner of the OCDA during 1997 to 1998.

As part of the Supplemental Site Investigation (SI) conducted by ARCADIS beginning during 2004, ARCADIS performed a phased reconnaissance survey within the OCDA to further evaluate whether paint sludge was present within this area. Work conducted under the Reconnaissance Survey included the creation of comparative topographic survey map identifying areas where the depth of fill materials had increased or decreased during the period from 1961 through 1974, and during the period from 1974 through 2003.

Based on a comparison of the two topographic surveys, the footprint of the OCDA is roughly defined as a 12-acre portion of the Site located between Park Brook and the eastern edge of Peters Mine Road as shown on Figure 2. A review of historic aerial photos, and observations made during the Reconnaissance Survey suggests that this area may have been used for the disposal of residential and industrial trash. The Reconnaissance Survey results for the OCDA are presented in the Results of the Field Reconnaissance Survey of the Ringwood Mines/ Landfill Site (ARCADIS 2005).

A review of the 1961 aerial photograph and topographic survey indicates that the area used by O' Connor may have been used at one time as a borrow area for fill placed at other locations at the Site; however, the 1974 aerial photograph and topographic map suggests that approximately 20 feet of fill had been placed in this area.

### 1.3 Geology and Hydrogeology

#### 1.3.1 Regional Geology/Hydrogeology

The Site is located in the southeastern extension of the New England Highlands Physiographic Province. The portion located in New Jersey is known as the New Jersey Highlands. In areas of well-foliated gneiss, the topography of the Highlands consists of northeast-southwest trending parallel ridges. The more common, less foliated gneiss forms rounded or broad-topped topographic highs. Granite gneiss and pegmatite form sharp ridges separated by narrow troughs underlain by less resistant gneiss. Major cross faults are visible as trench-like features which interrupt drainage. Those faults generally strike approximately east-west across the predominant northeast strike of the major ridges and valleys (Hotz 1953).

Structural features of the Highlands, which are regionally related either spatially or tectonically, include folds, faults, lineation trends, and jointing. The Highlands has experienced a complex history of folding and faulting, the result of both Precambrian and post-Precambrian tectonism. The formation of the Highlands and the associated faulting and folding which produced structural complexities in the region occurred during the closing periods of the Paleozoic Era concurrently with the formation of the Appalachian Mountains (WCC 1988).

The Highlands in Passaic County are drained by the Pequannock, Wanaque, and Ramapo Rivers which ultimately join to form the Pompton River, a tributary of the Passaic River. The drainage pattern north of the terminal moraine in the New Jersey Highlands is classified as deranged, and is marked by many poorly drained areas of lakes and swamps. Greenwood Lake and Lake Hopatcong are large lakes that were formed by the blocking of pre-glacial drainage courses. South of the terminal moraine, stream drainage generally follows structural valleys toward the southwest (WCC 1988).

### 1.3.2 Site Geology/Hydrogeology

The site terrain is mountainous with peaks up to 900 feet above sea level and valleys that are generally below 500 feet in elevation. The bedrock at the Site consists primarily of Precambrian gneiss and some amphibolites and pegmatite. Bedrock in the valleys and other topographically low areas is generally covered by overburden which consists of unconsolidated and reworked glacial deposits and weathered bedrock. In some areas, the overburden is overlain by excavated rock, mine tailings, refuse, and fill soil.

The iron ore found in Ringwood is thought to be hydrothermal deposits consisting primarily of magnetite that replaced pyroxene amphibolite and skarn rocks. The iron ore formed around the same time as emplacement of granite and pegmatite, which was about 950 million years ago.

Unconsolidated soil and sediment deposits are primarily confined to the stream valleys and corridors. The unconsolidated deposits appear to have the greatest thickness in the eastern and southern parts of the Site. Glacial deposits blanket the lower slopes of ridges and hills and consist of heterogeneous mixtures of silt, sand and gravel with boulders; typical of a ground moraine. The stream deposits are observed within the floodplains of the creeks and swamps and consist of clay and silt with some sand and gravel. These stream deposits are thought to be primarily derived from reworking of the glacial sediments.

There are four drainage basins within the Site and as a result, there are four streams that essentially drain the Site. They include Mine Brook, Peters Mine Brook, Park Brook and an unnamed tributary of Ringwood Creek identified by ARCADIS for the purposes of this RI as North Brook. Peters Mine Brook joins Mine Brook along the southern site boundary. Mine Brook flows into Ringwood Creek, just upstream of the Wanaque Reservoir. Park Brook and North Brook each flow into Furnace Dam Pond to the southeast of the Ringwood Site, and subsequently to the Ringwood River about 1 mile upstream of its confluence with the Wanaque Reservoir. The locations of these streams are shown on Figure 2.

Groundwater at the OCDA occurs in both overburden and bedrock, however, only the overburden is monitored by wells that are up to 20 feet deep for monitoring shallow overburden groundwater. One of the overburden wells, specifically OB-14B, monitors the deeper portion of the overburden at a depth of 35 feet bgs. Groundwater occurs at depths typically ranging from a few feet to about 15 feet bgs. Groundwater is shallower adjacent to Park Brook to the east side of the OCDA where the ground surface elevation is lower than the ground surface adjacent to Peters Mine Road (to the west side of OCDA). The depth to groundwater in the overburden within the OCDA fluctuates seasonally and is typically deeper during dryer summer months with some wells being dry, or nearly dry, during drought conditions.

The direction of groundwater flow in the upper aquifer which is monitored by overburden wells within the OCDA is generally to the southeast as shown on Figure 8. Groundwater in the upper aquifer discharges to streams creating base flow in the perennial streams. Surface water within the streams ultimately discharges into the Wanaque Reservoir, located approximately 1 mile from the confluence of Park Brook, North Brook and the Ringwood River (WCC 1988). There are no bedrock or lower aquifer wells within the OCDA; however, based on data generated within the PMP Area located immediately to the northwest of the OCDA, the groundwater flow gradient within the lower aquifer is generally to the southeast.

## 2. Study Area Investigation

The RI scope of work for the OCDA included the following:

- Visual reconnaissance survey of area
- Surface soil characterization
- Native and fill material characterization
  - Initial Test trench and test pit characterization methods
  - Initial Test trench and test pit sample collection
- Supplemental native and fill material characterization
  - Supplemental test trench excavation
  - Supplemental test trench base sample collection
  - Supplemental fill material sample collection
- Targeted removal and off-site disposal
  - Paint sludge
  - Drum and drum remnants
- Groundwater and surface water characterization
  - Installation and development of monitoring wells
  - Groundwater level monitoring program
  - Monitoring well and surface water sampling and analysis

The initial work performed during the period from 2006 to 2007 was performed in accordance with the USEPA-approved work plan dated September 12, 2006. Supplemental test trenching and targeted paint sludge removal work conducted during

2010 was performed in accordance with the USEPA-approved work plan dated December 28, 2009.

### 2.1 Visual Assessment

ARCADIS conducted a visual assessment of the OCDA as part of the site-wide field reconnaissance survey conducted during the period from December 2004 through September 2005. During this work, teams of two field staff trained in the identification of paint sludge, drums, drum remnants and other debris walked grid lines established within the OCDA at a spacing of every 50 feet. Grid nodes were established along the grid lines at a spacing of every 25 feet, and each field team was equipped with a global positioning system (GPS) and data recorder to confirm their location along the grid.

At each grid location, the field team would visually survey the area for the presence of paint sludge, drums, drum remnants, or other debris. Notes regarding the results of the visual assessment would be entered into the data recorder along with their position for subsequent mapping of the area. During this work, the field team also advanced a steel probe into the subsurface at each node location to assess whether paint sludge, drums, drum remnants or debris were present within the subsurface. The results of this work were included within a Report entitled, Results of the Field Reconnaissance Survey of the Ringwood Mines/Landfill Site (ARCADIS 2005).

ARCADIS also conducted a visual assessment of the OCDA with a US Army Corps of Engineers (USACOE) representative prior to sample collection associated with the RI. This assessment identified waste materials and/or topographic features that would impact the locations selected for collecting surface soil samples, excavating test pits and test trenches, and placement of the additional monitoring wells.

### 2.2 Surface Soil Characterization

A total of 15 surface soil samples were collected from the OCDA on November 21, 2006. Ten of these soil samples were collected from within the footprint of the OCDA, and five samples were collected from between the disposal area and adjacent surface water bodies such as Park Brook and the nearby wetland area. All samples were biased toward low-lying areas to better assess potential migration pathways to Park Brook or the wetland area. The surface soil sampling locations are identified on Figure 3 and the surface soil sampling logs are presented in Appendix B.

Soil samples were collected from a depth of 0-6 inches below ground surface at each location using stainless steel trowels or spoons and EnCore® samplers for VOCs, submitted to an NJDEP-certified laboratory, and analyzed for semi-volatile organic compounds (SVOCs),Target Compound List (TCL) organic compounds, Target Analyte List (TAL) metals, polychlorinated biphenyls (PCBs), and petroleum hydrocarbons. Leaf litter and/or other miscellaneous surface debris were removed prior to sample collection.

The surface soil samples were screened in the field using a PID, visually inspected for the presence of paint sludge or chips, and physically described in a field log. Locations were photo-documented and entered into a hand-held GPS.

### 2.2.1 Results of Surface Soil Characterization

The fifteen surface soil samples were collected from a variety of materials encountered within the investigation area, including native soils, mine tailings, and fill of variable composition. The nature of the material representing each surface sample is summarized in Table 1. All analytical results were reviewed and validated by ARCADIS in accordance with USEPA-approved protocols and the site Quality Assurance Project Plan (QAPP).

The analytical results for each surface sample were then compared to the NJDEP Soil Remediation Standards which are the applicable soil cleanup criteria as of December 2008. Note that the NJDEP Soil Cleanup Criteria were in use at the time the May 2008 Technical Memorandum was prepared and issued; however, a reconciliation of the soil analytical results in comparison to the Soil Remediation Standards has been conducted for purposes of this RIR given that these criteria are in effect as of the date of this RIR.

The surface sample analytical results are summarized in Table 2. The following summarizes the surface soil analytical results:

- As shown in Table 2, none of the 50 VOCs on the TCL were reported in any of the surface soil samples above the NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS) or the Impact to Groundwater Default Soil Screening Levels (IGWDSSL).

- There were no SVOCs reported above the NJDEP RDCSRS or IGWDSSL in any of the surface soil samples. The only SVOCs reported were trace levels below their respective RDCSRS and IGWDSSL of various polycyclic aromatic

hydrocarbons (PAHs) and bis(2-Ethylhexyl)phthalate in soil samples OC-SS-02, OC-SS-4, OC-SS-8, OC-SS-10, OC-SS-12, and OC-SS-14.

- PCB Aroclor 1254 was reported in one of the surface soil samples (OC-SS-04) at a concentration of 0.287 milligram per kilogram (mg/kg), which is above the Total PCB RDCSRS of 0.20 mg/kg. Total PCBs were also detected at a concentration above the RDCSRS in surface soil sample OC-SS-10 (0.2321 mg/kg).

- Arsenic was reported at a concentration above its RDCSRS of 19 mg/kg in 5 of the 15 soil samples with concentrations ranging from 42.4 to 51.1 mg/kg.

- As shown in Table 2 and Figure 3, lead was reported below its RDCSRS of 400 mg/kg in all 15 samples, with concentrations ranging from 11.2 to 155 mg/kg. Note that lead was reported in four of the 15 samples (OC-SS-08, OC-SS-10, OC-SS-13, and OC-SS-15) at concentrations above the 59 mg/kg IGWSSL at concentrations ranging from 67.7 to 155 mg/kg.

- As shown on Figure 3, two of the 15 surface soils samples (OC-SS-13 and OC-SS-14) were collected within a designated freshwater wetlands area along the eastern, down-slope section of the ODCA. Therefore, as shown in Table 2, the analytical results for these samples were also compared to the New Jersey Sediment Quality Screening Criteria (SQSC) for both low effect levels (LELs) and severe effect levels (SELs).

    - VOCs and PCBs were not reported in either of these samples.

    - There were no PAHs or any other SVOC reported at a concentration that exceeds its respective LEL criterion.

    - Several metals were reported at a concentration that exceeds its respective LEL or SEL and the results are summarized as follows:

        - Arsenic slightly exceeded its SEL of 33 mg/kg in sample OC-SS-14 at a concentration of 37.8 mg/kg.

        - Cadmium exceeded its LEL of 0.6 mg/kg in sample OC-SS-13 at 5.3 mg/kg.

- Copper exceeded its LEL of 16 mg/kg in both samples at 24.2 mg/kg in sample OC-SS-13 and 30.1 mg/kg in sample OC-SS-14.
- Lead exceeded its LEL of 31 mg/kg in sample OC-SS-13 at 155 mg/kg.
- Nickel exceeded its LEL of 16 mg/kg in sample OC-SS-13 at 23.8 mg/kg.
- Zinc exceeded its LEL of 120 mg/kg in sample OC-SS-13 at 352 mg/kg.

## 2.3 Native and Fill Material Characterization

### 2.3.1 Initial Test Trench and Test Pit Characterization Methods

A total of 14 test trenches and 10 test pits were initially completed during two field events with oversight by the USACOE. One event was conducted in July/August 2006 and one event was conducted in March 2007. The test trenches and test pits were excavated with a tracked excavator to characterize fill materials in the OCDA. The test trench and test pit excavations were performed to provide the following specific information:

- Types of fill materials. Prior to the RI, it was anticipated that the fill materials may potentially include paint sludge, drum remnants, mine tailings, construction, and demolition debris, general manufacturing wastes, general municipal wastes, and miscellaneous fill.
- Fill layering characteristics (e.g., intermingling or segregation of fill materials, presence of soil cover layers).
- Physical and chemical characteristics of underlying native soil.

Excavated materials were field screened with a PID to bias the selection of samples for laboratory analysis and for health and safety information. Material removed from test pits and trenches, with the exception of paint sludge, drums, and/or drum remnants, was returned to the excavation from which it was taken. Paint sludge, drums, and/or drum remnants were segregated and ultimately disposed off site at approved disposal facilities. The trenching field work was performed utilizing Level D personnel health and safety protocols.

Visual and photographic information collected during test trench and test pit excavation activities in March 2007, which were typically completed in approximately the same

locations as during the July/August 2006 field event, were used to create descriptive logs and cross-sections of each trench and pit. Field logs for each of the test trenches and test pits excavated in July/August 2006 and March 2007 are provided in Appendix C. Cross-sections representative of the test trenches and test pits excavated in March 2007 are provided in Appendix D. Photographs of the test trenches and test pits are provided in Appendix E.

### 2.3.2 Initial Test Trench Excavations

A total of 14 test trenches were excavated along the perimeter of the OCDA as shown on Figure 4. The trenching was performed to delineate the edge of fill, the edge of the former slime pond berm, and to characterize the nature of fill near the perimeter of the OCDA. Test trenches were excavated to a depth sufficient to encounter native soils, mine tailings, or first recharging groundwater. The trenches were excavated to approximate lengths of between 20 to 45 feet long as necessary to define the limits of the fill material and the OCDA boundaries.

The test trench field logs are provided in Appendix C and the subsurface logs from each test trench are summarized on a plan view map showing the relationship to the trench and fill material extent on Figure 4.

### 2.3.3 Initial Test Pit Excavations

The test pits were excavated within the boundaries of the OCDA as shown on Figure 4 to assess the vertical makeup of the interior portion of the area. A total of five test pits were excavated in each of the two halves of the OCDA for a total of 10 test pits. As with the test trenches, the test pits were excavated to a depth sufficient to encounter native soils, mine tailings, and first recharging groundwater. Fill material and any wastes were visually described and documented, screened with a PID, and checked for the presence of paint sludge.

The test pits were logged using the same criteria as the test trenches described in Section 2.3.2 above. The test pit field logs are provided in Appendix C and the subsurface logs from each test pit are summarized on a plan view map showing the relationship to the pit and fill material extent on Figure 4.

### 2.3.4 Initial Test Trench and Test Pit Sample Collection

The test trenches and pits were excavated into the overburden using a track-mounted excavator (Caterpillar Model 345 with a five cubic yard bucket). Samples were collected for visual characterization using the excavator during July and August 2006. The soil samples collected for laboratory analysis were obtained from excavated soil using stainless steel trowels and spoons for non-VOC analytes. EnCore® samplers were used for VOCs. Soil samples were collected at or above the soil-groundwater interface.

Representative samples were collected from each test trench and test pit to characterize the subsurface within the OCDA. Soil samples were collected from fill material associated with refuse and rubbish, mine tailings, and native soil. Soil samples were collected from the base of each test trench or test pit. A total of five additional samples were collected from fill materials that appeared to be atypical of other fill within the OCDA or that exhibited elevated PID readings

All the soil samples were submitted to Accutest Laboratories, an NJDEP-certified laboratory, and were analyzed for TCL VOCs and SVOC, TAL metals, PCBs, and petroleum hydrocarbons.

### 2.3.5 Results of Initial Test Trench and Test Pit Waste Characterization

A summary of the data collected from visual observation of the test trenches and test pits is presented in Table 3. Excavation of the test trenches and test pits provided visual data for assessing subsurface conditions within the OCDA. These observations confirmed the previous understanding that the OCDA was used for the disposal of mine tailings during historic mining activities that occurred on the Site and, later, for disposal of miscellaneous waste materials indicative of a landfill operation.

Field data collected during both of the July/August 2006 and March 2007 test trenching and test pitting events showed that at many of the locations fill material had a varied abundance of debris (including refuse and rubbish) that was intermixed with mine tailings and reworked soils. This uppermost landfill layer is extensive and matches up topographically with the former "slime" tailings pond and other mine tailings disposal areas shown on old mine maps, which define most of the OCDA. A copy of these maps is included within Appendix F.

As shown in Table 3, miscellaneous debris material was encountered at almost every test excavation location that fell within the boundaries of the OCDA. The landfilled

materials included general trash (carpet, cloth, paper, cardboard), plastic bits and bags, tires, glass, foam, scrap wood, fiberglass or mineral wool insulation, metal fragments and scrap, automobile debris, and miscellaneous junked appliances (white goods). Overall, soil cover and distinct layering patterns were difficult to distinguish because the fill material appeared to have been extensively re-worked, causing intermixing of debris and soil from layers above and below.

The extent of former landfilling operations was clearly delineated at most locations because the test trenches and test pits were terminated one or more feet into native soil, undisturbed mine tailings or undisturbed mine waste rock. The only location where the thickness of fill/mine tailings that were intermixed with debris extended beyond the limits of the excavation depth of 15 feet was at location ITP-06, a test pit that was located in the central part of the OCDA, where groundwater was encountered at a depth of 14.5 feet bgs.

As documented in the logs provided in Appendix C and as summarized in Table 3, debris, other than minor surficial trash, was not encountered at test pit locations ITP-02, ITP-08, and ITP-10A or at test trench locations ITT-08, ITT-09, ITT-10, and ITT-13. The lack of debris at test trench excavation locations ITP-08, ITT-8, ITT-09, and ITT-10 indicates that landfilling operations did not extend entirely across the northeastern wetland area in the investigation area. The absence of debris at test trench location ITT-13 also indicates that landfill operations did not extend up to the mine tailings berm at all points.

As also shown in Table 3, fill (including re-worked mine tailings) mixed with debris was commonly observed along the length of the OCDA fronting Peters Mine Road. Thicknesses of fill material with debris that exceeded the 10 foot depth were observed in the central part of the OCDA at test pit locations ITP-05, ITP-06, and ITP-07. The thickness of fill material with debris thinned toward Peters Mine Road, to the east toward Park Brook, and to the south where mine waste rock is prevalent in the subsurface.

As expected, some paint sludge chunks and fragments were observed in the landfill in addition to the paint sludge identified at several surface locations. Paint sludge chunks and/or fragments were identified at test pit locations ITP-01 in 2006 and 2007, ITP-03 in 2006, ITP-06 in 2006, ITP-07 in 2006, and ITP-10 in 2006 on the surface or mixed in with fill material to a maximum depth of 8 feet bgs as noted at the test pit ITP-06 location.

Paint sludge fragments were also observed at test trench location ITT-07 at a depth of 2 to 3.5 feet in 2006 and on the surface in June 2007. Paint sludge fragments were noted on the ground surface in the vicinity of test trench location ITT-11 during the Mine Tailings investigation field work in June 2007. A possible paint sludge flow deposit was observed to be partially exposed on the surface along a trail just to the west of test trench ITT-11 during OCDA RI fieldwork. A paint sludge flow was also uncovered in the southern part of the OCDA during excavation of test trench ITT-01A and within test trench ITT-14A. In addition, paint sludge flows were identified in the northern edge of OCDA and within the fill material adjacent to Peters Mine Road at the northern edge of the OCDA.

A summary of the data collected from visual observation of the test trenches and test pits is presented in Table 3.

#### 2.3.6 Initial Test Trench and Test Pit Sample Collection

A total of 29 soil samples were collected from the test trenches and test pits, 24 from the bottoms of the trenches and pits with five samples collected from fill or re-worked tailings containing refuse and rubbish. A total of three of the samples were collected from the 10 test pits and 16 samples were collected from the 14 test trenches. The soil samples were collected from a variety of soil matrices found within the OCDA, including native soils, mine tailings, mine waste rock, re-worked mine tailings, and fill. The soil material associated with each test pit and trench sample is presented in Table 1. The depths to each layer of material found in the OCDA along with depths that groundwater was encountered, is provided on Table 3.

All laboratory analytical results were reviewed and validated by ARCADIS in accordance with USEPA-approved protocols and the site QAPP. The results of the soil samples were compared to the RDCSRS and IGWDSSL and are presented in Table 4. The sample locations with analytical results are shown on Figure 5.

The analytical results for samples collected from the test trenches and test pits are summarized below.

##### *2.3.6.1 Test Pit Sample Results*

The following summarizes the soil analytical results generated from the initial Test Pit investigation in the OCDA:

- TCL VOCs were not reported in any of the 13 samples from the test pits at concentrations above their respective NJDEP RDCSRS or IGWDSSL.

- There were no exceedances of the NJDEP RDCSRS or IGWDSSL for SVOCs in the vast majority of the test pit soil samples, with the exception of sample OC-ITP-01A (4.5 to 5.0 feet) in which PAHs were reported above their respective RDCSRS and IGWSCC in native soil. Benzo (a) anthracene, Benzo (a) pyrene, and Benzo (b) fluoranthene were reported at 1.27 mg/kg, 1.18 mg/kg, and 1.25 mg/kg, respectively. Only Benzo (a) anthracene and Benzo (a) pyrene exceeded the IGWSCC standards.

- Total PCBs were reported at concentrations above the RDCSRS and IGWDSCC in soil samples at four of the test pit locations, specifically OC-ITP-03A (4.0 to 5.0 feet), OC-ITP-03B (10.0 to 10.5 feet), OC-ITP-04 (4.0 to 4.5 feet), and OC-ITP-07 (11.5 to 12.0 feet). As shown within Table 4, PCB Aroclors 1242, 1254, and/or 1260 were reported at individual concentrations ranging from 0.066 to 0.769 mg/kg.

- As summarized in Table 4, the analytical results indicated exceedances of the RDCSRSs and IGWDSCCs for the TAL metals aluminum, antimony, arsenic, barium, beryllium, cadmium, lead, manganese, mercury, vanadium, and zinc in all 13 samples collected. Only five of these samples locations had exceedances of the RDCSRS for arsenic and lead, specifically, test pits OC-ITP-03B (10.0 to 10.5 feet), OC-ITP-04 (4.0 to 4.5 feet), OC-ITP-05 (14.5 to 15.0 feet), OC-ITP-07 (11.5 to 12.0 feet), and OC-ITP-08 (5.5 to 6.0 feet).

- Arsenic was reported above its RDCSRS of 19 mg/kg in four of the 13 samples at concentrations ranging from 33.2 to 47.2 mg/kg.

- Lead was reported slightly above its 400 mg/kg RDCSRS in only one sample, specifically test pit OC-ITP-03B (10.0 to 10.5 feet), at a concentration of 430 mg/kg.

*2.3.6.2 Test Trench Sample Results*

There were no exceedances of NJDEP's RDCSRS or IGWDSSL for VOCs in any of the samples collected from the test trenches, with the exception of sample OC-ITT-14A (1.5 to 2.0 feet) which was collected from fill below paint sludge, where the concentrations of

ethylbenzene, toluene and total xylenes exceeded their IGWDSSL, but not their RDCSRS. Concentrations were 31.9 mg/kg, 18.5 mg/kg, and 225 mg/kg, respectively.

There were no exceedances of NJDEP's RDCSRS or IGWDSSL for SVOCs in any of the samples collected from the test trenches.

There were no exceedances of NJDEP's RDCSRS or IGWDSSL for PCBs (individually or in Aroclor aggregate) in any of the samples collected from the test trenches. Trace concentrations of PCBs were reported in only three test trench samples (OC-ITT-03 [3.5 to 4.0 feet], OC-ITT-12 [3.2 to 3.7 feet], and OC-ITT-14A [1.5 to 2.0 feet]), at concentrations between 0.057 and 0.14 mg/kg.

For the TAL metals, arsenic and vanadium were the only parameters that exceeded their respective RDCSRS. Arsenic was reported at concentrations above its RDCSRS of 19 mg/kg in seven of the samples. The seven samples where arsenic exceeded its RDCSRS included OC-ITT-05 (6.0 to 6.5 feet), OC-ITT-06 (7.5 to 8.0 feet), OC-ITT-08 (4.8 to 5.3 feet), OC-ITT-10 (3.8 to 4.3 feet), OC-ITT-11 (2.5 to 3.0 feet), OC-ITT-12 (3.2 to 3.7 feet), and OC-ITT-13BT (7.5 to 8.0 feet). These samples contained some amount of mine tailings material (in five samples), fill material (one sample), or native soil (one sample). The same seven samples that exceeded the RDCSRS for arsenic also exceeded the arsenic IGWDSSL.

Vanadium was also reported in all 16 of the samples and above its RDCSRS of 78 mg/kg in five of the samples, including OC-ITT-08 (4.8 to 5.3 feet), OC-ITT-10 (3.8 to 4.3 feet), OC-ITT-11 (2.5 to 3.0), OC-ITT-12 (3.2 to 3.7 feet), and OC-ITT-13BT (7.5 to 8.0 feet), at concentrations ranging from 88.2 to 155 mg/kg.

Aluminum, beryllium, cadmium, lead, manganese, mercury, and nickel all had exceedances of the IGWSSL, but not the RDCSRS. Aluminum exceeded its IGWSSL of 3,900 mg/kg in all 16 samples with concentrations ranging from 4,240 to 20,600 mg/kg. Beryllium exceeded its IGWSSL of 0.5 mg/kg in eight of the samples in concentrations ranging from 0.52 to 0.68 mg/kg. Cadmium exceeded its IGWSSL of 1.0 mg/kg in three of the 16 samples in concentrations ranging from 2.2 to 4.0 mg/kg. Lead exceeded its IGWSSL of 59 mg/kg in samples OC-ITT-11 (2.5 to 3.0 feet) and OC-ITT-14A (1.5 to 2.0 feet) at concentrations of 98.2 and 177 mg/kg, respectively. Manganese exceeded its IGWSSL of 42 mg/kg in all 16 samples in concentrations ranging from 110 to 1,010 mg/kg. Mercury exceeded its IGWSSL of 0.1 mg/kg in five samples in concentrations ranging from 0.015 to 1.3 mg/kg. Nickel exceeded its IGWSSL of 31 mg/kg in three of the samples with concentrations ranging from 32.6 to 67.8 mg/kg.

### 2.4 Supplemental Native and Fill Material Characterization

Based on the results of the July/August 2006 and March 2007 native and fill material characterization, supplemental investigation test trenches were completed with oversight by the USACOE from January 19 through February 10, 2010. As indicated previously, this work was done in accordance with the USEPA-approved revised work plan dated December 28, 2009. The supplemental trenching was performed to fine-tune the delineation and assessment of the nature of the fill material, the depth of mine tailings (where possible), and the location of and amount of paint sludge that may remain within the ODCA.

The test trenches were excavated with a tracked excavator to characterize native and fill materials in the OCDA. The test trench excavations were performed to provide the following specific information:

- Types of fill. The fill materials included, mine tailings, construction and demolition debris, general manufacturing debris (cardboard, wood, piping and plastic), general municipal debris (refuse and household trash), paint sludge, drum remnants, and/or reworked soil.

- Fill layering characteristics (e.g., intermingling or segregation of fill materials, presence of soil cover layers).

- Additional physical and chemical characteristics of the fill materials and underlying native soil.

Soil and fill materials were field screened with a PID for health and safety and potential environmental impact information. The trenching field work was performed utilizing Level D health and safety protocols. With the exception of paint sludge, drums, and drum remnants, all materials removed from the test trenches were returned to the excavation from which it was taken. Paint sludge, drum, and drum remnants removed from excavations were stockpiled in a dedicated location, characterized, and covered with plastic sheeting pending off-site disposal.

Visual and photographic information collected during test trench excavation activities were used in conjunction with field notes to create representative cross-sections of each trench. Cross sections for each of the eight test trenches are in Appendix D.

### 2.4.1 Supplemental Test Trench Excavation

ARCADIS performed supplemental clearing and test trenching activities within the OCDA during the period of January 4 through February 11, 2010. In order to provide better characterization, Ford completed eight test trenches totaling 3,169 linear feet were excavated as part of the supplemental test trench investigation. The supplemental test trench locations are presented on Figure 6.

Test trenches were excavated to a width of approximately 6 feet; and to a maximum depth of 20 feet below ground surface (bgs), to native soil, or approximately 1 foot below recharging groundwater. All test trenches were backfilled the same day. A total of 74 base and sidewall samples were collected from the OCDA from January 19 through February 10, 2010. Sampling locations are identified on Figure 6, and the analytical results are summarized in Table 5. The depth of each soil sample is also shown in Table 5.

### 2.4.2 Supplemental Test Trench Base Sample Collection

Forty samples were collected from the base of each test trench at a frequency of approximately one sample per 100 linear feet of trench. Base samples were classified as being collected from native soil, at the groundwater table and/or 20 feet below ground surface. The samples were screened in the field using a PID and checked for magnetic charge using a magnet (to determine if mine tailings were present). Each VOC sample was collected out of the excavation bucket using Encore® samplers. Stainless steel trowels or disposable scoops and stainless steel bowls were used to collect sample for one 900 ml glass amber jar for TCL SVOCs, TAL metals, and PCB analysis. All samples were submitted to an NJDEP-certified laboratory for analysis.

### 2.4.3 Supplemental Fill Material Sample Collection

An additional thirty-four samples were collected from the sidewalls of the test trenches at a frequency of approximately one sample per 100 linear feet of trench. The samples were screened in the field using a PID, and collected using stainless steel trowels or Encore® samplers for VOCs. One 900 mL glass amber jar was also collected for TCL SVOCs, TAL metals, and PCB analysis. All samples were submitted to an NJDEP-certified laboratory for analysis.

2.4.4 Results of Supplemental Test Trench and Test Pit Waste Characterization

Miscellaneous debris material was encountered along the T1 transit on the south end approximately 88 feet north and continues north to T2 ending approximately at 200 feet from the end of T2 of the OCDA. Debris was also found along the T5, T6, T7, and T8 transits, more specifically from the start of the T5 test trench at the east end to 300 feet west, within T6 from the start of the test trench at the east end to 446 feet west, within T7 from approximately 26 feet to the end of the trench at 292 feet west and within T8 from approximately 158 feet to the end of the test trench at 394 feet west transit. The landfilled materials included general trash (carpet, cloth, paper, cardboard), plastic bits and bags, metal and plastic strapping, tires, glass, foam, scrap wood, fiberglass or mineral wool insulation, metal fragments and scrap and automobile debris. Overall, soil cover and distinct layering patterns were difficult to distinguish because the fill material appeared to have been extensively re-worked, causing intermixing of debris and soil from layers above and below.

Fill (including re-worked mine tailings) mixed with debris was commonly observed along the length of the OCDA frontage along Peters Mine Road. Fill thicknesses with debris exceeded at least ten feet in depth were observed in the central part of the OCDA (locations T5, T6, T7, and T8 transits). The thickness of fill material with debris thinned towards Peters Mine Road, to the east toward Park Brook, and to the south.

Groundwater was encountered at various depths in the test trenches and test pits. Depth to groundwater encountered ranged from three feet bgs to 16 feet bgs. In most cases, groundwater was encountered in either native soil or mine tailings, with the exception of locations OC-ITP-06 (14.5 feet bls) and OC-ITP-07 (12.5 feet bls) where perched water or groundwater was encountered in areas that contained fill and rubbish material.

As expected, some additional paint sludge was observed within the OCDA. Paint sludge was present in chunks (up to 2 feet in diameter), fragments, and flows. Subsurface and surficial paint sludge was located on the T1 transit 88 feet north of the start of trench to approximately 132 feet north of the start. The paint sludge was mixed in with fill material to a maximum depth of 4.5 feet bgs. In addition, paint sludge flows were identified on the T8 and T3 transits. Along the T8 transit surficial and subsurface paint sludge was observed at the east end of the trench at approximately 152 to 199 feet west of beginning of trench located 1.5 to 4.2 feet bgs. Along the T3 transit at the west end, 12 feet from the chain link fence to 135 feet east, paint sludge was observed 2.2 to 4.5 feet bgs.

*2.4.4.1 Results of Supplemental Trench Base and Fill Sampling*

Forty soil/tailings samples were collected from the bottom of the trenches. Thirty-eight collected in native soil and two (T1-7+10 and T3-2+00) from mine tailings one-foot below the groundwater table as requested by the USACOE. All sample results were reviewed and validated by ARCADIS in accordance with USEPA-approved protocols and the site QAPP.

- As shown within Table 5, VOCs were not reported in any of the 40 samples from the test trench bases above the RDCSRS or the IGWSSLs. There were no exceedances of NJDEP's RDCSRS or IGWSSLs for SVOCs in any of the test trench base soil samples.

- PCBs were not reported in any of the 40 samples from the test trench base above NJDEPs RDCSRS or IGWSSLs.

- Out of the 23 metals that are part of the TAL list, eight metals exceeded their IGWSSL (aluminum, beryllium, lead, manganese, mercury, arsenic, cadmium and nickel). Only arsenic exceeded its RDCSRS of 19.0 mg/kg in 14 of the 40 samples.

- Concentration ranges for metal exceedances: Aluminum in all 40 samples (4,880 to 31,300 mg/kg), beryllium in 13 samples (0.54 to 1.3 mg/kg), lead in two samples (64.1 to 70.8 mg/kg), manganese in all 40 samples (67.5 to 1,540 mg/kg), mercury in five samples (0.12 to 2.9 mg/kg), arsenic in 14 samples (22.8 to 126 mg/kg), cadmium in four samples (1.2 to 2.9 mg/kg) and nickel at 157 mg/kg in one sample.

Thirty-four samples were collected from fill material within the trenched area.

· As shown within Table 5, VOCs were not reported in any of the 34 samples from the test trench fill above NJDEP's RDCSRS or IGWSSL except for a single exceedance of tetrachloroethene which was reported at 0.0105 mg/kg which is slightly above its IGWSSL of 0.0005 mg/kg at location F-T6-0+84.

- There were no exceedances of NJDEP's RDCSRS or IGWSSL for SVOCs in any of the test trench fill soil samples, except in samples F-T2-5+06, F-T3-0+99, F-T5-0+50 and F-T6-1+99 which had the following exceedances: F-T2-5+06 exceeded both the RDCSRS and the IGWSSL for benzo(a)anthracene and

benzo(a)pyrene; F-T3-0+99 exceeded both the RDCSRS and the IGWSSL for benzo(a)anthracene and benzo(a)pyrene, but only the RDCSRS for benzo(b)fluoranthene; F-T5-0+50 exceeded both the RDCSRS and the IGWSSL for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and only the RDCSRS for dibenzo(a,h)anthracene; and F-T6-1+99 exceeded both the RDCSRS and the IGWSSL for benzo(a)pyrene.

- With respect to the TAL metals:
  - Aluminum exceeded its IGWDSSL of 3,900 mg/kg in 25 of 34 samples in concentrations ranging from 4,400 to 15,600 mg/kg.
  - Antimony exceeded its IGWDSSL of 6.0 mg/kg in 3 of the 34 samples in concentrations ranging from 7.9 to 17.0 mg/kg.
  - Barium exceeded its IGWDSSL of 1,300 in one sample at a concentration of 1,810 mg/kg.
  - Beryllium exceeded its IGWDSSL of 0.5 mg/kg in 5 of the 34 samples in concentrations ranging from 0.51 to 0.83 mg/kg.
  - Cadmium exceeded its IGWDSSL of 1.0 mg/kg in 8 of the 34 samples on concentrations ranging from 1.8 to 8.7 mg/kg.
  - Lead exceeded its IGWDSSL of 59 mg/kg in 3 of 43 samples at concentrations ranging from 63.7 to 477 mg/kg, and also exceeded its RDCSRS of 400 mg/kg at one of these locations.
  - Manganese exceeded its IGWDSSL of 42 mg/kg in 20 of the 34 samples at concentrations ranging from 124 to 824 mg/kg.
  - Mercury exceeded its IGWDSSL of 0.1 mg/kg in 13 of the 34 samples with concentrations ranging from 0.14 to 5.4 mg/kg.
  - Nickel exceeded its IGWDSSL of 31 mg/kg in 5 of 34 samples with concentrations ranging from 31.6 to 43.1 mg/kg.
  - Vanadium exceeded its RDCSRS of 78 mg/kg in 15 of the 34 samples with concentrations ranging from 83.6 to 350 mg/kg; there is no IGWDSSL for

vanadium.

- Arsenic exceeded its RDCSRS and IGWSSL of 19.0 mg/kg in 15 of the 34 samples at concentrations ranging from 22.8 to 89.2 mg/kg.

- Total PCBs were reported above both the RDCSRS and the IGWDSSL in 5 of the test trench fill samples (F-T1-5+97 at 1.13 mg/kg, F-T6-3+10 at 0.415 mg/kg, F-T1-7+25 at 0.302 mg/kg, F-T5-2+50 at 0.2677 mg/kg, F-T6-2+50 at 0.2115 mg/kg and F-T7-2+50 at 0.2342 mg/kg.

### 2.5 Summary of Paint Sludge and Drum/Drum Remnant Removal Activities

As outlined above, paint sludge was encountered within or adjacent to test trenches T1, T3, and T8 during supplemental investigation activities conducted in the OCDA from January 4 through February 11, 2010. Paint sludge, drums and drum remnants identified during investigatory activities were stockpiled on plastic sheeting within the fenced area near the center of the OCDA. Paint sludge, drums and drum remnants were sampled for characterization and covered with plastic sheeting pending characterization and off-site disposal.

Subsequent to the completion of test trenching activities, ARCADIS conducted a targeted removal program to remove paint sludge deposits identified within the OCDA. ARCADIS conducted the targeted removal program within the OCDA during the period from March to April 2010. A total of approximately 2,200 tons of paint sludge were stockpiled and ultimately disposed off site during test trenching activities. Removal efforts focused on solid paint sludge flows rather than pieces of paint sludge intermingled with soil; therefore materials removed consisted of predominantly paint sludge. The paint sludge was shipped off site as a characteristic hazardous waste (based on lead leachability) for disposal at the EQ facility in Detroit, Michigan. Locations and the boundaries of where paint sludge was identified and removed are identified on Figure 6.

A total of six drums and/or drum remnants were removed during supplemental test trenching activities, and no additional drums were encountered during targeted paint sludge removal activities. Drums and/or drum remnants were placed within 85-gallon overpacks and sampled for disposal. A drum log identifying the contents of drums is provided as Appendix G. Analytical results of waste characterization sampling performed on these drums are also included within Appendix G. Table 6 presents a summary of

the drum inventory, a description of contents and a list of constituent concentrations that were above the RDCSRS.

Results of sampling indicated that five of the drums contained PCBs, petroleum hydrocarbons and/or VOCs. Three of these drums were sent off site for disposal as hazardous waste, while two of these drums were sent off site for disposal as a waste regulated under the Toxic Substances Control Act (TSCA) since the total concentration of PCBs reported exceeded the threshold concentration of 50 mg/kg. One drum was characterized and disposed of as a non-hazardous.

Subsequent to the completion of targeted paint sludge removal activities, ARCADIS backfilled and/or contour graded areas as necessary, and applied straw and annual rye grass seed to stabilize the area. The final remedy of this area will be determined through the Feasibility Study process.

### 2.6 Groundwater Investigations

A total of eleven overburden monitoring wells (OB-9, OB-14A, OB-14B, OB-16, OB-17, OB-18, OB-22, OB-23, OB-24, OB-25, and OB-28) were installed within and around the OCDA to determine groundwater quality and to establish the relationship between waste materials present in OCDA and groundwater quality. All monitoring wells remain active in the site sampling program with the exception of OB-9, which was damaged and no longer can be sampled. The geographic locations of the wells are illustrated on Figure 7.

The following subsections discuss the history, progression and findings of the groundwater quality investigations.

#### 2.6.1 Historical Groundwater Investigations and Results with the OCDA

Groundwater quality in the vicinity of the OCDA was initially investigated as part of the 1984 to 1988 RI through the installation of three groundwater monitoring wells screened within the unconsolidated (overburden) deposits. These monitoring wells range in depth from 20 to 63 feet bgs, and are referred to as OB-9, OB-14A, and OB-14B. Well locations are shown on Figure 7.

Monitoring well OB-14A was completed to a depth of 20 feet bgs and screened across fill material within the OCDA, while well OB-9 and OB-14B were screened within the native soil at intervals of 51 to 61 feet bgs and 25 to 35 feet bgs, respectively. Three

additional monitoring wells (OB-16, OB-17, and OB-18) were installed to monitor groundwater in the vicinity of four magnetically anomalous areas within the OCDA. These wells were screened in the shallow (overburden) groundwater table between 13 feet bgs and 20 feet bgs, respectively.

During the initial RI activities at the Site, groundwater samples were collected from monitoring wells OB-9, OB-14A, and OB-14B on three occasions during the RI, between 1984 and 1988. The results indicated the following:

- Dissolved lead was not reported in filtered samples obtained from any of these three wells during the RI.

- Total lead was reported in unfiltered groundwater samples twice during the Remedial Investigation; once during the second groundwater sampling event (June 1986) at OB-9 (65 micrograms per liter [µg/L]) and once during the third event (March 1988) at OB-14A (85 µg/L).

- Toluene was reported in well OB-9 at 19 µg/L on one occasion. This concentration was significantly below the New Jersey Groundwater Quality Standard (GWQS) of 1,000 µg/L and no other VOCs were reported in any of these wells.

Groundwater samples from monitoring wells OB-14A, OB-14B, OB-16, OB-17 and OB-18 were subsequently collected seven times as part of the post-Record of Decision (ROD) Environmental Monitoring Program during the period from 1992 through 1995, and the results indicated that following:

- No VOCs were reported in the groundwater above the New Jersey GWQS during this period.

- Total lead was reported at concentrations greater than the New Jersey GWQS of 5 µg/L in nine of the 28 unfiltered samples obtained from wells OB-14A, OB-14B, OB-17 and OB-18 during this period. Lead was not reported in well OB-16 at concentrations exceeding 5 µg/L during any of the monitoring rounds.

Filtered groundwater samples were not obtained during the initial RI and low-flow groundwater sampling techniques were not typically followed during this period; therefore the concentrations reported may be due to turbidity in site monitoring wells or the crystalline nature of bedrock at the Site. The maximum total lead concentrations reported in unfiltered groundwater samples collected from wells OB-14A, OB-14B, OB-

17, and OB-18 during this period (1992 to 1995) were 117 µg/L, 26.4 µg/L, 7.3 µg/L, and 101 µg/L, respectively.

It is important to note, however, that lead concentrations decreased with time with fewer samples each year exceeding the NJDEP GWQS of 5 µg/L. In 1995, only one unfiltered sample collected at well OB-14A which is screened within fill material, contained lead at an estimated concentration greater than 5 µg/L. Sampling conducted in 2004 found lead concentrations to be less than 5 µg/L in both filtered (dissolved) and unfiltered samples obtained from wells OB-14A, OB-14B, OB-16, OB-17, and OB-18. The results of the RI indicate that sampling techniques and sample turbidity may have affected the reported lead concentrations and, as sampling techniques designed to minimize turbidity so that groundwater samples more representative of actual groundwater quality were collected, lead was not reported above its 5 µg/L GWQS in groundwater in the vicinity of the OCDA. The declining lead levels in these wells may also be related to the removal of paint sludge from the OCDA during the late 1980s and 1990s, which may have been serving as a source of lead concentrations in groundwater. Should this be the case, targeted paint sludge removal actions conducted during 2011 in this area should continue to result in an ongoing decrease in groundwater lead concentrations.

### 2.6.2 Additional Monitoring Well Installations

Four additional overburden monitoring wells (OB-22, OB-23, OB-24, OB-25 and OB-28) were installed as part of the OCDA groundwater investigation to better evaluate the groundwater regime within and surrounding the former OCDA. The well locations are shown on Figure 7.

As shown on Figure 7, monitoring well OB-25 was installed to the west and north of the OCDA, across Peters Mine Road by Sheehan Drive, to assess upgradient conditions. Monitoring well OB-23 was installed within the central part of the former OCDA and was screened within the overburden beneath the fill materials at this location. Monitoring wells OB-22 and OB-24 were positioned to provide monitoring points along the possible downgradient southern edge of the OCDA and along the northeastern edge potentially downgradient of the primary disposal area.

As also shown on Figure 7, monitoring well OB-22 location is located upgradient of the existing monitoring wells OB-16, OB-17, and OB-18 and at the downgradient edge of the former OCDA. Monitoring well OB-24 location is close to Park Brook and is

downgradient of a former 2004 sludge removal area. The monitoring well OB-28 location is downgradient of OCDA monitoring well OB-16.

Overburden monitoring wells were installed using hollow stem auger techniques, completed as a 2-inch inside diameter, schedule 40 PVC water table well, with 10 feet of screen placed across the water table (5 feet above; 5 feet below). The well construction logs and well sampling records are in Appendix H.

Following installation, the monitoring wells were developed with a submersible pump until the discharged water was nearly sediment free, or for 30 minutes, whichever occurred first. Development water was contained in fractionation tanks for disposal through the on-site portable treatment system. The well casing elevations were surveyed by a New Jersey licensed surveyor. For consistency, the elevations of the existing monitoring wells in the OCDA were resurveyed relative to the new wells. NJDEP Forms A and B are provided within Appendix H.

### 2.7 Groundwater and Surface Water Sampling

Pursuant to the USEPA-approved Post-Environmental Monitoring Program Sampling Work Plan (ARCADIS 2004), approved on August 24, 2004, and the August 8, 2006 Work Plan, ARCADIS has performed semi-annual groundwater sampling and monitored groundwater elevations at monitoring wells located at the Ringwood Mines/Landfill Site through 2010. Site-wide groundwater sampling was transitioned to an annual basis as approved by the USEPA in 2011. Site-wide groundwater sampling was also conducted at the Site, including the OCDA, in April/May 2012. Additional groundwater and surface water elevation monitoring was also conducted during 2012 as outlined within the Proposed Supplemental Site-Related Groundwater RI Work Plan (ARCADIS 2012a) and in response to correspondence between the USEPA and Ford regarding an expanded environmental tracer study in the vicinity of the PMP and the CMP. The USEPA approved the supplemental Work Plan in their August 15, 2012 correspondence.

The primary purpose of the supplemental RI conducted in 2012 was to further characterize groundwater flow pathways and connectivity between bedrock, overburden, surface water, and the mine shafts within the PMP and CMP Areas; however, the supplemental 2012 study also provided additional information related to groundwater and surface water flow within the OCDA.

ARCADIS collected groundwater samples from each well using the groundwater sampling and analytical procedures documented in the QAPP. As specified in the Post-

Environmental Monitoring Program Sampling Work Plan, each sample was analyzed for TAL inorganic compounds, TCL organic constituents, and the key anions chloride, sulfate, carbonate and bicarbonate, nitrate and phosphate.[1] The samples were analyzed at Accutest Laboratories in Dayton, NJ using the following SW-846 methodology as described in the USEPA-approved QAPP (May 2004):

- TCLVOCs – USEPA Method 8260B
- TCL SVOCs – USEPA Method 8270C
- TAL Metals (including key anions) – USEPA Methods 6010B/7470A
- TCL Pesticides/PCBs – USEPA Methods 8081A/8082
- Cyanide – USEPA Method 9012A

Beginning in April/October 2007 and for all subsequent sampling events, USEPA approved the deletion of pesticides from the analytical protocol as these compounds had not been reported in groundwater at the Site.

Quality control samples were obtained in accordance with NJDEP and QAPP procedures specified in the Work Plan. Both unfiltered (total metal) groundwater samples and filtered (dissolved) samples were analyzed for TAL metals to better evaluate the unfiltered groundwater analytical results for metals. Surface water samples were also collected from the Park Brook, located adjacent to and downgradient of the OCDA in April 2012 by ARCADIS in accordance with the approved ARCADIS 2005 Work Plan and the Proposed Groundwater Sampling Modification comments provided by the USEPA on April 20, 2011. As shown on Figure 7, surface water samples SW/SD-12 PAB-01A and SW/SD-PAB-02 were collected from Park Brook immediately adjacent to and downgradient of the OCDA and surface water sample SW/SD-PAB-03 was collected from Park Brook further downgradient and downstream of the OCDA.

In addition, as part of the Supplemental RI for Site-Related Groundwater, a supplemental groundwater investigation was conducted in 2012 that included surface

[1] The cations (calcium, magnesium, potassium, and sodium) are included as target metals in the TAL inorganic compound analysis protocol.

water staff gauge monitoring within the OCDA to further evaluate groundwater discharge to surface water pathways and flow patterns. The supplemental RI included installation of surface water staff gauges within Park Brook with water levels measured manually twice a week for a period of approximately seven weeks. The results of the staff gauge monitoring are discussed in Section 2.8 of this RIR.

### 2.8 Results of Groundwater and Surface Water Investigations

The results of groundwater sampling conducted in association with the OCDA during the period from 2006 through 2012 are provided in Table 7 and shown on Figure 7. Geochemical parameters measured in the field during each sampling event are summarized in Table 8 and on Figure 9. Groundwater sampling was conducted on a semi-annual basis during the period from 2006 through 2010, and on an annual basis in 2011 and 2012 as approved by the USEPA. The 2012 groundwater and surface water field sampling logs are presented in Appendix I.

The results of these analyses were compared to NJDEP's Class IIA Ground Water Quality Standards (GWQS), including certain metals for which NJDEP's GWQS are based on USEPA's non-health-based secondary, aesthetic standards (e.g., aluminum, iron, manganese, sodium, and zinc – See N.J.A.C. 7:9-6, et seq). As requested by the USEPA, all groundwater analytical results were also compared to the USEPA Maximum Concentration Limits (MCLs) and the findings are discussed herein.

The results of the OCDA surface water samples collected in April 2012 are shown in Table 9. Surface water sample results were compared to NJDEP Surface Water Quality Standards (SWQS) – See N.J.A.C. 7:9B, et seq).

All analytical results were reviewed and validated by ARCADIS in accordance with the QAPP. Validation qualifiers and comments were added to the data tables as appropriate. No data were invalidated.

#### 2.8.1 Overburden Groundwater Flow

A map showing the overburden monitoring well groundwater elevations and the overburden flow gradient in the OCDA during the most recent April 2012 sampling event is presented as Figure 8. As shown, groundwater flow in the overburden, or upper aquifer, within the OCDA is to the southeast sub-parallel to Park Brook and away from the slope of Whaleback Mountain. Groundwater flow characteristics observed in April

2012 are generally consistent with those observed during prior groundwater sampling/monitoring events.

Although there are no bedrock or lower aquifer monitoring wells within the OCDA, data from the PMP Area located immediately northwest of the OCDA indicates that the groundwater flow gradient in the bedrock in the vicinity of the OCDA is generally to the southeast (ARCADIS 2012b).

### 2.8.2 Summary of Groundwater Geochemical Results

ARCADIS collected geochemical data during each sampling event during the period from September 2006 through May 2012. Results of geochemical sampling are shown within Table 8 and summarized on Figure 9. Parameters monitored during each event included the following:

- Temperature ($^{o}$C)
- Turbidity (a measure of the degree to which water losses its transparency due to suspended particulates, measured in nephelometric turbidity unit [NTUs])
- pH (a measure of relative acidity or alkalinity of the water, measured in SI units)
- Alkalinity (a measure of the concentration of calcium carbonate, measured in milligrams per liter [mg/L])
- Chloride (measured in mg/L)
- Sulfate (measured in mg/L)
- Dissolved oxygen (or DO, a measure of oxygen available for biological systems to support aerobic activity, measured in mg/L)
- Conductivity (a measure of the ability of a solution to transfer current due to the presence of dissolved solids, measured in micromhos per centimeter [µmhos/cm])
- Oxidation/Reduction Potential (a measure of the tendency of a chemical species to acquire electrons and thereby be reduced, oxidation-reduction potential, redox, or Eh, measured in mV)

All geochemical parameters but alkalinity, sulfate and chloride ion, were measured in the field using standard measurement equipment. Alkalinity, sulfate, and chloride were analyzed within the laboratory using approved USEPA methods. The results of these analyses indicated the following:

- The temperature of groundwater within the OCDA varied from 6.45 $^{o}$C in well OB-17 during April 2007 to 16.69 within well OB-22 during May 2011. In general, water temperatures were slightly warmer during the September monitoring periods and coldest during the April monitoring periods. There was no discernable pattern with respect to temperature variations between 2006 and 2012.

- The turbidity of groundwater samples collected at OCDA monitoring wells varied greatly based on well location with the highest turbidity reported at the upgradient well OB-25 location with an average turbidity reading greater than 480 NTU. Turbidity was generally lower in downgradient wells OB-16, OB-17 and OB-18. With respect to the 2012 sampling event, turbidity was highest in recently installed well OB-28 (29.6 NTU); but was also elevated at wells OB-16 (25.7 NTU) and OB-24 (26.6 NTU). The turbidity reading within OB-25 (24.1 NTU) was higher than observed during 2011 (0.0 NTU); but much less than the historic average.

    - Groundwater pH indicated generally slightly acidic conditions in all OCDA wells during the period 2006 through 2011 with the exception of OB-24 and OB-25, with readings ranging from 5.31 in OB-18 during September 2008 to 6.94 at well OB-18 during October 2009. The pH of groundwater at wells OB-24 and OB-25 tended to be slightly higher, with slightly basic readings reported. The pH of groundwater at well OB-24 ranged from 5.28 (a possible outlier) during September 2008 to 7.24 during April 2007. The pH of groundwater at well OB-25 ranged from 6.0 during September 2006 to 7.13 during April 2008. With respect to 2012, pH readings were slightly higher at all well locations, with pH readings within five of the ten wells being slightly basic. pH has shown a slight increasing trend in a number of wells within the OCDA between 2008 and 2012, with the most distinct increasing trend observed at well OB-24 located on the southeastern side of the OCDA in close proximity to the Park Brook where pH readings have increased yearly since 2008. Since the oxidation of organic matter tends to result in more acidic conditions, the increase in groundwater pH at this location may indicate that organic oxidation of materials within the OCDA is waning.

- Overall, the pH of groundwater within the OCDA monitoring well network exhibited no extreme conditions, which is consistent with the balance of soil and groundwater analytical data which indicate no appreciable impact associated with OCDA contents.

· DO levels in groundwater within the OCDA wells during the period from 2006 through 2012 was generally low with the exception of groundwater at upgradient wells OB-22 and OB-25 where groundwater exhibits oxidized conditions. Generally, wells located within the OCDA and immediately downgradient exhibit mildly reducing to reducing conditions other than at the well OB-18 location downgradient of the OCDA where DO levels have varied over time likely due to the location of this well downgradient and outside the footprint of the OCDA.

  - The low DO levels are attributable to the natural oxidation of organic matter intermixed within the fill of the OCDA.

  - DO concentrations at downgradient well locations varied from 0.16 mg/L at well OB-16 during May 2010 to 1.76 mg/L in OB-16 during April 2012.

  - By comparison, DO levels at well OB-22 ranged from 2.99 during April 2007 to 8.57 during April 2008 and DO concentrations at well OB-25 varied from 4.27 mg/L during May 2010 to 10.49 mg/L during April 2008.

  - DO concentrations at well OB-18 varied from 0.65 mg/L during July 2009 to 3.24 during October 2009.

  - The documented reduction in DO concentrations between the upgradient and downgradient wells within the OCDA wells, coupled with other indicators of oxidation/reduction potential, confirms that the natural oxidation of organic matter in the fill in contact with groundwater is occurring. The data also indicate that aerobic microbial activity is likely taking place as more oxygenated groundwater flows into the OCDA from upgradient, and discharges to Park Brook. The data indicates that the natural oxidation of organic matter in the fill in contact with groundwater has resulted in depleted DO levels and therefore mildly reducing conditions.

· As expected, redox, measured as Eh, at monitoring wells within the OCDA are generally consistent with DO measurements during the period from 2006 through 2012, where both parameters are generally either low and negative, or higher and

positive. Eh measurements documented in groundwater at wells OB-22, OB-24 and OB-25 were generally positive and indicative of oxidized or aerobic conditions which generally correspond with higher DO values reported at these wells while Eh measurements at wells located within the OCDA at wells OB-14A, OB-14B and OB-23 were generally negative, or indicative of mildly reducing conditions reflective of the ongoing oxidation of organic matter within the OCDA and possibly aerobic microbial activity since, as the aerobic microbes proliferate, DO is utilized and its concentration is depleted. Note that wells OB-22 and OB-23 were dry during the April 2012 sampling event therefore no DO or Eh measurements could be taken.

- Conductivity within the OCDA wells was generally consistent during the period from 2006 through 2012, and varied from 0.181 µmhos/cm to less than, or slightly greater than 1.0 µmhos/cm. Conductivity in well OB-23, located in the center of the OCDA, was in all cases (through 2011) greater than the conductivity observed in downgradient wells OB-16 and OB-17 during the same sampling events.

As indicated above, geochemical data collected to date within the OCDA are similar to those anticipated within or adjacent to a landfilled area. These data indicate that oxidation of organic material is causing mildly reducing to reducing conditions and likely microbial degradation is taking place within the OCDA in a manner that has, and will, continue to reduce constituent concentrations.

### 2.8.3 Groundwater Sampling Results

The results of the groundwater monitoring program for overburden wells installed within the OCDA indicate the following:

- There has been only one detection of a single VOC above its GWQS in the vicinity of the OCDA. MTBE was detected at upgradient monitoring well OB-25 at a concentration of 171µg/L during the July 2009 sampling event, which is above the GWQS of 70 µg/L. This result is anomalous as MTBE was not detected in groundwater samples collected at any OCDA well during any other sampling events. Since MTBE was not widely used in the United States prior to the mid-1980s, it is unlikely that this anomalous detection of MTBE is related to former waste disposal activities at the OCDA.

- There have only been two detections of SVOCs at concentrations above the GWQS. Bis(2-Ethylhexyl)phthalate was detected in monitoring wells OB-23 and

OB-25 at concentrations of 6.6 µg/L and 3.7 µg/L, respectively during the April 2007 sampling event. It has not been detected in any monitoring wells within the OCDA since that time, including the most recent sampling event in April/May 2012.

- There have been no detections of pesticides or PCBs in any of the groundwater samples collected from the OCDA monitoring wells.

- As shown in Table 7 and on Figure 7, total metals concentrations of select metals have been detected above their respective GWQS in groundwater samples collected at OCDA, specifically:

  - Total aluminum has historically been sporadically detected at concentrations above the GWQS of 200 µg/L at wells OB-14A, OB-14B, OB-16, OB-17, OB-18, OB-22, OB-23, OB-24, OB-25, and OB-28.
  - Total arsenic has historically been sporadically detected at concentrations above the GWQS of 3 µg/L at wells OB-14A, OB-16, OB-22, OB-25, and OB-28.
  - Total iron has historically been detected at concentrations above the GWQS of 300 µg/L at all of the OCDA monitoring wells.
  - Total lead has historically been sporadically detected at concentration above the GWQS of 5 µg/L at wells OB, 22, OB-23, OB-25, and OB-28.
  - Total manganese has historically been detected at concentrations above the GWQS of 50 µg/L at wells OB-14A, OB-14B, OB-16, OB-17, OB-22 and OB-23, OB-24, and OB-25.
  - Total sodium has historically been detected at concentrations above the GWQS of 50,000 µg/L at wells OB-23 and OB-25.

Iron and manganese in the dissolved form have also been detected at concentrations above their respective GWQS. These concentrations of dissolved iron and manganese are potentially associated with moderately to strongly reducing conditions demonstrated by low DO concentrations and low (e.g., negative) Eh values. These moderately to strongly reducing conditions most likely reflect the natural oxidation of organic matter and possibly the aerobic microbial degradation of organic matter within the OCDA fill materials.

Aluminum and arsenic are also sensitive to redox conditions in the groundwater; however, the results of the RI indicate that neither metal is prevalent in the dissolved form. Although these metals are present in the soil/groundwater system, analytical results for filtered groundwater samples demonstrate that they are not in a form that is available for dissolution. Therefore, detected concentrations of total aluminum and total arsenic are most likely representative of elevated groundwater sample turbidity and the occurrence of fine particulates in the saturated soil/groundwater system of the OCDA fill materials.

It is worth noting that constituents detected in groundwater samples collected at upgradient groundwater monitoring well OB-25 are not consistent with constituents detected in groundwater samples collected at the other OCDA wells. Groundwater analytical results for samples collected at well OB-25 had elevated concentrations of lead, bis(2-ethylhexyl)phthalate, beryllium, cadmium, mercury, and arsenic; along with detected concentrations of copper, zinc, cobalt, and nickel. Since well OB-25 is located upgradient from the OCDA, constituents detected in groundwater at this location likely are not associated with fill materials placed historically within the OCDA.

### 2.8.4 Surface Water Sampling Results

The surface water analytical results adjacent to and downgradient of the OCDA are presented on Figure 7. The data indicate the following:

- No TCL VOCs, or PCBs were reported above the NJDEP SWQS.
- For TAL metals, only antimony was detected at a concentration above its NJDEP SWQS of 6 µg/L. Antimony was reported in surface water sample SW-PAB-03 at a concentration of 6.4 µg/L in November 2005, but has not been reported in surface water adjacent to the OCDA since that date.
- The laboratory method detection limits for arsenic and benzene were above their respective SWQS; however, these constituents were not reported at concentrations above the laboratory method detection limits at any of the OCDA surface water sample locations.
- Bis(2-Ethylhexyl)phthalate was reported at a concentration above its SWQS at surface water sample SW-PAB-01.
- No additional SVOCs were reported at concentrations above the SWQS.

In addition, as summarized in Table 10, a total of eight surface water gauging stations were installed within Park Brook, Mine Brook, Peters Mine Brook, and Peters Mine Pond, and surface water levels were manually measured twice per week during a 6-week period in summer 2012. Water levels were converted to surface water and groundwater elevations by referencing measured elevations of gauge tops and tops of well casings to allow for direct comparison. Total daily precipitation levels measured at the Ringwood, New Jersey Remote Automatic Weather Station were compiled to assess recharge dynamics in groundwater and surface water. These data were used in lieu of site-specific rain gauges because they represent daily precipitation totals, where rain gauges are visited less frequently and only provide the total precipitation between site visits.

The data generated during the water level monitoring study confirm data from previous RI activities which indicate that surface waters at the Site generally flow from north to south, changing directions locally according to bends in the brook channels. Surface water hydraulic gradients ranged from 0.01 to 0.05 ft/ft in the PMP and CMP Areas, respectively, and largely reflect changes in topography across the Site.

The data indicate that surface water levels in the most upgradient brook, Park Brook, responded rapidly to precipitation. For example, approximately 8.5 inches of precipitation over a 10-day period resulted in water levels increasing by approximately 0.8 foot between the July 17 and July 20 gauging events. Water levels at downgradient locations did not increase as significantly (approximately 0.3 to 0.7 foot) as the brooks widen, and ponds and wetlands serve to mute the affect of localized recharge.

## 3. Nature and Extent of Impacts

This section provides a description of the nature and extent of impacts in the OCDA. The results of sampling outlined above are contained within the December 16, 2008 Draft Technical Memorandum and July 8, 2011 Draft Technical Memorandum - O'Connor Disposal Area Supplemental Test Trench Investigation, and are included here by reference.

Historical sampling data used to assess the nature and extent of impacts at the Site are discussed in previous sections of this report, and summarized in Tables 1 through 9, attached. The locations of sampling points, test pits, test trenches and monitoring wells are shown on Figures 2 through 9.

Constituents of Concern and Sources

Based on the area-wide characterization of surface soil and fill material/contents within the OCDA, as well as characterization of the overburden groundwater, the following conclusions were drawn

Only arsenic and, to a lesser extent lead, low concentrations of PAHs and PCBs, occur sporadically at concentrations above their respective RDCSRS and/or the IGWDSSL VOCs were not reported in the OCDA except for a single exceedance of tetrachloroethene, which was reported at 0.0105 mk/kg, which is above its IGWSSL of 0.0005 mg/kg at location F-T6-0+84.

There were no exceedances of the NJDEP RDCSRS or IGWDSSL for SVOCs in the vast majority of the test pit and test trench soil samples, with the exception of samples F-T2-5+06, F-T3-0+99, F-T5-0+50, F-T6-1+99, andOC-ITP-01A (4.5-5.0 feet) in which PAHs were reported above their respective RDCSRS and/or IGWSCC in native soil.

Total PCBs were reported at concentrations above the RDCSRS and IGWDSSL in soil samples at four of the test pit locations, specifically OC-ITP-03A (4.0-5.0 feet), OC-ITP-03B (10.0-10.5 feet), OC-ITP-04 (4.0-4.5 feet), and OC-ITP-07 (11.5-12.0 feet). PCBs were also detected above the RDCSRS and IGWDSSL at test trench locations F-T1-5+97, F-T6-3+10, F-T1-7+25, F-T5-2+50, F-T6-2+50 and F-T7-2+50. As shown within Table 4, PCB Aroclors 1242, 1254, and/or 1260 were reported at individual concentrations ranging from 0.066 to 1.13 mg/kg.

This conclusion is consistent with the absence of any area-wide gross impacts to groundwater quality as detailed in Section 2.8.3.

Tables 2 through 9 summarize the analytical results for sediment, surface soil, fill materials, groundwater and surface water.

Two surface soil samples were collected within wetland areas of the OCDA. Results of laboratory analyses indicated that concentrations of cadmium, copper, lead, nickel and zinc exceeded the LEL within Sample OC-SS-13. At sample location OC-SS-14, the LEL for copper and the SEL for arsenic were exceeded.

Fill materials within and adjacent to the OCDA were placed during a period of varied use of the Site for residential, municipal, and industrial refuse as well as for the disposal of materials from the Ford Mahwah Assembly plant. Though limited amounts of paint

sludge have been identified within and adjacent to the OCDA, groundwater quality improved during the period from 1992 through 2004 based on the frequency and concentration of lead reported, and remains essentially unchanged from 2004 to the present; constituents of concern related to paint sludge, such as benzene, toluene, ethylbenzene, and xylenes (BTEX) and lead, are not present in the groundwater or surface water in any consistent pattern or in high concentrations indicative of a contaminant source.

In addition, various low level concentrations of predominantly total arsenic are reported in groundwater at concentrations that sporadically exceeded the NJDEP GWQS at a few of the monitoring wells in this area. Alternatively, based on the reducing conditions within and downgradient of the OCDA, concentrations of iron and manganese, which are also redox sensitive metals, are reported above their respective GWQS due to their solubility under the reducing conditions. The iron and manganese concentrations in groundwater at the Site as a whole are consistently observed above their respective GWQS, and coupled with the low yield of the overburden and bedrock wells in the area, renders the groundwater insufficient for potable use. Although drinking water to the residents is provided by the Borough of Ringwood via municipal wells with added supplies by the North Jersey District Water Supply Commission when required, the State of New Jersey has classified groundwater at the Site as Class IIA, with the designated use of providing potable water, should that become necessary.

The constituents of potential concern identified in samples collected from upgradient groundwater monitoring well OB-25 in November 2006 and April 2007 were inconsistent with the detections observed in other wells at the Site. The samples collected from this well had higher concentrations of lead (594 µg/L), which exceeded its NJDEP GWQS; exceedances for bis(2-Ethylhexyl)phthalate, beryllium, cadmium, mercury, and arsenic; high concentrations of copper and zinc, and detections of cobalt and nickel. The suite of heavy metals reported resembles the heavy metals reported in the sediment sample collected from Peters Mine Brook, upgradient of the OCDA and south of the Borough of Ringwood recycling center, in November 2005.

Well OB-25 is located adjacent to a former automobile junkyard that is known to have been present on the northwest corner of Peters Mine Road and Sheehan Drive. This well is also located downgradient from a residential property where automotive repairs and storage are frequently observed. Furthermore, concentrations of MTBE reported at OB-25 in the July 2009 sample event are likely anomalous as MTBE was not reported

in any OCDA well during any other sampling events. No other concentrations of MTBE were reported in the OCDA.

## 4. Fate and Transport

As previously noted, the data indicate that there is no significant adverse impact to the environment associated with the contents or fill material deposited in the OCDA as only arsenic and to a lesser extent lead, and low concentrations of PAHs and PCBs occur sporadically at concentrations slightly above their respective RDCSRS and/or the IGWSSL. This section describes the general fate and transport associated with the sporadically reported low level constituents identified within soil and fill materials and groundwater at the OCDA.

### 4.1 Primary Sources of Contamination and Primary Release Mechanisms

As previously discussed, other than elevated concentrations of iron and manganese and total lead and occasional detections of arsenic, overall there is no indication of impacts to groundwater quality at the OCDA. The arsenic reported at sporadic well locations reflects predominantly total and not dissolved concentrations. The data indicate that the arsenic in the system is not available for dissolution and is therefore not representative of actual groundwater quality conditions unlike the iron and manganese. The fact that arsenic is not elevated throughout the OCDA, even though groundwater conditions are reducing, confirms the fact that arsenic is not available for dissolution and is not a contaminant of concern in terms of groundwater quality. With respect to the other metals, including lead, there is no indication of any adverse impact to groundwater related to any of these constituents.

### 4.2 Secondary Release Mechanisms

When a released contaminant is retained in an environmental medium such as groundwater, surface water, soil or sediment, that medium functions as a secondary source for further release of the contaminant. The following paragraphs discuss possible release mechanisms for the low level concentrations of the various constituents of potential concern.

#### 4.2.1 Down Gradient Discharge to Groundwater

Hydrogeologic data collected in the vicinity of the OCDA indicates that arsenic has been reported in overburden groundwater and within and downgradient of the OCDA (e.g. OB-14A, OB-16, OB-25, and OB-28). There is evidence of some upward vertical groundwater flow based on the OB-14A and OB-14B well pair, although the magnitude of the head difference is less than six inches. Based on the groundwater elevation

data, groundwater within the overburden in the vicinity of the OCDA discharges to Park Brook and the wetlands to the east. This was confirmed by the findings of the surface water gauging conducted as part of the supplemental RI in 2012.

As previously stated in Section 4.1, there are few constituents of concern reflective of groundwater quality reported in the OCDA. Total arsenic at well locations OB-16 and OB-28 with no dissolved arsenic reported at these locations are consistent with the findings of the RI which indicates that arsenic is not available for dissolution and is generally reported in the total and not dissolved form which is consistent with the fact that it has not been reported in surface waters downgradient of the OCDA.

**Concentration Trends**

Review of the groundwater analytical results summarized in Table 7 and Figure 7 indicate no significant change in groundwater quality from 2006 through 2012. Sporadically reported concentrations of metals, primarily in total (unfiltered) form, including sporadically reported total arsenic and total lead, are not reflective of actual groundwater quality. The concentrations of arsenic reported within and downgradient of the OCDA have remained generally consistent since the renewal of investigation efforts during 2004.

# 5. Baseline Risk Assessment

## 5.1 Human Health Evaluation

The Baseline Human Health Risk Assessment (BHHRA) was prepared and provided under separate cover in April 2012 as a requirement established in the AOC Statement of Work. The summary of the BHHRA is presented below:

The BHHRA for the OCDA of the Ringwood Superfund Site assumes that a Walker/Hiker/Dog Walker, Dirt Biker/ATV Rider, Wader, Hunter, Current Outdoor Worker, and Resident could be exposed to media from the OCDA. The Walker/Hiker/Dog Walker is assumed to be exposed to surface soil via incidental ingestion, dermal contact, and inhalation of dust. The Dirt Biker/ATV Rider is assumed to be exposed to surface soil via incidental ingestion, dermal contact, and inhalation of dust. The Wader is assumed to be exposed to sediment and surface water from surface water bodies in the OCDA via incidental ingestion and dermal contact. The Hunter is assumed to be exposed to game and plant tissue collected from the OCDA via ingestion. The Outdoor Worker is assumed to be exposed to surface soil via incidental ingestion, dermal contact, and inhalation of dust. The Resident is assumed to be exposed to surface soil via incidental ingestion, dermal contact, and inhalation of dust. Conservative exposure estimates were used to estimate the exposure of each receptor.

The potential cancer and non-cancer risks for the Walker/Hiker/Dog Walker, Dirt Biker/ATV Rider, Wader, and Outdoor Worker RME scenarios are all within or below USEPA's benchmarks. The Hunter RME scenario exceeds USEPA's cancer risk range and target hazard index. Additionally, the young child Resident RME scenario exceeds USEPA's target hazard index. When average CT exposure assumptions are applied, all receptors are below USEPA's benchmarks for potential cancer and non-cancer risk.

The estimated lifetime cancer risk from all pathways and all receptors is driven by arsenic. The exposure point concentration (EPC) in soil (95$^{th}$ Upper Confidence Limit on the mean) was 51 mg/kg. However, as noted in ARCADIS (2008), it is Ford's position that arsenic concentrations at the Site are dominated by naturally occurring minerals and mine tailings from historical mining activities, not residues from paints. Further, ARCADIS analyzed samples of mine tailings and found that non magnetic mine tailings contained 21 to 50 mg/kg arsenic, which is similar to the EPC for arsenic at the OCDA. Given that naturally occurring iron ore is abundant at the Site and iron mine tailing are encountered at various locations at the Site and were present there before any waste materials from Ford were disposed at the Site, the estimated lifetime cancer risk

reported in the BHHRA is the background risk associated with the mineralogy of the area and is not attributable to Ford's historical activities on the Site.

For the Hunter, concentrations of cadmium, copper, iron, and zinc in game and concentrations of arsenic and cadmium in plants are driving the risk. According to USEPA (2012c), arsenic, cadmium, copper, iron, and zinc concentrations in both plants and game are not elevated compared to the concentrations detected in their reference samples. For the young child Residents, the concentration of arsenic in soil is driving the risk. As noted in ARCADIS (2008), it is Ford's position that arsenic concentrations at the Site are dominated by naturally occurring minerals and mine tailings from historical mining activities, not residues from paints.

Lead concentrations in soil result in estimated fetal blood lead levels that are predicted to be below USEPA's benchmark for all the Walker/Hiker/Dog Walker, Dirt Biker/ATV Rider, Wader, Outdoor Worker, and Resident scenarios. Lead concentrations in game and plant tissue result in estimated fetal blood lead levels that are predicted to slightly exceed USEPA's benchmark for the young child Hunter RME scenario. When average CT assumptions are applied, lead concentrations in game and plant tissue result in estimated fetal blood lead levels that are predicted to be below USEPA's benchmark for the young child Hunter scenario.

#### 5.1.1 Exposure Setting

The Site and OCDA Area background is briefly discussed above in Section 1.1. The Site is located along the northern side of Margaret King Avenue about a half a mile west of Sloatsburg Road in the Borough of Ringwood, Passaic County, New Jersey. The Site is bordered on the south by Mine Brook, which flows south of Margaret King Avenue, on the east by the utility right-of-way sold to Public Service Electric & Gas (PSE&G) in 1970, on the west by property owned by Tuxedo Homes, Inc. and on the north by part of the Wanaque Wildlife Refuge. Figure 1 shows the location of the Site, and Figure 2 identifies the location of the OCDA within the Site.

The geographic area covered in the HHRA comprises the non-residential areas, which includes all portions of the Ringwood Mines Landfill Site that could have potentially received waste materials. This area consists of approximately 198 acres. The OCDA encompasses approximately 12 acres within this larger area of the Site.

5.1.2 Physical Setting

The OCDA is located within the north central part of the Ringwood Mines Site. The Site is bounded by mountainous ridges to the west (Whaleback Mountain, Mine Hill) and north (Hope Mountain, Un-named Mountain) and lower hills and ridges to the east and south. There are surface water drainages within the Site and these include Mine Brook (western and southern areas), Peters Mine Brook (a drainage swale in the central part of the Site), Park Brook (north-central area) and North Brook (north area). These surface water drainages are tributaries to Ringwood Creek, which in turn flows into the Wanaque Reservoir.

There are numerous wetlands areas along the stream corridors, some of which are enhanced by beaver dams.

There are paved roads in the residential areas and leading to the OCDA. These streets are Peters Mine Road, Cannon Mine Road, Van Dunk Lane, Sheehan Drive, Milligan Drive, Horseshoe Bend Road, and Petzold Avenue. In addition to the paved roads there are many former mine roads and trails, some covered with gravel or mine tailings and some which are dirt surfaces. A few of the trails and former mine roads are in various states of natural reclamation.

The Borough of Ringwood Public Works Garage is located near the intersection of Peters Mine Road and Margaret King Avenue and the Recycling Center is located about a half mile north on Peters Mine Road along the west side. There is a PSE&G power sub-station on the east side of Peters Mine Road approximately 400 yards north of the intersection with Margaret King Avenue.

Both wetland and upland habitats are present at the Site. Historically, the site area has been logged, including as part of the former mining operations. Soil surfaces consist primarily of dense leaf litter, downed tree branches and cobble to boulder-sized rock. Most of the vegetation at the Site has developed over the past 50 years.

Tree species present at the Site include: red and white oak, chestnut oak, tulip poplar, black and yellow birch, American beech, sugar maple, green and white ash, eastern cottonwood, slippery elm, and sassafras. The present composition of mature trees 50 to 60 feet high with a closed canopy is dominated by tulip poplar, black and yellow birch, American beech, sugar maple, chestnut oak, white oak and red oak. The understory is composed of trees of the same species along with ironwood, serviceberry, and sassafras.

The shrub layer is composed of staghorn sumac, multiflora rose, wineberry, autumn olive, black raspberry, winged euonymus, buckhorn, witch hazel, spicebush, and maple leaf viburnum. The herbaceous layer is composed of succession species including: deer-tongue panicum, pokeberry, garlic mustard, joe-pye-weed, bracken fern, goldenrods, mullein, and a number of other grass species. Poison ivy, fox grape, Virginia creeper, mile-a-minute, and Asiatic bittersweet are major woody vine species.

Wetlands vegetation consists of skunk cabbage, jewelweed, cinnamon fern, Christmas fern, sensitive fern, tear-thumb, and fringed loosestrife. Additional shrub species include sweet pepperbush, winterberry and multiflora rose.

Much of the shrub vegetation appears to have indications of heavy browsing by deer, especially the fringed loosestrife and jewelweed.

#### 5.1.3 Geology

The site geology is also discussed in Section 1.3.2. The Site is located within the southeastern extension of the Highlands of the New England Physiographic Province. Prominent ridges of crystalline bedrock that trend northeast-southwest form the Highlands. Valleys found between the ridges contain glacial and stream sediment deposits. The topographic relief at the Site is moderate, with elevations ranging from approximately 425 feet to more than 950 feet above mean sea level.

The rocks underlying the Ringwood area are chiefly pre-Cambrian age gneisses with granitic rocks also present. There are four general types of rocks found at the Site; garnetiferous quartz-biotite gneiss, quartz-oligoclase gneiss, hornblende granite, and granite pegmatite. Accessory rock types include pyroxene amphibolite, quartzite, magnetite (iron ore), and skarn. The bedrock is folded in places and has pronounced foliations and jointing.

The iron ore found in Ringwood is thought to be hydrothermal deposits consisting primarily of magnetite that replaced pyroxene amphibolite and skarn rocks. The iron ore formed around the same time as emplacement of granite and pegmatite, which was about 950 million years ago.

Unconsolidated soil and sediment deposits are primarily confined to the stream valleys and corridors. The unconsolidated deposits appear to have greatest thickness in the eastern and southern parts of the Site. Glacial deposits blanket the lower slopes of ridges and hills and consist of heterogeneous mixtures of silt, sand and gravel with

boulders; typical of a ground moraine. The stream deposits are observed within the floodplains of the creeks and swamps and consist of clay and silt with some sand and gravel. These stream deposits are thought to be primarily derived from reworking of the glacial sediments.

### 5.1.4 Surface Water Hydrology

The site hydrogeology is also discussed in Section 1.3.2. Generally, surface water at the Site flows from the north and northwest via wetlands and shallow streams to the south and southwest. As shown on Figure 2, the flowing surface water bodies at the Site are North Brook, Park Brook, Peters Mine Brook and Mine Brook

Wetland areas are mostly located in the northeastern, east central, and southwestern parts of the Site. In the vicinity of the OCDA, wetlands are located downslope to the east and southeast as shown on Figure 2.

The surface water bodies are recharged directly by precipitation and from groundwater discharge as confirmed by the groundwater and surface water gauging conducted as part of the supplemental RI for the Site-Related Groundwater AC, the findings of which will be discussed in the Site-Related Groundwater RIR. During times of extended or heavy precipitation the streams are high-energy types. Stream flow is perennial in the lower elevation parts of the Site. Stream flow is ephemeral in the narrow stream corridors north of the OCDA, with little to no surface water flow observed during dry summer and early fall months.

The surface water bodies eventually drain to Ringwood Creek and are part of the Wanaque watershed. All of the surface water bodies are classified as freshwater, trout maintenance (FW-2- TM) by the NJDEP. The NJDEP current classification of groundwater at the Site is Class IIA which is the default classification for the majority of the State of New Jersey. Although the groundwater is classified as Class IIA and may be a potential potable source, the yield in overburden and bedrock, as well as the concentrations of iron and manganese, makes the potable use of groundwater unfeasible. Most of Ringwood's drinking water comes from municipal wells, with a lesser amount being provided by the North Jersey District Water Supply Commission.

Some of the surface water hydrology of the area has been altered by historical development, such as road construction activities along Peters Mine Road, which have turned Peters Mine Brook into a drainage ditch. Park Brook, which flows adjacent to

the OCDA, had its channel re-routed by the miners over 150 years ago so that the mine pit could be excavated.

### 5.1.5 Groundwater Hydrology

Groundwater hydrology is also discussed in Section 1.3.2. Groundwater levels vary at the Site depending upon topography with groundwater shallower on the slopes of hills and ridges and becoming deeper towards the valley center. Depths to groundwater as determined by the water table surface measurements in the investigation area range from several feet up to approximately 20 feet bgs.

Overall, groundwater at the Site, both in the unconsolidated overburden material and in bedrock, flows down slope in the valley in a southeasterly direction following Park Brook and towards Mine Brook and Ringwood Creek. Because the Site is directly adjacent to recharge areas (Whaleback Mountain and Hope Mountain), the volumes of groundwater flow vary based on the amount and durations of precipitation. Based on historical data that indicates only limited pumping was needed to dewater the Mines (Hotz 1953). This is consistent with the low recharge rates observed during monitor well purging, and indicates bedrock at the Site is a limited groundwater resource. This will be further discussed in the Site-Related Groundwater RIR which will be submitted under separate cover.

Although groundwater at the Site is classified as Class IIA, a potential potable water source by the NJDEP, groundwater at the Site is not used as a potable water source and most of the drinking water to the residents comes from municipal wells, with a lesser amount provided by the North Jersey District Water Supply Commission. Note that the Borough of Ringwood's municipal water supply wells reside in a different watershed from that associated with the Site.

### 5.1.6 Zoning

The Site occupies portions of blocks 600, 601, 602, 603, and 604 in the Borough of Ringwood. Various exempted lots belong to the Borough of Ringwood, the State of New Jersey (Ringwood Manor State Park), and PSE&G. Orange and Rockland Electric Company has a utility corridor easement that runs through portions of the Site. The OCDA is located within tax lot 6.01, block 601.

The Borough of Ringwood owns land in the southern and central parts of the Site, including the area encompassed by the OCDA, and the State of New Jersey owns the

land in the northwestern part of the Site. PSE&G's property is primarily located on the eastern side of the Site, but is also on the southwestern part of the Site.

About one half of the Site is zoned Conservation space (C-200) and includes Ringwood State Park and part of the PSE&G property. The lots along Peters Mine Road, Cannon Mine Road, and Van Dunk Lane that are not developed are zoned residential (R-20 and RT-40). Land to the west of the residential properties along Van Dunk Lane is zoned Industrial (I-60). Land zoned single family residential at the Site includes the CMP area, the former OCDA, the Borough of Ringwood Recycling Center, and the former Borough of Ringwood Landfill.

### 5.1.7 Demographics

Demographic information documents the age and size of populations and identifies potentially sensitive populations, such as young children, women of child-bearing age, the chronically ill and the elderly. The United States Census Bureau reports that in 2000 the Borough of Ringwood had a total population of 866 people living within 1 mile of the Site (209 total housing units). Approximately 200 people are believed to live in the 48 residences within the site boundaries. According to the U.S. Census Bureau, 87 children under the age of 6 (10% of the population), 168 females between the ages of 15 and 44 (19.4% of the population) and 103 adults over the age of 65 (11.9% of the population) comprise the sensitive population within 1 mile of the Site.

Residential properties located within and near the Site consist primarily of single-family dwellings. Lot sizes are typically less than half an acre and there is substantial open space at the Site. Demographically, the site area is considered sparsely populated.

There are no hospitals within 1 mile of the Site. There is one school within the 1 mile site radius; the Eleanor Hewitt School (local elementary – 4$^{th}$ and 5$^{th}$ grades) located southeast of the Site on Sloatsburg Road. There is a private school (Ringwood Christian School – K through 8$_{th}$ grade) approximately 1.2 miles southeast from the Site on Carletondale Road.

### 5.1.8 Current Land Use

Current land use at the Site (excluding the embedded residential parcels) includes Borough of Ringwood facilities (Department of Public Works yard, Recycling Center), State of New Jersey parkland (Ringwood Manor section of Ringwood State

Park), utility corridors (PSE&G and Orange and Rockland Electric Company), a power sub-station, and open space (Borough of Ringwood property).

Future development of open space at the Site is not considered likely because of conservation zoning, the presence of unbuildable slopes and wetlands, former landfills, extensive mine tailings deposits and mine hazards (former pits and shafts). It is anticipated that some mine hazard mitigation work will be completed in the future.

Public drinking water is supplied to residents from well fields located within a different watershed approximately 2 miles southeast of the Site. While the NJDEP current classification of groundwater at the Site indicates that it may be a potential potable source, this is highly unlikely given the elevated natural metal concentrations in groundwater. Groundwater and surface water at the Site is not used and future uses are not likely based on insufficient yield and the high iron and manganese content and the low aquifer yields.

Paved roads at the Site are traveled by residents, mail carriers, delivery trucks, garbage and refuse haulers, utility workers, and visitors. The Recycling Center is open to the public on Wednesdays. Utility workers are periodically on site to clear brush in the utility corridors and to perform maintenance on the power transmission towers and at the sub-station.

Known recreational uses of the land include hiking in Ringwood State Park, hunting, and riding all-terrain vehicles (ATVs). Swimming appears to be an unlikely activity given the presence of dead tree snags, tree stumps and/or debris in these areas, and/or inaccessibility due to the presence of heavy vegetation in the warmer months.

Areas of the Site where removal actions have occurred and the former landfill areas (PMP Area, CMP Area, and OCDA) are typically inaccessible during warmer months because of heavy vegetation at ground level (shrubs, vines, briars). Areas of sedimentation at the Site are typically inaccessible because of ponded water or swampy ground.

#### 5.1.9 Exposure Pathways and Potential Receptors

Potential exposure pathways and potential receptors were selected based on current and potential future land uses for the non-residential areas of the Site, zoning and demographic information, and observations made during the Reconnaissance Survey and other field activities (e.g., wetland delineation, site investigations). The exposure pathways and potential receptors are discussed below.

Under current conditions, access to the Site by the public is limited. The CSM assumes that paint sludge remains in selected areas of the Site. The final remedial action for the OCDA will be designed to minimize the potential for future exposure to the lowest level constituent remaining in the environmental media.

An exposure pathway consists of the following four elements: (1) a source and mechanism of constituent release to the environment, (2) a retention or transport medium for the released constituent, (3) a point of potential contact by the receptor with the impacted medium (the exposure point), and (4) a route of exposure to the receptor at the exposure point (e.g., ingestion, inhalation, or dermal contact). If any of these elements do not exist, the exposure pathway is considered incomplete and will not be further evaluated.

The following outlines potential exposure pathways and potential receptors selected for evaluation at the Site.

*Current and Future*

- The potential exists for off-site receptors (adult and adolescent) to gain access to the Site and be exposed via direct contact (e.g., incidental ingestion, inhalation, and dermal contact) to constituents in surface soil during hunting and/or recreational activities. In addition, those who hunt wild game and/or gather plants (such as wild carrots) from the Site could be potentially exposed to site-related constituents via ingestion of these food sources; however, these activities do not occur within the boundary of the OCDA and a final remedial action will be designed and implemented for the OCDA to address the potential for direct contact.

- The Site contains some water features (e.g., intermittent brooks/creeks and groundwater fed springs) that receptors (adult and adolescent) may contact while on the Site. Exposure to site-related constituents in these water features may occur via incidental ingestion and dermal contact with water and/or sediment during recreational activities (e.g., wading across/along brooks, while hunting or hiking); however, these activities do not occur within the boundary of the OCDA and a final remedial action will be designed and implemented for the OCDA to address the potential for exposure.

- The potential for off-site receptors (adult and adolescent) to gain access to the Site and be exposed via direct contact (e.g., incidental ingestion and dermal

contact) to site-related constituents in sludge, and in soil immediately adjacent to sludge during hunting and/or recreational activities has been significantly reduced through the removal of approximately 2,200 tons of paint sludge from the OCDA.

- The potential exists for future hypothetical construction workers to be exposed via incidental ingestion, inhalation, and dermal contact to site-related constituents remaining in surface soil and sub-surface soil during future construction activities; however, it is not anticipated that other than remedial action, construction workers will be working within the OCDA itself.

- The potential exists for future hypothetical residents to be exposed via ingestion, inhalation, and dermal contact to site-related constituents in surface soil if the Site were to be used for residential land re-use; however, a final remedial action will be designed and implemented for the OCDA to address the planned future use of the OCDA.

- The potential exists for future hypothetical commercial/industrial workers to be exposed via incidental ingestion, inhalation, and dermal contact to site-related constituents in surface soil if the Site were to be used for commercial/industrial land re-use; however, a final remedial action will be designed and implemented for the OCDA to address the planned future use of the OCDA

### 5.2 Environmental Evaluation

A Screening-Level Ecological Risk Assessment (SLERA) for the OCDA was submitted to the USEPA under separate cover in April 2012. The SLERA concluded that, there are potential risks to the meadow vole, short-tailed shrew, American robin, and tree swallow associated with site-specific surface soil and sediment. These risks are primarily associated with antimony, lead, and nickel. Though the limited bioavailability of constituents of potential ecological concern (COPEC) has been documented by the work conducted by Arcadis and USEPA to date, low levels of bis(2-ethylhexyl)phthalate and cadmium in surface water, various metals in surface soil and sediment within the OCDA may pose a potential risk to plants and invertebrates in the OCDA.

These risks were further evaluated through dose modeling to upper trophic level receptors, which demonstrated that potential ecological risks within the OCDA were associated with dietary exposures of metal COPEC in soil to the meadow vole, short-tailed shrew, American robin, and red-tailed hawk as well as metal COPEC in sediment

to the tree swallow. All other potential exposure pathways were determined to have negligible risk.

A Baseline Ecological Risk Assessment (BERA) for the OCDA was submitted to the USEPA under separate cover on November 29, 2012. The objective of the BERA was to provide a refined analysis of the potential risks associated with the ingestion pathway using more realistic exposure assumptions.

The results of the refined dose modeling for soil and sediment demonstrate that risks associated with potential exposures to ecological receptors including the meadow vole, short-tailed shrew, American robin, red-tailed hawk, and tree swallow in the OCDA are low; no lowest observed adverse effect level (LOAEL) hazard quotients (HQs) for any receptor or COPEC modeled for soil or sediment exceeded 1. NO observed adverse effect level (NOAEL) HQs exceed 1 for cadmium in the short-tailed shrew and lead in the American robin indicating limited potential for risk. As noted above, NOAEL TRVs are very conservative and therefore the LOAEL HQ provides a more appropriate estimate of potential risk.

Based on the results of the BERA, the data indicate that risks to ecological receptors within the OCDA are low and, therefore, no further ecological evaluation is warranted.

## 6. Findings and Conclusions

Based on the results of the RI for the OCDA, the data indicate the following with respect to findings and conclusions:

**Surface Soil Quality**

- Surface soils in the vicinity of the OCDA are predominately soil intermixed with a variety of waste materials, mine wastes, and some paint sludge, however, surface soil analytical results generally indicate that only trace concentrations of certain VOCs, SVOCs, and PCBs are reported above the RDCSRS.

- Arsenic was reported at concentrations above its RDCSRS; but that is not unexpected due to the quantity of mine tailings placed within the OCDA during prior mining operations.

- Of the 23 metals on the TAL, one or more were detected at concentrations above their respective NJDEP IGWDSSL, including aluminum, beryllium, cadmium, lead, manganese, and mercury.

- For surface soil samples collected within the wetlands area, there were no VOC, SVOC, PCB or pesticide exceedances and the LEL was exceeded for cadmium, copper, lead, nickel and zinc in one sample and the LEL for copper and the SEL for arsenic were exceeded in the second sample.

**Fill Material Content and Quality**

- Conceptual cross-sections of the OCDA based on all available boring logs depicting the estimated depth and width of the OCDA and general fill type characterization are provided in Appendix D.

- As shown, a variety of miscellaneous waste materials and some paint sludge deposits were encountered during the RI along with historical mine waste materials (i.e., tailings and waste rock) with analytical results from samples of fill material reflecting the wide range of fill material/debris encountered.

- The OCDA contents consist primarily of miscellaneous solid waste intermixed with fill cover soils, some minor amounts of mine tailings of various size fractions

ranging from coarse sand to very fine sand and mine waste rock overlying rock rubble.

- Targeted paint sludge removal activities conducted during 2010 and earlier events removed for off-site disposal over 2,200 tons of paint sludge from the OCDA along with six drums of waste materials. Based on the results of test pits and trenches, these removal actions have addressed the majority of paint sludge within this area and all drums identified during the OCDA investigation activities.

- Analytical results from samples collected within the OCDA indicate that sporadic exceedances of the RDCSCC and/or Impact-to-Groundwater Soil Remediation Standard (IGWSRS) in fill material samples from the base of trenches within the OCDA respect to PAHs and metals and to a lesser extent PCBs although the data indicate a sporadic distribution with no recognizable pattern.

**Groundwater Occurrence, Movement, and Quality**

- Groundwater was encountered in the overburden at various depths in the test trenches and test pits within the OCDA and ranges from three feet bgs to 16 feet bgs.

- In most cases, groundwater was encountered in either native soil or mine tailings, with the exception of locations OC-ITP-06 (14.5 feet bls) and OC-ITP-07 (12.5 feet bgs) where perched water or groundwater was encountered in areas that contained fill and rubbish material. In addition, waste materials were found in contact with groundwater during the 2010 installation of test trench #3.

- Although there are no bedrock or lower aquifer monitoring wells within the OCDA, data from the PMP Area located to the northwest of the OCDA indicates that the groundwater flow gradient in the bedrock is generally to the southeast.

- Groundwater elevation data from the shallow overburden wells monitored over the course of the RI indicate a groundwater flow gradient to the southeast and sub-parallel to the Park Brook which has remained generally consistent over the course of monitoring as confirmed by the findings of the surface water gauging conducted as part of the supplemental RI activities.

- There is a minor upward vertical gradient observed between well pair OB-14A and OB-14B

- DO levels in groundwater are higher at wells located upgradient of the OCDA and lower at wells located within and immediately downgradient of the OCDA where the redox potential is also generally low or negative, which, coupled with other indicator parameters, is reflective of mildly reducing to reducing groundwater geochemical conditions.

- The documented reduction in DO concentrations in groundwater between the upgradient and downgradient wells within the OCDA wells confirms that the natural oxidation of organic matter in the fill in contact with groundwater is occurring. The data also indicate that aerobic microbial activity is also taking place as more oxygenated groundwater flows into the OCDA, interacts with organic materials present within the fill, and flows beyond the OCDA into Park Brook.

- The analytical results from groundwater sampling events conducted over the course of the RI indicate no VOCs, SVOCs, pesticides or PCBs in groundwater within and downgradient of the OCDA at concentrations above their respective NJDEP GWQS or USEPA MCLs.

- Groundwater quality in the overburden water bearing zone remains essentially unchanged from previous sampling events; constituents of concern related to paint sludge, such as BTEX and lead, are not present in the groundwater in any consistent pattern or in high concentrations indicative of a "hot" spot source.

- Various concentrations of total metals have been reported in unfiltered samples at concentrations above their respective GWQS, including aluminum, arsenic, iron, lead and manganese, with dissolved phase iron and manganese reflective of the reducing groundwater geochemical conditions and sporadic but infrequent detections of dissolved arsenic.

- Even though groundwater exhibits reducing conditions at several well locations within the OCDA and arsenic is soluble under such conditions, arsenic is not elevated across the OCDA which indicates that arsenic is not available for dissolution in groundwater.

- Note that, inconsistent with prior groundwater sampling rounds, a trace of arsenic was reported in the filtered sample at monitoring well location OB-16 during the May 2011 event; however, as anticipated, there was no dissolved-phase arsenic detected during the April/May 2012 groundwater sampling event.

- The data generated over the past 6 years of groundwater quality monitoring upgradient, within and downgradient of the OCDA indicate that there is no adverse impact to groundwater quality associated with the OCDA.

- Overall, groundwater quality and flow conditions have been adequately characterized and groundwater monitoring utilizing the existing network of wells in the area will continue as part of the Site-Related Groundwater AC and as necessary with respect to the final remedy for the OCDA itself.

**Surface Water Occurrence, Movement and Quality**

- The Park Brook is located to the east and southeast of the OCDA as shown in Figure 2.

- Surface water gauging coupled with multiple rounds of groundwater elevation monitoring at wells located throughout the OCDA confirm that groundwater in the overburden flows to the east/southeast and discharges to the Park Brook.

- The analytical results of surface water sampling conducted from 2006 through 2012 indicate no VOCs, PCBs, or metals at concentrations above their respective NJDEP SWQS within the Park Brook. The laboratory method detection limits for site-specific constituents of arsenic and benzene are above the SWQS; however, these constituents were not reported at concentrations above the laboratory method detection limits at any of the OCDA surface water sample locations.

## 7. References

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Table 1. Soil Sample Collection Matrix Summary - O'Connor Disposal Area



| **Test Trench/Test Pit Samples** | |
|---|---|
| Sample Name | Sample Material |
| OC-ITP-01A | Native soil |
| OC-ITP-01B | Fill (below paint sludge) |
| OC-ITP-02 | Mine waste rock fill |
| OC-ITP-03A | Fill w/rubbish |
| OC-ITP-03B | Mine waste rock fill |
| OC-ITP-04 | Mine Tailings w/rubbish |
| OC-ITP-05 | Mine Tailings |
| OC-ITP-06A | Fill w/rubbish |
| OC-ITP-06B | Mine Tailings w/rubbish |
| OC-ITP-07 | Mine Tailings w/rubbish |
| OC-ITP-08 | Mine Tailings |
| OC-ITP-09 | Native soil |
| OC-ITP-10 | Native soil |
| | |
| OC-ITT-01 | Native soil |
| OC-ITT-02 | Native soil |
| OC-ITT-03 | Mine Tailings w/rubbish |
| OC-ITT-04 | Native soil |
| OC-ITT-05 | Mine Tailings w/rubbish |
| OC-ITT-06 | Mine Tailings |
| OC-ITT-07A | Fill |
| OC-ITT-07B | Native soil |
| OC-ITT-08 | Mine Tailings w/rubbish |
| OC-ITT-09 | Native soil |
| OC-ITT-10 | Native soil |
| OC-ITT-11 | Fill w/rubbish |
| OC-ITT-12 | Mine Tailings |
| OC-ITT13-BT | Mine Tailings |
| OC-ITT-14A | Fill (below paint sludge) |
| OC-ITT-14B | Fill w/rubbish |
| | |
| **Surface Soil Samples** | |
| Sample Name | Sample Material |
| OC-SS-01 | Native soil |
| OC-SS-02 | Organic soil |
| OC-SS-03 | Fill w/ soil development |
| OC-SS-04 | Fill |
| OC-SS-05 | Mine Tailings |
| OC-SS-06 | Mine Tailings |
| OC-SS-07 | Fill w/ soil development |

Table 1. Soil Sample Collection Matrix Summary - O'Connor Disposal Area



| | |
|---|---|
| OC-SS-08 | Fill w/ soil development |
| OC-SS-09 | Mine Tailings |
| | |
| **Surface Soil Samples** | |
| Sample Name | Sample Material |
| OC-SS-10 | Fill |
| OC-SS-11 | Fill (cover) |
| OC-SS-12 | Mine Tailings |
| OC-SS-13 | Fill w/ soil development |
| OC-SS-14 | Mine Tailings (soil) |
| OC-SS-15 | Fill (cover) |

**Table 2. Summary of Analytical Results, O'Connor Disposal Area Surface Soil Samples, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Area Location | Freshwater Sediment Screen Guidelines | | Residential Direct Contact Soil Remediation Standard | Default Impact to Groundwater Soil Screening Level | O'Connor Surface Soil Samples | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | | | | | OC-SS-1 | OC-SS-02 | OC-SS-03 | OC-SS-4 | OC-SS-05 (DUP-OCSS5-061121) | OC-SS-5 | OC-SS-06 | OC-SS-7 | OC-SS-8 | OC-SS-9 | OC-SS-10 | OC-SS-11 |
| Sample Date | | | | | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 |
| Validation Status | LEL (1) | SEL (2) | | | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 0.213 | NE | 290 | 0.2 | < 0.00096 | < 0.00094 | < 0.00061 | < 0.00052 | < 0.00082 | < 0.00062 | < 0.00058 | < 0.00087 | < 0.00069 | < 0.00051 | < 0.00072 | < 0.00055 |
| 1,1,2,2-Tetrachloroethane | 0.85 | NE | 1 | 0.005 | < 0.00093 | < 0.00091 | < 0.00059 | < 0.00051 | < 0.0008 | < 0.0006 | < 0.00056 | < 0.00085 | < 0.00067 | < 0.00049 | < 0.0007 | < 0.00054 |
| 1,1,2-Trichloroethane | 0.518 | NE | 2 | 0.01 | < 0.00087 | < 0.00085 | < 0.00055 | < 0.00047 | < 0.00074 | < 0.00056 | < 0.00052 | < 0.00079 | < 0.00063 | < 0.00046 | < 0.00065 | < 0.0005 |
| 1,1-Dichloroethane | NE | NE | 8 | 0.2 | < 0.00078 | < 0.00076 | < 0.00049 | < 0.00042 | < 0.00067 | < 0.0005 | < 0.00047 | < 0.00071 | < 0.00056 | < 0.00041 | < 0.00058 | < 0.00045 |
| 1,1-Dichloroethene | 0.0194 | NE | 11 | 0.005 | < 0.0011 | < 0.0011 | < 0.0007 | < 0.00061 | < 0.00095 | < 0.00071 | < 0.00067 | < 0.001 | < 0.0008 | < 0.00059 | < 0.00083 | < 0.00064 |
| 1,2,4-Trichlorobenzene | 5.062 | NE | 73 | 0.4 | < 0.00057 | < 0.00055 | < 0.00036 | < 0.00031 | < 0.00049 | < 0.00036 | < 0.00034 | < 0.00052 | < 0.00041 | < 0.0003 | < 0.00042 | < 0.00033 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | NE | NE | 0.08 | 0.005 | < 0.0035 | < 0.0034 | < 0.0022 | < 0.0019 | < 0.003 | < 0.0022 | < 0.0021 | < 0.0032 | < 0.0025 | < 0.0018 | < 0.0026 | < 0.002 |
| 1,2-Dibromoethane | NE | NE | 0.008 | 0.005 | < 0.00092 | < 0.00089 | < 0.00058 | < 0.0005 | < 0.00078 | < 0.00059 | < 0.00055 | < 0.00083 | < 0.00066 | < 0.00049 | < 0.00068 | < 0.00053 |
| 1,2-Dichlorobenzene | 0.294 | NE | 5300 | 11 | < 0.00074 | < 0.00072 | < 0.00047 | < 0.0004 | < 0.00063 | < 0.00047 | < 0.00044 | < 0.00067 | < 0.00053 | < 0.00039 | < 0.00055 | < 0.00043 |
| 1,2-Dichloroethane | 0.26 | NE | 0.9 | 0.005 | < 0.00088 | < 0.00086 | < 0.00056 | < 0.00048 | < 0.00075 | < 0.00056 | < 0.00053 | < 0.0008 | < 0.00063 | < 0.00047 | < 0.00066 | < 0.00051 |
| 1,2-Dichloropropane | 0.333 | NE | 2 | 0.005 | < 0.0009 | < 0.00088 | < 0.00057 | < 0.00049 | < 0.00077 | < 0.00058 | < 0.00054 | < 0.00082 | < 0.00065 | < 0.00048 | < 0.00067 | < 0.00052 |
| 1,3-Dichlorobenzene | 1.315 | NE | 5300 | 12 | < 0.00079 | < 0.00077 | < 0.0005 | < 0.00043 | < 0.00068 | < 0.00051 | < 0.00048 | < 0.00072 | < 0.00057 | < 0.00042 | < 0.00059 | < 0.00046 |
| 1,4-Dichlorobenzene | 0.318 | NE | 5 | 1 | < 0.00074 | < 0.00073 | < 0.00047 | < 0.00041 | < 0.00064 | < 0.00048 | < 0.00045 | < 0.00068 | < 0.00054 | < 0.0004 | < 0.00056 | < 0.00043 |
| 2-Butanone (MEK) | NE | NE | 3100 | 0.6 | < 0.0044 | < 0.0043 | < 0.0028 | < 0.0024 | < 0.0038 | < 0.0028 | < 0.0027 | < 0.004 | < 0.0032 | < 0.0023 | < 0.0033 | < 0.0026 |
| 2-Hexanone | NE | NE | NS | NS | < 0.0022 | < 0.0021 | < 0.0014 | < 0.0012 | < 0.0019 | < 0.0014 | < 0.0013 | < 0.002 | < 0.0016 | < 0.0012 | < 0.0016 | < 0.0013 |
| 4-methyl-2-pentanone (MIBK) | NE | NE | NS | NS | < 0.0032 | < 0.0031 | < 0.002 | < 0.0018 | < 0.0028 | < 0.0021 | < 0.0019 | < 0.0029 | < 0.0023 | < 0.0017 | < 0.0024 | < 0.0019 |
| Acetone | NE | NE | 70000 | 12 | < 0.0046 | < 0.0045 | < 0.0029 | 0.0067 J | < 0.004 | < 0.003 | < 0.0028 | 0.0083 J | < 0.0033 | < 0.0025 | 0.0283 | < 0.0027 |
| Benzene | 0.34 (a) | NE | 2 | 0.005 | < 0.00078 | < 0.00076 | < 0.00049 | < 0.00042 | < 0.00067 | < 0.0005 | < 0.00047 | < 0.00071 | < 0.00056 | < 0.00041 | < 0.00058 | < 0.00045 |
| Bromodichloromethane | NE | NE | 1 | 0.005 | < 0.00074 | < 0.00072 | < 0.00047 | < 0.0004 | < 0.00063 | < 0.00047 | < 0.00045 | < 0.00067 | < 0.00053 | < 0.00039 | < 0.00055 | < 0.00043 |
| Bromoform | 0.492 | NE | 81 | 0.02 | < 0.0007 | < 0.00069 | < 0.00044 | < 0.00038 | < 0.0006 | < 0.00045 | < 0.00042 | < 0.00064 | < 0.00051 | < 0.00037 | < 0.00053 | < 0.00041 |
| Bromomethane | 0.00137 | NE | 25 | 0.03 | < 0.0006 | < 0.00058 | < 0.00038 | < 0.00033 | < 0.00051 | < 0.00038 | < 0.00036 | < 0.00054 | < 0.00043 | < 0.00032 | < 0.00045 | < 0.00034 |
| Carbon disulfide | NE | NE | 7800 | 4 | < 0.00089 | < 0.00087 | < 0.00057 | < 0.00049 | < 0.00077 | < 0.00057 | < 0.00054 | < 0.00081 | < 0.00064 | < 0.00047 | < 0.00067 | < 0.00052 |
| Carbon tetrachloride | 1.45 | NE | 0.6 | 0.005 | < 0.0015 | < 0.0015 | < 0.00097 | < 0.00084 | < 0.0013 | < 0.00099 | < 0.00093 | < 0.0014 | < 0.0011 | < 0.00082 | < 0.0011 | < 0.00089 |
| Chlorobenzene | 0.291 | NE | 510 | 0.4 | < 0.0007 | < 0.00068 | < 0.00044 | < 0.00038 | < 0.0006 | < 0.00045 | < 0.00042 | < 0.00064 | < 0.00051 | < 0.00037 | < 0.00052 | < 0.0004 |
| Chloroethane | NE | NE | 220 | NS | < 0.0028 | < 0.0027 | < 0.0018 | < 0.0015 | < 0.0024 | < 0.0018 | < 0.0017 | < 0.0026 | < 0.002 | < 0.0015 | < 0.0021 | < 0.0016 |
| Chloroform | 0.121 | NE | 0.6 | 0.2 | < 0.00094 | < 0.00092 | < 0.0006 | < 0.00051 | < 0.00081 | < 0.0006 | < 0.00057 | < 0.00086 | < 0.00068 | < 0.0005 | < 0.0007 | < 0.00054 |
| Chloromethane | NE | NE | 4 | NS | < 0.00075 | < 0.00073 | < 0.00047 | < 0.00041 | < 0.00064 | < 0.00048 | < 0.00045 | < 0.00068 | < 0.00054 | < 0.0004 | < 0.00056 | < 0.00043 |
| cis-1,2-Dichloroethene | NE | NE | 230 | 0.2 | < 0.0011 | < 0.0011 | < 0.00069 | < 0.00059 | < 0.00093 | < 0.0007 | < 0.00066 | < 0.00099 | < 0.00078 | < 0.00058 | < 0.00081 | < 0.00063 |
| cis-1,3-Dichloropropene | NE | NE | 2 | 0.005 | < 0.00067 | < 0.00065 | < 0.00042 | < 0.00037 | < 0.00058 | < 0.00043 | < 0.0004 | < 0.00061 | < 0.00048 | < 0.00036 | < 0.0005 | < 0.00039 |
| Cyclohexane | NE | NE | NS | NS | < 0.0021 | < 0.002 | < 0.0013 | < 0.0011 | < 0.0018 | < 0.0013 | < 0.0013 | < 0.0019 | < 0.0015 | < 0.0011 | < 0.0016 | < 0.0012 |
| Dibromochloromethane | NE | NE | 3 | 0.005 | < 0.00089 | < 0.00087 | < 0.00056 | < 0.00049 | < 0.00076 | < 0.00057 | < 0.00054 | < 0.00081 | < 0.00064 | < 0.00047 | < 0.00066 | < 0.00051 |
| Dichlorodifluoromethane | NE | NE | 490 | 25 | < 0.0013 | < 0.0013 | < 0.00081 | < 0.0007 | < 0.0011 | < 0.00083 | < 0.00078 | < 0.0012 | < 0.00093 | < 0.00068 | < 0.00096 | < 0.00074 |
| Ethylbenzene | 1.4 (a) | NE | 7800 | 8 | < 0.00073 | < 0.00071 | < 0.00046 | < 0.0004 | < 0.00063 | < 0.00047 | < 0.00044 | < 0.00066 | < 0.00053 | < 0.00039 | < 0.00055 | < 0.00042 |
| Freon 113 | NE | NE | NS | NS | < 0.0014 | < 0.0014 | < 0.00088 | < 0.00076 | < 0.0012 | < 0.00089 | < 0.00084 | < 0.0013 | < 0.001 | < 0.00074 | < 0.001 | < 0.0008 |
| Isopropylbenzene | NE | NE | NS | NS | < 0.00075 | < 0.00073 | < 0.00048 | < 0.00041 | < 0.00065 | < 0.00048 | < 0.00045 | < 0.00069 | < 0.00054 | < 0.0004 | < 0.00056 | < 0.00043 |
| Methyl acetate | NE | NE | 78000 | 14 | < 0.0023 | < 0.0022 | < 0.0014 | < 0.0012 | < 0.002 | < 0.0015 | < 0.0014 | < 0.0021 | < 0.0016 | < 0.0012 | < 0.0017 | < 0.0013 |
| Methyl tert butyl ether | NE | NE | 110 | 0.2 | < 0.00091 | < 0.00088 | < 0.00057 | < 0.00049 | < 0.00078 | < 0.00058 | < 0.00055 | < 0.00082 | < 0.00065 | < 0.00048 | < 0.00068 | < 0.00052 |
| Methylcyclohexane | NE | NE | NS | NS | < 0.001 | < 0.001 | < 0.00066 | < 0.00057 | < 0.00089 | < 0.00067 | < 0.00063 | < 0.00095 | < 0.00075 | < 0.00055 | < 0.00078 | < 0.0006 |
| Methylene chloride | 0.159 | NE | 34 | 0.007 | < 0.0011 | < 0.0011 | < 0.00071 | < 0.00061 | < 0.00096 | < 0.00072 | < 0.00068 | < 0.001 | < 0.00081 | < 0.00059 | < 0.00084 | < 0.00065 |
| o-Xylene | NE | NE | NS | NS | < 0.0008 | < 0.00078 | < 0.0005 | < 0.00044 | < 0.00068 | < 0.00051 | < 0.00048 | < 0.00073 | < 0.00058 | < 0.00042 | < 0.0006 | < 0.00046 |
| Styrene | 0.254 | NE | 90 | 2 | < 0.00053 | < 0.00052 | < 0.00033 | < 0.00029 | < 0.00045 | < 0.00034 | < 0.00032 | < 0.00048 | < 0.00038 | < 0.00028 | < 0.0004 | < 0.00031 |
| Tetrachloroethene | 0.45 (a) | NE | 2 | 0.005 | < 0.0013 | < 0.0013 | < 0.00084 | < 0.00073 | < 0.0011 | < 0.00086 | < 0.0008 | < 0.0012 | < 0.00096 | < 0.00071 | < 0.001 | < 0.00077 |
| Toluene | 2.5 (a) | NE | 6300 | 4 | < 0.00088 | < 0.00086 | < 0.00055 | < 0.00048 | < 0.00075 | < 0.00056 | < 0.00053 | < 0.0008 | < 0.00063 | < 0.00047 | < 0.00066 | < 0.00051 |
| Trans-1,2-dichloroethene | 0.654 | NE | 300 | 0.4 | < 0.0011 | < 0.0011 | < 0.0007 | < 0.0006 | < 0.00095 | < 0.00071 | < 0.00067 | < 0.001 | < 0.0008 | < 0.00059 | < 0.00083 | < 0.00064 |
| trans-1,3-Dichloropropene | NE | NE | 2 | 0.005 | < 0.00063 | < 0.00062 | < 0.0004 | < 0.00035 | < 0.00054 | < 0.00041 | < 0.00038 | < 0.00058 | < 0.00046 | < 0.00034 | < 0.00047 | < 0.00037 |
| Trichloroethene | 1.6 (a) | NE | 7 | 0.007 | < 0.00084 | < 0.00082 | < 0.00053 | < 0.00046 | < 0.00072 | < 0.00054 | < 0.00051 | < 0.00077 | < 0.00061 | < 0.00045 | < 0.00063 | < 0.00049 |
| Trichlorofluoromethane | NE | NE | 23000 | 22 | < 0.0012 | < 0.0012 | < 0.00075 | < 0.00064 | < 0.001 | < 0.00076 | < 0.00071 | < 0.0011 | < 0.00085 | < 0.00063 | < 0.00088 | < 0.00068 |
| Vinyl Chloride | 0.202 | NE | 0.7 | 0.005 | < 0.001 | < 0.001 | < 0.00066 | < 0.00057 | < 0.0009 | < 0.00067 | < 0.00063 | < 0.00095 | < 0.00075 | < 0.00056 | < 0.00078 | < 0.0006 |
| Xylene, -m,p | NE | NE | NS | NS | < 0.0014 | < 0.0014 | < 0.0009 | < 0.00078 | < 0.0012 | < 0.00091 | < 0.00086 | < 0.0013 | < 0.001 | < 0.00075 | < 0.0011 | < 0.00082 |
| Xylenes | 0.12 (a) | NE | 12000 | 12 | < 0.0008 | < 0.00078 | < 0.0005 | < 0.00044 | < 0.00068 | < 0.00051 | < 0.00048 | < 0.00073 | < 0.00058 | < 0.00042 | < 0.0006 | < 0.00046 |
| Total TIC, Volatile | NE | NE | NS | NS | 0 | 0 | 0 | 0 | 0 | 0.02 J | 0 | 0 | 0 | 0 | 0.037 J | 0 |

**Table 2. Summary of Analytical Results, O'Connor Disposal Area Surface Soil Samples, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Area Location | Freshwater Sediment | | Residential | Default Impact to | O'Connor Surface Soil Samples | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Screen Guidelines | | Direct Contact | Groundwater | OC-SS-1 | OC-SS-02 | OC-SS-03 | OC-SS-4 | OC-SS-05 (DUP-OCSS5-061121) | OC-SS-5 | OC-SS-06 | OC-SS-7 | OC-SS-8 | OC-SS-9 | OC-SS-10 | OC-SS-11 |
| Sample Date | | | Soil Remediation | Soil Screening | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 |
| Validation Status | LEL (1) | SEL (2) | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | NE | NE | 3100 | 90 | < 0.021 | < 0.022 | < 0.019 | < 0.019 | < 0.019 | < 0.019 | < 0.017 | < 0.021 | < 0.019 | < 0.018 | < 0.019 | < 0.019 |
| 2,4,5-Trichlorophenol | NE | NE | 6100 | 44 | < 0.066 | < 0.068 | < 0.059 | < 0.058 | < 0.058 | < 0.058 | < 0.054 | < 0.066 | < 0.058 | < 0.055 | < 0.058 | < 0.059 |
| 2,4,6-Trichlorophenol | 0.208 | NE | 19 | 0.2 | < 0.037 | < 0.038 | < 0.033 | < 0.032 | < 0.033 | < 0.033 | < 0.03 | < 0.037 | < 0.033 | < 0.031 | < 0.032 | < 0.033 |
| 2,4-Dichlorophenol | 0.0817 | NE | 180 | 0.2 | < 0.073 | < 0.075 | < 0.066 | < 0.065 | < 0.065 | < 0.065 | < 0.06 | < 0.073 | < 0.065 | < 0.061 | < 0.064 | < 0.066 |
| 2,4-Dimethylphenol | 0.304 | NE | 1200 | 0.7 | < 0.11 | < 0.12 | < 0.1 | < 0.099 | < 0.1 | < 0.099 | < 0.093 | < 0.11 | < 0.1 | < 0.093 | < 0.099 | < 0.1 |
| 2,4-Dinitrophenol | 0.00621 | NE | 120 | 0.3 | < 0.066 | < 0.069 | < 0.06 | < 0.059 | < 0.059 | < 0.059 | < 0.055 | < 0.067 | < 0.059 | < 0.055 | < 0.059 | < 0.06 |
| 2,4-Dinitrotoluene | 0.0144 | NE | 0.7 | NS | < 0.051 | < 0.052 | < 0.046 | < 0.045 | < 0.045 | < 0.045 | < 0.042 | < 0.051 | < 0.045 | < 0.042 | < 0.045 | < 0.046 |
| 2,6-Dinitrotoluene | NE | NE | 0.7 | NS | < 0.05 | < 0.051 | < 0.045 | < 0.044 | < 0.044 | < 0.044 | < 0.041 | < 0.05 | < 0.044 | < 0.042 | < 0.044 | < 0.045 |
| 2-Chloronaphthalene | 0.417 | NE | NS | NS | < 0.061 | < 0.063 | < 0.055 | < 0.054 | < 0.054 | < 0.054 | < 0.051 | < 0.061 | < 0.054 | < 0.051 | < 0.054 | < 0.055 |
| 2-Chlorophenol | 0.0319 | NE | 310 | 0.5 | < 0.037 | < 0.039 | < 0.034 | < 0.033 | < 0.033 | < 0.033 | < 0.031 | < 0.037 | < 0.033 | < 0.031 | < 0.033 | < 0.034 |
| 2-Methylnaphthalene | 0.070 (a) | 0.67 (a) | 230 | 5 | < 0.028 | < 0.029 | < 0.026 | < 0.025 | < 0.025 | < 0.025 | < 0.024 | < 0.028 | < 0.025 | < 0.024 | < 0.025 | < 0.026 |
| 2-Methylphenol | NE | NE | 310 | NS | < 0.043 | < 0.044 | < 0.039 | < 0.038 | < 0.038 | < 0.038 | < 0.035 | < 0.043 | < 0.038 | < 0.036 | < 0.038 | < 0.039 |
| 2-Nitroaniline | NE | NE | 39 | NS | < 0.028 | < 0.029 | < 0.025 | < 0.024 | < 0.025 | < 0.025 | < 0.023 | < 0.028 | < 0.025 | < 0.023 | < 0.024 | < 0.025 |
| 2-Nitrophenol | NE | NE | NS | NS | < 0.054 | < 0.056 | < 0.049 | < 0.048 | < 0.048 | < 0.048 | < 0.045 | < 0.054 | < 0.048 | < 0.045 | < 0.048 | < 0.049 |
| 3&4-Methylphenol | NE | NE | NS | NS | < 0.062 | < 0.065 | < 0.056 | < 0.055 | < 0.056 | < 0.055 | < 0.052 | < 0.063 | < 0.056 | < 0.052 | < 0.055 | < 0.056 |
| 3,3'-Dichlorobenzidine | 0.127 | NE | 1 | 0.2 | < 0.042 | < 0.043 | < 0.037 | < 0.037 | < 0.037 | < 0.037 | < 0.034 | < 0.042 | < 0.037 | < 0.035 | < 0.037 | < 0.037 |
| 3-Nitroaniline | NE | NE | NS | NS | < 0.034 | < 0.035 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.028 | < 0.034 | < 0.03 | < 0.028 | < 0.03 | < 0.03 |
| 4,6-Dinitro-2-methylphenol | NE | NE | 6 | 0.3 | < 0.038 | < 0.039 | < 0.034 | < 0.034 | < 0.034 | < 0.034 | < 0.031 | < 0.038 | < 0.034 | < 0.032 | < 0.033 | < 0.034 |
| 4-Bromophenyl phenyl ether | NE | NE | NS | NS | < 0.022 | < 0.023 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.018 | < 0.022 | < 0.02 | < 0.019 | < 0.02 | < 0.02 |
| 4-Chloro-3-Methylphenol | NE | NE | NS | NS | < 0.055 | < 0.057 | < 0.05 | < 0.049 | < 0.049 | < 0.049 | < 0.046 | < 0.056 | < 0.049 | < 0.046 | < 0.049 | < 0.05 |
| 4-Chloroaniline | NE | NE | NS | NS | < 0.027 | < 0.028 | < 0.024 | < 0.024 | < 0.024 | < 0.024 | < 0.022 | < 0.027 | < 0.024 | < 0.023 | < 0.024 | < 0.024 |
| 4-Chlorophenyl phenyl ether | NE | NE | NS | NS | < 0.021 | < 0.021 | < 0.018 | < 0.018 | < 0.018 | < 0.018 | < 0.017 | < 0.021 | < 0.018 | < 0.017 | < 0.018 | < 0.018 |
| 4-Nitroaniline | NE | NE | NS | NS | < 0.03 | < 0.031 | < 0.027 | < 0.027 | < 0.027 | < 0.027 | < 0.025 | < 0.03 | < 0.027 | < 0.025 | < 0.027 | < 0.027 |
| 4-Nitrophenol | 0.0133 | NE | NS | NS | < 0.059 | < 0.061 | < 0.053 | < 0.053 | < 0.053 | < 0.053 | < 0.049 | < 0.06 | < 0.053 | < 0.05 | < 0.052 | < 0.054 |
| Acenaphthene | 0.016 (a) | 0.5 (a) | 3400 | 74 | < 0.022 | < 0.023 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.018 | < 0.022 | 0.0674 J | < 0.019 | < 0.02 | < 0.02 |
| Acenaphthylene | 0.044 (a) | 0.64 (a) | NS | NS | < 0.018 | < 0.018 | < 0.016 | < 0.016 | < 0.016 | < 0.016 | < 0.015 | < 0.018 | < 0.016 | < 0.015 | < 0.016 | < 0.016 |
| Acetophenone | NE | NE | 2 | 2 | < 0.028 | < 0.028 | < 0.025 | < 0.024 | < 0.025 | < 0.024 | < 0.023 | < 0.028 | < 0.025 | < 0.023 | 0.0755 J | < 0.025 |
| Anthracene | 0.22 | 370 | 17000 | 1500 | < 0.017 | < 0.017 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.014 | < 0.017 | 0.149 | < 0.014 | < 0.015 | < 0.015 |
| Atrazine | NE | NE | 210 | 0.2 | < 0.038 | < 0.039 | < 0.034 | < 0.033 | < 0.034 | < 0.034 | < 0.031 | < 0.038 | < 0.034 | < 0.031 | < 0.033 | < 0.034 |
| Benzaldehyde | NE | NE | 6100 | NS | < 0.048 | < 0.05 | < 0.043 | < 0.043 | < 0.043 | < 0.043 | < 0.04 | < 0.048 | < 0.043 | < 0.04 | < 0.042 | < 0.043 |
| Benzo(a)anthracene | 0.32 | 1,480 | 0.6 | 0.5 | < 0.021 | < 0.022 | < 0.019 | < 0.019 | < 0.019 | < 0.019 | < 0.017 | < 0.021 | 0.243 | < 0.018 | 0.0725 J | < 0.019 |
| Benzo(a)pyrene | 0.37 | 1,440 | 0.2 | 0.2 | < 0.015 | < 0.016 | < 0.014 | < 0.013 | < 0.014 | < 0.014 | < 0.013 | < 0.015 | 0.175 J | < 0.013 | 0.102 | < 0.014 |
| Benzo(b)fluoranthene | 10.4 | NE | 0.6 | 2 | < 0.02 | < 0.021 | < 0.018 | < 0.018 | < 0.018 | < 0.018 | < 0.016 | < 0.02 | 0.238 | < 0.017 | 0.112 | < 0.018 |
| Benzo(g,h,i)perylene | 0.17 | 320 | 380000 | NS | < 0.024 | < 0.025 | < 0.022 | < 0.021 | < 0.021 | < 0.021 | < 0.02 | < 0.024 | 0.088 J | < 0.02 | 0.0912 | < 0.022 |
| Benzo(k)fluoranthene | 0.24 | 1,340 | 6 | 16 | < 0.033 | < 0.034 | < 0.03 | < 0.029 | < 0.029 | < 0.029 | < 0.027 | < 0.033 | 0.162 | < 0.027 | 0.123 | < 0.03 |
| Benzyl butyl phthalate | 1.97 | NE | 1200 | 150 | < 0.033 | < 0.034 | < 0.03 | < 0.029 | < 0.029 | < 0.029 | < 0.027 | < 0.033 | < 0.029 | < 0.028 | 0.089 | < 0.03 |
| bis(2-Chloroethoxy)methane | NE | NE | NS | NS | < 0.028 | < 0.029 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.023 | < 0.028 | < 0.025 | < 0.023 | < 0.025 | < 0.025 |
| bis(2-Chloroethyl)ether | 3.52 | NE | 0.4 | 0.2 | < 0.022 | < 0.022 | < 0.02 | < 0.019 | < 0.019 | < 0.019 | < 0.018 | < 0.022 | < 0.019 | < 0.018 | < 0.019 | < 0.02 |
| bis(2-Chloroisopropyl)ether | NE | NE | 23 | 3 | < 0.033 | < 0.034 | < 0.029 | < 0.029 | < 0.029 | < 0.029 | < 0.027 | < 0.033 | < 0.029 | < 0.027 | < 0.029 | < 0.029 |
| bis(2-Ethylhexyl)phthalate | 0.182 | 0.75 | 35 | 790 | < 0.056 | < 0.058 | < 0.05 | < 0.049 | < 0.05 | < 0.05 | < 0.046 | < 0.056 | 0.0895 | < 0.047 | 0.49 | < 0.05 |
| Caprolactam | NE | NE | 31000 | 8 | < 0.042 | < 0.043 | < 0.038 | < 0.037 | < 0.037 | < 0.037 | < 0.035 | < 0.042 | < 0.037 | < 0.035 | < 0.037 | < 0.038 |
| Carbazole | NE | NE | 24 | NS | < 0.018 | < 0.018 | < 0.016 | < 0.016 | < 0.016 | < 0.016 | < 0.015 | < 0.018 | 0.0728 J | < 0.015 | < 0.016 | < 0.016 |
| Chrysene | 0.34 | 460 | 62 | 52 | < 0.016 | < 0.017 | < 0.015 | < 0.014 | < 0.014 | < 0.014 | < 0.013 | < 0.016 | 0.219 | < 0.013 | 0.0968 | < 0.015 |
| Dibenzo(a,h)anthracene | 0.06 | 130 | 0.2 | 0.5 | < 0.023 | < 0.024 | < 0.021 | < 0.02 | < 0.02 | < 0.02 | < 0.019 | < 0.023 | 0.158 J | < 0.019 | < 0.02 | < 0.021 |
| Dibenzofuran | NE | NE | NS | NS | < 0.02 | < 0.021 | < 0.018 | < 0.018 | < 0.018 | < 0.018 | < 0.017 | < 0.02 | 0.0341 J | < 0.017 | < 0.018 | < 0.018 |
| Diethyl phthalate | 0.295 | NE | 49000 | 57 | < 0.019 | < 0.019 | < 0.017 | < 0.017 | < 0.017 | < 0.017 | < 0.015 | < 0.019 | < 0.017 | < 0.016 | < 0.016 | < 0.017 |
| Dimethyl phthalate | NE | NE | NS | NS | < 0.019 | < 0.019 | < 0.017 | < 0.017 | < 0.017 | < 0.017 | < 0.016 | < 0.019 | < 0.017 | < 0.016 | < 0.017 | < 0.017 |
| di-n-butyl phthalate | 1.114 | 0.11 | 6100 | 620 | < 0.028 | < 0.029 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.023 | < 0.028 | < 0.025 | < 0.023 | < 0.024 | < 0.025 |
| di-n-octylphthalate | NE | NE | 2400 | 3300 | < 0.037 | < 0.039 | < 0.034 | < 0.033 | < 0.033 | < 0.033 | < 0.031 | < 0.037 | < 0.033 | < 0.031 | < 0.033 | < 0.034 |
| Fluoranthene | 0.75 | 1,020 | 2300 | 840 | < 0.015 | 0.0258 J | < 0.014 | 0.0212 J | < 0.014 | < 0.014 | < 0.013 | < 0.015 | 0.578 | < 0.013 | 0.124 | < 0.014 |
| Fluorene | 0.19 | 160 | 2300 | 110 | < 0.018 | < 0.018 | < 0.016 | < 0.015 | < 0.016 | < 0.016 | < 0.014 | < 0.018 | 0.0621 J | < 0.015 | < 0.015 | < 0.016 |

**Table 2. Summary of Analytical Results, O'Connor Disposal Area Surface Soil Samples, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Area Location | Freshwater Sediment | | Residential | Default Impact to | O'Connor Surface Soil Samples | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Screen Guidelines | | Direct Contact | Groundwater | OC-SS-1 | OC-SS-02 | OC-SS-03 | OC-SS-4 | OC-SS-05 (DUP-OCSS5-061121) | OC-SS-5 | OC-SS-06 | OC-SS-7 | OC-SS-8 | OC-SS-9 | OC-SS-10 | OC-SS-11 |
| Sample Date | | | Soil Remediation | Soil Screening | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 |
| Validation Status | LEL (1) | SEL (2) | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.02 | 24 | 0.3 | 0.2 | < 0.025 | < 0.026 | < 0.023 | < 0.022 | < 0.022 | < 0.022 | < 0.021 | < 0.025 | < 0.022 | < 0.021 | < 0.022 | < 0.023 |
| Hexachlorobutadiene | 0.0265 | NE | 6 | 0.6 | < 0.029 | < 0.03 | < 0.026 | < 0.025 | < 0.026 | < 0.026 | < 0.024 | < 0.029 | < 0.026 | < 0.024 | < 0.025 | < 0.026 |
| Hexachlorocyclopentadiene | 0.901 | NE | 45 | 210 | < 0.031 | < 0.032 | < 0.028 | < 0.028 | < 0.028 | < 0.028 | < 0.026 | < 0.031 | < 0.028 | < 0.026 | < 0.028 | < 0.028 |
| Hexachloroethane | 0.584 | NE | 35 | 0.2 | < 0.022 | < 0.023 | < 0.02 | < 0.019 | < 0.019 | < 0.019 | < 0.018 | < 0.022 | < 0.019 | < 0.018 | < 0.019 | < 0.02 |
| Indeno(1,2,3-cd)pyrene | 0.2 | 320 | 0.6 | 5 | < 0.028 | < 0.029 | < 0.025 | < 0.024 | < 0.025 | < 0.025 | < 0.023 | < 0.028 | 0.0936 J | < 0.023 | 0.0651 J | < 0.025 |
| Isophrone | 0.432 | NE | 510 | 0.2 | < 0.022 | < 0.022 | < 0.02 | < 0.019 | < 0.019 | < 0.019 | < 0.018 | < 0.022 | < 0.019 | < 0.018 | < 0.019 | < 0.02 |
| Naphthalene | 0.16 (a) | 2.1 (a) | 6 | 16 | < 0.025 | < 0.025 | < 0.022 | < 0.022 | < 0.022 | < 0.022 | < 0.02 | < 0.025 | < 0.022 | < 0.021 | < 0.022 | < 0.022 |
| Nitrobenzene | 0.145 | NE | 31 | 0.2 | < 0.03 | < 0.031 | < 0.027 | < 0.027 | < 0.027 | < 0.027 | < 0.025 | < 0.031 | < 0.027 | < 0.025 | < 0.027 | < 0.027 |
| N-Nitroso-di-n-Propylamine | NE | NE | 0.2 | 0.2 | < 0.028 | < 0.029 | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.023 | < 0.028 | < 0.025 | < 0.023 | < 0.025 | < 0.025 |
| N-Nitrosodiphenylamine | NE | NE | 99 | 0.2 | < 0.018 | < 0.019 | < 0.016 | < 0.016 | < 0.016 | < 0.016 | < 0.015 | < 0.018 | < 0.016 | < 0.015 | < 0.016 | < 0.016 |
| Pentachlorophenol | 23 | NE | 3 | 0.3 | < 0.049 | < 0.051 | < 0.044 | < 0.043 | < 0.044 | < 0.043 | < 0.04 | < 0.049 | < 0.044 | < 0.041 | < 0.043 | < 0.044 |
| Phenanthrene | 0.56 | 950 | NS | NS | < 0.019 | < 0.02 | < 0.017 | < 0.017 | < 0.017 | < 0.017 | < 0.016 | < 0.019 | 0.503 | < 0.016 | 0.0504 J | < 0.017 |
| Phenol | 0.0491 | 0.048 | 18000 | 5 | < 0.054 | < 0.056 | < 0.049 | < 0.048 | < 0.048 | < 0.048 | < 0.045 | < 0.054 | < 0.048 | < 0.045 | < 0.048 | < 0.049 |
| Pyrene | 0.49 | 850 | 1700 | 550 | < 0.015 | 0.0232 J | < 0.014 | 0.0193 J | < 0.013 | < 0.013 | < 0.012 | < 0.015 | 0.441 | < 0.013 | 0.177 | < 0.014 |
| Total TIC, Semi-Volatile | NE | NE | NS | NS | 0.23 J | 1.64 J | 0.43 J | 0 | 0 | 0 | 3.2 J | 1.37 J | 0 | 4.42 J | 8.29 J | 0 |
| Total PAHs (3) | 4 | 10000 | NS | NS | <0.376 | <0.374 | <0.341 | <0.318 | <0.335 | <0.335 | <0.31 | <0.376 | <0.093 | <0.315 | <0.2252 | <0.341 |
| **PCBs** | | | | | | | | | | | | | | | | |
| PCB 1016 | 0.007 | 53 | 0.2 | 0.2 | < 0.0083 | < 0.0085 | < 0.0075 | < 0.0073 | < 0.0073 | < 0.0073 | < 0.0069 | < 0.0083 | < 0.0073 | < 0.0069 | < 0.0073 | < 0.0076 |
| PCB 1221 | NE | NE | 0.2 | 0.2 | < 0.026 | < 0.027 | < 0.024 | < 0.023 | < 0.023 | < 0.023 | < 0.022 | < 0.026 | < 0.023 | < 0.022 | < 0.023 | < 0.024 |
| PCB 1232 | NE | NE | 0.2 | 0.2 | < 0.024 | < 0.024 | < 0.021 | < 0.021 | < 0.021 | < 0.021 | < 0.02 | < 0.024 | < 0.021 | < 0.02 | < 0.021 | < 0.022 |
| PCB 1242 | NE | NE | 0.2 | 0.2 | < 0.014 | < 0.014 | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.014 | < 0.012 | < 0.012 | 0.15 | < 0.013 |
| PCB 1248 | 0.03 | 150 | 0.2 | 0.2 | < 0.015 | < 0.015 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.015 | < 0.013 | < 0.013 | < 0.013 | < 0.014 |
| PCB 1254 | 0.06 | 34 | 0.2 | 0.2 | < 0.021 | < 0.021 | < 0.019 | **0.287** | < 0.018 | < 0.018 | < 0.017 | < 0.021 | < 0.018 | < 0.017 | 0.0821 | < 0.019 |
| PCB 1260 | 0.005 | 24 | 0.2 | 0.2 | < 0.0088 | < 0.009 | < 0.0079 | < 0.0078 | < 0.0078 | < 0.0077 | < 0.0073 | < 0.0088 | < 0.0077 | < 0.0073 | < 0.0078 | < 0.0081 |
| Total PCBs | 0.07 | 530 | 0.2 | 0.2 | 0 | 0 | 0 | **0.287** | 0 | 0 | 0 | 0 | 0 | 0 | **0.2321** | 0 |
| **Metals - Total** | | | | | | | | | | | | | | | | |
| Aluminum | NE | NE | 78000 | 3900 | 15900 | 11500 | 15500 | 9000 | 4160 | 4230 | 7420 | 10200 | 9740 | 4050 | 10400 | 11100 |
| Antimony | NE | 3 | 31 | 6 | < 1 J | < 0.93 J | < 0.86 J | < 1.6 J | < 20 J | < 21 J | < 20 J | < 0.97 J | < 0.8 J | < 20 J | < 0.8 J | < 0.87 J |
| Antimony - Method 6020 | NE | 3 | 31 | 6 | NA | NA | NA | NA | < 0.24 R | < 0.24 R | < 0.24 R | NA | NA | < 0.24 R | NA | NA |
| Arsenic | 6 | 33 | 19 | 19 | 5.8 | 6.2 | 3.7 | 5.3 | **42.6 B** | **47.5 B** | **51.1 B** | 4.4 | 4.5 | **42.4 B** | 4.5 | 2.3 B |
| Barium | NE | NE | 16000 | 1300 | 64.5 | 37.5 | 50.1 | 60.7 | 16.6 B | 14.5 B | 40.5 B | 48.2 | 44.7 | 23.4 B | 70 | 42.9 |
| Beryllium | NE | NE | 16 | 0.5 | 0.69 | 0.42 B | 0.56 B | 0.27 B | < 0.56 | < 0.57 | < 0.56 | 0.41 B | 0.39 B | < 0.57 | 0.37 B | 0.43 B |
| Cadmium | 0.6 | 10 | 78 | 1 | 0.21 B | < 0.18 | < 0.17 | < 0.31 | < 3.9 | < 4 | < 4 | 0.59 B | 1.2 | < 4 | 3.4 | 0.37 B |
| Calcium | NE | NE | NS | NS | 1780 J | 3000 J | 255 BJ | 5030 J | 44500 J | 47500 J | 46500 J | 2440 J | 1630 J | 40500 J | 2020 J | 1500 J |
| Chromium | 26 | 110 | NS | NS | 17.9 J | 11.2 J | 17 J | 19.8 J | < 4.8 J | < 4.9 J | 9.3 BJ | 14.9 J | 15 J | 6.6 BJ | 18.6 J | 13.9 J |
| Cobalt | 50 | NE | 1600 | 59 | 8.9 J | 4.1 BJ | 8.6 J | 12.5 J | 6.4 BJ | 7.7 BJ | 11.2 BJ | 7.9 J | 7.7 J | 8.4 BJ | 7.3 J | 7.6 J |
| Copper | 16 | 110 | 3100 | 7300 | 15.9 | 12.4 | 11 | 63.4 | 16.9 B | 16.1 B | 35.1 B | 21 | 20.2 | 27.4 B | 22.5 | 18.8 |
| Iron | NE | NE | NS | NS | 19900 | 12800 | 18800 | 23800 | 26200 | 24600 | 21500 | 20000 | 18800 | 26000 | 19800 | 18100 |
| Lead | 31 | 250 | 400 | 59 | 26.5 | 45.2 | 11.2 | 26.5 | < 12 | < 12 | < 12 | 17.7 | 100 | < 12 | 108 | 13.6 |
| Magnesium | NE | NE | NS | NS | 2490 J | 1520 J | 2840 J | 3950 J | 4910 BJ | 4830 BJ | 8790 BJ | 3380 J | 3080 J | 4890 BJ | 3270 J | 3010 J |
| Manganese | 630 | 1,100 | 11000 | 42 | 1760 J | 449 J | 460 J | 461 J | 296 J | 304 J | 397 J | 562 J | 504 J | 312 J | 482 J | 506 J |
| Mercury | 0.2 | 2 | 23 | 0.1 | 0.17 | 0.13 | 0.041 | 0.069 | 0.012 B | 0.015 B | 0.058 | 0.044 | 0.04 | 0.054 | 0.092 | 0.028 B |
| Nickel | 16 | 75 | 1600 | 31 | 14.2 | 10.1 | 16.7 | 17.9 | < 15 | 16.9 B | < 15 | 18.1 | 16.2 | < 15 | 17.2 | 15.9 |
| Potassium | NE | NE | NS | NS | 836 | 407 B | 583 B | 1330 | 942 B | 864 B | 2200 B | 1190 | 832 | 1210 B | 915 | 939 |
| Selenium | NE | NE | 390 | 7 | 1.2 B | 1.3 B | < 0.9 | < 1.7 | < 21 | < 21 | < 21 | < 1 | < 0.83 | < 21 | < 0.83 | < 0.91 |
| Silver | 1 (a) | 3.7 (a) | 390 | 1 | < 0.21 | < 0.19 | < 0.18 | < 0.34 | < 4.2 | < 4.3 | < 4.2 | < 0.2 | < 0.17 | < 4.3 | < 0.17 | < 0.18 |
| Sodium | NE | NE | NS | NS | < 100 | < 98 | < 91 | < 170 | < 2100 | < 2200 | < 2100 | < 100 | < 84 | < 2100 | < 84 | < 91 |
| Thallium | NE | NE | 5 | 3 | < 1.1 | < 1 | < 0.96 J | < 1.8 | < 22 | < 23 | < 23 | < 1.1 | < 0.89 | < 23 | < 0.89 | < 0.97 |
| Thallium - Method 6020 | NE | NE | 5 | 3 | NA | NA | NA | NA | < 0.21 | < 0.22 | < 0.21 | NA | NA | < 0.22 | NA | NA |
| Vanadium | NE | NE | 78 | NS | 28 J | 25 J | 23.1 J | 44.2 J | 78 BJ | 76.3 BJ | 75 BJ | 20.1 J | 19.1 J | 74.5 BJ | 19.6 J | 19.8 J |
| Zinc | 120 | 820 | 23000 | 600 | 81.3 | 45.9 J | 47.8 J | 48.3 J | 34 BJ | 35 BJ | 28.4 BJ | 62.9 | 74.9 | 50.2 BJ | 237 | 64.2 |
| **Other** | | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons (TPH) | NE | NE | NS | NS | < 34 | < 35 | < 31 | < 30 | < 30 | < 30 | < 28 | < 34 | < 30 | < 28 | 80.1 | < 31 |
| Solids, Percent | NE | NE | NS | NS | 75.3 | 73.6 | 84.2 | 85.7 | 85.7 | 85.9 | 91.3 | 75.4 | 85.7 | 90.9 | 86 | 83.6 |

Footnotes on page 7.

**Table 2. Summary of Analytical Results, O'Connor Disposal Area Surface Soil Samples, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Area Location | Freshwater Sediment | | Residential | Default Impact to | O'Connor Surface Soil Samples | | | | Field Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Screen Guidelines | | Direct Contact | Groundwater | OC-SS-12 | OC-SS-13* | OC-SS-14* | OC-SS-15 | FIELD BLANK 061121-2 | TRIP BLANK 061121-2 |
| Sample Date | | | Soil Remediation | Soil Screening | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 |
| Validation Status | LEL (1) | SEL (2) | Standard | Level | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | |
| 1,1,1-Trichloroethane | 0.213 | NE | 290 | 0.2 | < 0.00063 | < 0.0011 | < 0.00059 | < 0.00091 | < 0.28 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | 0.85 | NE | 1 | 0.005 | < 0.00061 | < 0.0011 | < 0.00057 | < 0.00088 | < 0.28 | < 0.28 |
| 1,1,2-Trichloroethane | 0.518 | NE | 2 | 0.01 | < 0.00057 | < 0.001 | < 0.00053 | < 0.00083 | < 0.32 | < 0.32 |
| 1,1-Dichloroethane | NE | NE | 8 | 0.2 | < 0.00051 | < 0.0009 | < 0.00048 | < 0.00074 | < 0.23 | < 0.23 |
| 1,1-Dichloroethene | 0.0194 | NE | 11 | 0.005 | < 0.00073 | < 0.0013 | < 0.00068 | < 0.0011 | < 0.33 | < 0.33 |
| 1,2,4-Trichlorobenzene | 5.062 | NE | 73 | 0.4 | < 0.00037 | < 0.00066 | < 0.00035 | < 0.00054 | < 0.16 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | NE | NE | 0.08 | 0.005 | < 0.0023 | < 0.004 | < 0.0021 | < 0.0033 | < 1.1 | < 1.1 |
| 1,2-Dibromoethane | NE | NE | 0.008 | 0.005 | < 0.0006 | < 0.0011 | < 0.00056 | < 0.00087 | < 0.52 | < 0.52 |
| 1,2-Dichlorobenzene | 0.294 | NE | 5300 | 11 | < 0.00048 | < 0.00086 | < 0.00045 | < 0.0007 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | 0.26 | NE | 0.9 | 0.005 | < 0.00057 | < 0.001 | < 0.00054 | < 0.00084 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | 0.333 | NE | 2 | 0.005 | < 0.00059 | < 0.001 | < 0.00055 | < 0.00085 | < 0.2 | < 0.2 |
| 1,3-Dichlorobenzene | 1.315 | NE | 5300 | 12 | < 0.00052 | < 0.00092 | < 0.00048 | < 0.00075 | < 0.32 | < 0.32 |
| 1,4-Dichlorobenzene | 0.318 | NE | 5 | 1 | < 0.00049 | < 0.00086 | < 0.00046 | < 0.00071 | < 0.24 | < 0.24 |
| 2-Butanone (MEK) | NE | NE | 3100 | 0.6 | < 0.0029 | < 0.0051 | < 0.0027 | < 0.0042 | < 2.6 | < 2.6 |
| 2-Hexanone | NE | NE | NS | NS | < 0.0014 | < 0.0026 | < 0.0014 | < 0.0021 | < 1.3 | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | NE | NE | NS | NS | < 0.0021 | < 0.0037 | < 0.002 | < 0.0031 | < 1.1 | < 1.1 |
| Acetone | NE | NE | 70000 | 12 | < 0.003 | 0.0212 | 0.0294 | < 0.0044 | < 2.4 | < 2.4 |
| Benzene | 0.34 (a) | NE | 2 | 0.005 | < 0.00051 | < 0.0009 | < 0.00048 | < 0.00074 | < 0.21 | < 0.21 |
| Bromodichloromethane | NE | NE | 1 | 0.005 | < 0.00048 | < 0.00086 | < 0.00045 | < 0.0007 | < 0.17 | < 0.17 |
| Bromoform | 0.492 | NE | 81 | 0.02 | < 0.00046 | < 0.00082 | < 0.00043 | < 0.00067 | < 0.54 | < 0.54 |
| Bromomethane | 0.00137 | NE | 25 | 0.03 | < 0.00039 | < 0.00069 | < 0.00037 | < 0.00057 | < 0.22 J | < 0.22 J |
| Carbon disulfide | NE | NE | 7800 | 4 | < 0.00058 | < 0.001 | < 0.00055 | 0.0044 J | < 0.21 | < 0.21 |
| Carbon tetrachloride | 1.45 | NE | 0.6 | 0.005 | < 0.001 | < 0.0018 | < 0.00094 | < 0.0015 | < 0.29 | < 0.29 |
| Chlorobenzene | 0.291 | NE | 510 | 0.4 | < 0.00046 | < 0.00081 | < 0.00043 | < 0.00067 | < 0.22 | < 0.22 |
| Chloroethane | NE | NE | 220 | NS | < 0.0018 | < 0.0033 | < 0.0017 | < 0.0027 | < 0.56 | < 0.56 |
| Chloroform | 0.121 | NE | 0.6 | 0.2 | < 0.00061 | < 0.0011 | < 0.00058 | < 0.0009 | < 0.22 | < 0.22 |
| Chloromethane | NE | NE | 4 | NS | < 0.00049 | < 0.00087 | < 0.00046 | < 0.00071 | < 0.35 | < 0.35 |
| cis-1,2-Dichloroethene | NE | NE | 230 | 0.2 | < 0.00071 | < 0.0013 | < 0.00067 | < 0.001 | < 0.18 | < 0.18 |
| cis-1,3-Dichloropropene | NE | NE | 2 | 0.005 | < 0.00044 | < 0.00078 | < 0.00041 | < 0.00064 | < 0.15 | < 0.15 |
| Cyclohexane | NE | NE | NS | NS | < 0.0014 | < 0.0024 | < 0.0013 | < 0.002 | < 0.5 | < 0.5 |
| Dibromochloromethane | NE | NE | 3 | 0.005 | < 0.00058 | < 0.001 | < 0.00055 | < 0.00085 | < 0.19 | < 0.19 |
| Dichlorodifluoromethane | NE | NE | 490 | 25 | < 0.00084 | < 0.0015 | < 0.00079 | < 0.0012 | < 0.75 | < 0.75 |
| Ethylbenzene | 1.4 (a) | NE | 7800 | 8 | < 0.00048 | < 0.00085 | < 0.00045 | < 0.00069 | < 0.2 | < 0.2 |
| Freon 113 | NE | NE | NS | NS | < 0.0009 | < 0.0016 | < 0.00085 | < 0.0013 | < 0.69 | < 0.69 |
| Isopropylbenzene | NE | NE | NS | NS | < 0.00049 | < 0.00087 | < 0.00046 | < 0.00072 | < 0.2 | < 0.2 |
| Methyl acetate | NE | NE | 78000 | 14 | < 0.0015 | < 0.0027 | < 0.0014 | < 0.0022 | < 2.1 | < 2.1 |
| Methyl tert butyl ether | NE | NE | 110 | 0.2 | < 0.00059 | < 0.0011 | < 0.00056 | < 0.00086 | < 0.31 | < 0.31 |
| Methylcyclohexane | NE | NE | NS | NS | < 0.00068 | < 0.0012 | < 0.00064 | < 0.00099 | < 0.18 | < 0.18 |
| Methylene chloride | 0.159 | NE | 34 | 0.007 | < 0.00073 | < 0.0013 | < 0.00069 | < 0.0011 | < 0.27 | < 0.27 |
| o-Xylene | NE | NE | NS | NS | < 0.00052 | < 0.00093 | < 0.00049 | < 0.00076 | < 0.31 | < 0.31 |
| Styrene | 0.254 | NE | 90 | 2 | < 0.00035 | < 0.00061 | < 0.00032 | < 0.0005 | < 0.16 | < 0.16 |
| Tetrachloroethene | 0.45 (a) | NE | 2 | 0.005 | < 0.00087 | < 0.0015 | < 0.00082 | < 0.0013 | < 0.28 | < 0.28 |
| Toluene | 2.5 (a) | NE | 6300 | 4 | < 0.00057 | < 0.001 | < 0.00054 | < 0.00084 | < 0.2 | < 0.2 |
| Trans-1,2-dichloroethene | 0.654 | NE | 300 | 0.4 | < 0.00072 | < 0.0013 | < 0.00068 | < 0.0011 | < 0.42 | < 0.42 |
| trans-1,3-Dichloropropene | NE | NE | 2 | 0.005 | < 0.00041 | < 0.00074 | < 0.00039 | < 0.0006 | < 0.2 | < 0.2 |
| Trichloroethene | 1.6 (a) | NE | 7 | 0.007 | < 0.00055 | < 0.00098 | < 0.00052 | < 0.0008 | < 0.29 | < 0.29 |
| Trichlorofluoromethane | NE | NE | 23000 | 22 | < 0.00077 | < 0.0014 | < 0.00072 | < 0.0011 | < 0.25 | < 0.25 |
| Vinyl Chloride | 0.202 | NE | 0.7 | 0.005 | < 0.00068 | < 0.0012 | < 0.00064 | < 0.001 | < 0.29 | < 0.29 |
| Xylene, -m,p | NE | NE | NS | NS | < 0.00093 | < 0.0016 | < 0.00087 | < 0.0014 | < 0.42 | < 0.42 |
| Xylenes | 0.12 (a) | NE | 12000 | 12 | < 0.00052 | < 0.00093 | < 0.00049 | < 0.00076 | < 0.31 | < 0.31 |
| Total TIC, Volatile | NE | NE | NS | NS | 0 | 0 | 0 | 0.016 J | 0 | 0 |

**Table 2. Summary of Analytical Results, O'Connor Disposal Area Surface Soil Samples, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Area Location | Freshwater Sediment | | Residential | Default Impact to | O'Connor Surface Soil Samples | | | | Field Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Screen Guidelines | | Direct Contact | Groundwater | OC-SS-12 | OC-SS-13* | OC-SS-14* | OC-SS-15 | FIELD BLANK 061121-2 | TRIP BLANK 061121-2 |
| Sample Date | | | Soil Remediation | Soil Screening | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 |
| Validation Status | LEL (1) | SEL (2) | Standard | Level | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | |
| 1,1'-Biphenyl | NE | NE | 3100 | 90 | < 0.02 | < 0.023 | < 0.019 | < 0.018 | < 0.36 J | NA |
| 2,4,5-Trichlorophenol | NE | NE | 6100 | 44 | < 0.061 | < 0.073 | < 0.059 | < 0.056 | < 2.1 J | NA |
| 2,4,6-Trichlorophenol | 0.208 | NE | 19 | 0.2 | < 0.034 | < 0.041 | < 0.033 | < 0.032 | < 1.4 J | NA |
| 2,4-Dichlorophenol | 0.0817 | NE | 180 | 0.2 | < 0.068 | < 0.081 | < 0.066 | < 0.063 | < 1.7 J | NA |
| 2,4-Dimethylphenol | 0.304 | NE | 1200 | 0.7 | < 0.1 | < 0.12 | < 0.1 | < 0.096 | < 1.8 J | NA |
| 2,4-Dinitrophenol | 0.00621 | NE | 120 | 0.3 | < 0.062 | < 0.074 | < 0.06 | < 0.057 | < 0.97 J | NA |
| 2,4-Dinitrotoluene | 0.0144 | NE | 0.7 | NS | < 0.047 | < 0.056 | < 0.046 | < 0.044 | < 0.93 | NA |
| 2,6-Dinitrotoluene | NE | NE | 0.7 | NS | < 0.046 | < 0.055 | < 0.045 | < 0.043 | < 0.61 J | NA |
| 2-Chloronaphthalene | 0.417 | NE | NS | NS | < 0.057 | < 0.068 | < 0.055 | < 0.053 | < 1.1 J | NA |
| 2-Chlorophenol | 0.0319 | NE | 310 | 0.5 | < 0.035 | < 0.042 | < 0.034 | < 0.032 | < 1 J | NA |
| 2-Methylnaphthalene | 0.070 (a) | 0.67 (a) | 230 | 5 | < 0.027 | < 0.032 | < 0.026 | < 0.024 | < 0.44 J | NA |
| 2-Methylphenol | NE | NE | 310 | NS | < 0.04 | < 0.048 | < 0.039 | < 0.037 | < 1.5 J | NA |
| 2-Nitroaniline | NE | NE | 39 | NS | < 0.026 | < 0.031 | < 0.025 | < 0.024 | < 0.72 J | NA |
| 2-Nitrophenol | NE | NE | NS | NS | < 0.05 | < 0.06 | < 0.049 | < 0.047 | < 2 J | NA |
| 3&4-Methylphenol | NE | NE | NS | NS | < 0.058 | < 0.069 | < 0.056 | < 0.054 | < 1.4 J | NA |
| 3,3'-Dichlorobenzidine | 0.127 | NE | 1 | 0.2 | < 0.039 | < 0.046 | < 0.037 | < 0.036 | < 1.3 J | NA |
| 3-Nitroaniline | NE | NE | NS | NS | < 0.032 | < 0.038 | < 0.03 | < 0.029 | < 1.4 J | NA |
| 4,6-Dinitro-2-methylphenol | NE | NE | 6 | 0.3 | < 0.035 | < 0.042 | < 0.034 | < 0.033 | < 0.78 J | NA |
| 4-Bromophenyl phenyl ether | NE | NE | NS | NS | < 0.021 | < 0.025 | < 0.02 | < 0.019 | < 0.33 J | NA |
| 4-Chloro-3-Methylphenol | NE | NE | NS | NS | < 0.052 | < 0.062 | < 0.05 | < 0.048 | < 1.3 J | NA |
| 4-Chloroaniline | NE | NE | NS | NS | < 0.025 | < 0.03 | < 0.024 | < 0.023 | < 0.43 J | NA |
| 4-Chlorophenyl phenyl ether | NE | NE | NS | NS | < 0.019 | < 0.023 | < 0.018 | < 0.018 | < 0.47 J | NA |
| 4-Nitroaniline | NE | NE | NS | NS | < 0.028 | < 0.034 | < 0.027 | < 0.026 | < 0.78 J | NA |
| 4-Nitrophenol | 0.0133 | NE | NS | NS | < 0.055 | < 0.066 | < 0.053 | < 0.051 | < 0.92 J | NA |
| Acenaphthene | 0.016 (a) | 0.5 (a) | 3400 | 74 | < 0.021 | < 0.025 | < 0.02 | < 0.019 | < 0.019 | NA |
| Acenaphthylene | 0.044 (a) | 0.64 (a) | NS | NS | < 0.016 | < 0.02 | < 0.016 | < 0.015 | < 0.01 | NA |
| Acetophenone | NE | NE | 2 | 2 | < 0.026 | < 0.031 | < 0.025 | < 0.024 | < 0.41 J | NA |
| Anthracene | 0.22 | 370 | 17000 | 1500 | 0.0324 J | < 0.019 | < 0.015 | < 0.015 | < 0.023 | NA |
| Atrazine | NE | NE | 210 | 0.2 | < 0.035 | < 0.042 | < 0.034 | < 0.033 | < 0.18 J | NA |
| Benzaldehyde | NE | NE | 6100 | NS | < 0.045 | < 0.053 | < 0.043 | < 0.041 | < 0.29 J | NA |
| Benzo(a)anthracene | 0.32 | 1,480 | 0.6 | 0.5 | 0.0834 | < 0.023 | < 0.019 | < 0.018 | < 0.0074 | NA |
| Benzo(a)pyrene | 0.37 | 1,440 | 0.2 | 0.2 | 0.0834 | < 0.017 | < 0.014 | < 0.013 | < 0.018 | NA |
| Benzo(b)fluoranthene | 10.4 | NE | 0.6 | 2 | 0.0992 | < 0.022 | < 0.018 | < 0.017 | < 0.039 | NA |
| Benzo(g,h,i)perylene | 0.17 | 320 | 380000 | NS | 0.047 J | < 0.027 | < 0.022 | < 0.021 | < 0.019 | NA |
| Benzo(k)fluoranthene | 0.24 | 1,340 | 6 | 16 | 0.0685 J | < 0.037 | < 0.03 | < 0.028 | < 0.017 | NA |
| Benzyl butyl phthalate | 1.97 | NE | 1200 | 150 | < 0.031 | < 0.037 | < 0.03 | < 0.028 | < 0.64 J | NA |
| bis(2-Chloroethoxy)methane | NE | NE | NS | NS | < 0.026 | < 0.031 | < 0.025 | < 0.024 | < 0.71 J | NA |
| bis(2-Chloroethyl)ether | 3.52 | NE | 0.4 | 0.2 | < 0.02 | < 0.024 | < 0.02 | < 0.019 | < 0.58 J | NA |
| bis(2-Chloroisopropyl)ether | NE | NE | 23 | 3 | < 0.03 | < 0.036 | < 0.029 | < 0.028 | < 0.8 J | NA |
| bis(2-Ethylhexyl)phthalate | 0.182 | 0.75 | 35 | 790 | 0.242 | < 0.062 | < 0.05 | < 0.048 | < 0.72 J | NA |
| Caprolactam | NE | NE | 31000 | 8 | < 0.039 | < 0.047 | < 0.038 | < 0.036 | < 0.34 J | NA |
| Carbazole | NE | NE | 24 | NS | < 0.016 | < 0.02 | < 0.016 | < 0.015 | < 0.4 J | NA |
| Chrysene | 0.34 | 460 | 62 | 52 | 0.0987 | < 0.018 | < 0.015 | < 0.014 | < 0.018 | NA |
| Dibenzo(a,h)anthracene | 0.06 | 130 | 0.2 | 0.5 | < 0.021 | < 0.025 | < 0.021 | < 0.02 | < 0.018 | NA |
| Dibenzofuran | NE | NE | NS | NS | < 0.019 | < 0.023 | < 0.018 | < 0.017 | < 0.37 J | NA |
| Diethyl phthalate | 0.295 | NE | 49000 | 57 | < 0.017 | < 0.021 | < 0.017 | < 0.016 | < 0.42 J | NA |
| Dimethyl phthalate | NE | NE | NS | NS | < 0.017 | < 0.021 | < 0.017 | < 0.016 | < 0.36 J | NA |
| di-n-butyl phthalate | 1.114 | 0.11 | 6100 | 620 | < 0.026 | < 0.031 | < 0.025 | < 0.024 | < 0.64 J | NA |
| di-n-octylphthalate | NE | NE | 2400 | 3300 | < 0.035 | < 0.042 | < 0.034 | < 0.032 | < 0.62 J | NA |
| Fluoranthene | 0.75 | 1,020 | 2300 | 840 | 0.201 | < 0.017 | 0.022 J | < 0.013 | < 0.0098 | NA |
| Fluorene | 0.19 | 160 | 2300 | 110 | < 0.016 | < 0.019 | < 0.016 | < 0.015 | < 0.022 | NA |

**Table 2. Summary of Analytical Results, O'Connor Disposal Area Surface Soil Samples, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Area Location | Freshwater Sediment | | Residential | Default Impact to | O'Connor Surface Soil Samples | | | | Field Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Screen Guidelines | | Direct Contact | Groundwater | OC-SS-12 | OC-SS-13* | OC-SS-14* | OC-SS-15 | FIELD BLANK 061121-2 | TRIP BLANK 061121-2 |
| Sample Date | | | Soil Remediation | Soil Screening | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 | 11/21/2006 |
| Validation Status | LEL (1) | SEL (2) | Standard | Level | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.02 | 24 | 0.3 | 0.2 | < 0.023 | < 0.028 | < 0.023 | < 0.022 | < 0.066 | NA |
| Hexachlorobutadiene | 0.0265 | NE | 6 | 0.6 | < 0.027 | < 0.032 | < 0.026 | < 0.025 | < 0.19 J | NA |
| Hexachlorocyclopentadiene | 0.901 | NE | 45 | 210 | < 0.029 | < 0.035 | < 0.028 | < 0.027 | < 0.44 J | NA |
| Hexachloroethane | 0.584 | NE | 35 | 0.2 | < 0.02 | < 0.024 | < 0.02 | < 0.019 | < 0.31 J | NA |
| Indeno(1,2,3-cd)pyrene | 0.2 | 320 | 0.6 | 5 | 0.0396 J | < 0.031 | < 0.025 | < 0.024 | < 0.012 | NA |
| Isophrone | 0.432 | NE | 510 | 0.2 | < 0.02 | < 0.024 | < 0.02 | < 0.019 | < 0.64 J | NA |
| Naphthalene | 0.16 (a) | 2.1 (a) | 6 | 16 | < 0.023 | < 0.027 | < 0.022 | < 0.021 | < 0.028 | NA |
| Nitrobenzene | 0.145 | NE | 31 | 0.2 | < 0.028 | < 0.034 | < 0.027 | < 0.026 | < 0.46 J | NA |
| N-Nitroso-di-n-Propylamine | NE | NE | 0.2 | 0.2 | < 0.026 | < 0.031 | < 0.025 | < 0.024 | < 0.51 J | NA |
| N-Nitrosodiphenylamine | NE | NE | 99 | 0.2 | < 0.017 | < 0.02 | < 0.016 | < 0.016 | < 0.56 J | NA |
| Pentachlorophenol | 23 | NE | 3 | 0.3 | < 0.046 | < 0.054 | < 0.044 | < 0.042 | < 0.43 | NA |
| Phenanthrene | 0.56 | 950 | NS | NS | 0.133 | < 0.021 | < 0.017 | < 0.017 | < 0.023 | NA |
| Phenol | 0.0491 | 0.048 | 18000 | 5 | < 0.05 | < 0.06 | < 0.049 | < 0.047 | < 0.54 J | NA |
| Pyrene | 0.49 | 850 | 1700 | 550 | 0.247 | < 0.017 | 0.0219 J | < 0.013 | < 0.015 | NA |
| Total TIC, Semi-Volatile | NE | NE | NS | NS | 0 | 0.86 J | 0.91 J | 0 | 0 | NA |
| Total PAHs (3) | 4 | 10000 | NS | NS | <0.155 | <0.418 | <0.327 | <0.324 | <0.2552 | 0 |
| **PCBs** | | | | | | | | | | |
| PCB 1016 | 0.007 | 53 | 0.2 | 0.2 | < 0.0076 | < 0.0092 | < 0.0074 | < 0.0071 | < 0.1 | NA |
| PCB 1221 | NE | NE | 0.2 | 0.2 | < 0.024 | < 0.029 | < 0.023 | < 0.022 | < 0.52 | NA |
| PCB 1232 | NE | NE | 0.2 | 0.2 | < 0.022 | < 0.026 | < 0.021 | < 0.02 | < 0.43 | NA |
| PCB 1242 | NE | NE | 0.2 | 0.2 | < 0.013 | < 0.015 | < 0.012 | < 0.012 | < 0.18 | NA |
| PCB 1248 | 0.03 | 150 | 0.2 | 0.2 | < 0.014 | < 0.017 | < 0.013 | < 0.013 | < 0.17 | NA |
| PCB 1254 | 0.06 | 34 | 0.2 | 0.2 | < 0.019 | < 0.023 | < 0.018 | < 0.018 | < 0.12 | NA |
| PCB 1260 | 0.005 | 24 | 0.2 | 0.2 | < 0.0081 | < 0.0098 | < 0.0079 | < 0.0075 | < 0.13 | NA |
| Total PCBs | 0.07 | 530 | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | NA |
| **Metals - Total** | | | | | | | | | | |
| Aluminum | NE | NE | 78000 | 3900 | 6210 | 14600 | 5740 | 4660 | < 23 | NA |
| Antimony | NE | 3 | 31 | 6 | < 23 J | < 10 J | < 8.8 J | 0.94 BJ | < 5 J | NA |
| Antimony - Method 6020 | NE | 3 | 31 | 6 | < 0.27 R | NA | NA | NA | NA | NA |
| Arsenic | 6 | 33 | 19 | 19 | **45 B** | < 7.7 | ***37.8*** | 4.4 | < 1.5 | NA |
| Barium | NE | NE | 16000 | 1300 | 32.1 B | 96 B | 37.3 B | 452 | < 2.3 | NA |
| Beryllium | NE | NE | 16 | 0.5 | 0.73 B | < 0.28 | 0.48 B | 0.29 B | < 0.4 | NA |
| Cadmium | 0.6 | 10 | 78 | 1 | < 4.4 | ***5.3 B*** | < 1.7 | 0.55 B | < 1.3 | NA |
| Calcium | NE | NE | NS | NS | 41100 J | 2870 BJ | 27800 J | 3690 J | 77.8 BJ | NA |
| Chromium | 26 | 110 | NS | NS | 13.7 BJ | 24.6 J | 9.7 BJ | 10 J | 0.8 B | NA |
| Cobalt | 50 | NE | 1600 | 59 | 12.4 BJ | 9.9 BJ | 10.8 BJ | 5.1 BJ | < 1.8 | NA |
| Copper | 16 | 110 | 3100 | 7300 | 28.3 B | ***30.1 B*** | ***24.2 B*** | 11.3 | < 2.7 | NA |
| Iron | NE | NE | NS | NS | 49900 | 27200 | 21500 | 11800 | < 25 | NA |
| Lead | 31 | 250 | 400 | 59 | 28.1 B | ***155*** | 17.5 B | 67.7 | < 2.8 | NA |
| Magnesium | NE | NE | NS | NS | 6650 BJ | 4560 BJ | 5980 BJ | 2360 J | < 14 | NA |
| Manganese | 630 | 1,100 | 11000 | 42 | 302 J | ***677 J*** | 397 J | 208 J | < 0.6 | NA |
| Mercury | 0.2 | 2 | 23 | 0.1 | 1.1 | 0.11 | 0.039 | 0.015 B | < 0.037 | NA |
| Nickel | 16 | 75 | 1600 | 31 | < 16 | ***23.8 B*** | 14.2 B | 8.6 | < 2.8 | NA |
| Potassium | NE | NE | NS | NS | 1280 B | 1420 B | 1860 B | 493 B | < 55 | NA |
| Selenium | NE | NE | 390 | 7 | < 24 | < 11 | < 9.1 | < 0.87 | < 6.2 | NA |
| Silver | 1 (a) | 3.7 (a) | 390 | 1 | < 4.7 | < 2.1 | < 1.8 | < 0.17 | < 1 | NA |
| Sodium | NE | NE | NS | NS | < 2400 | < 1100 | < 920 | < 88 | 1120 B | NA |
| Thallium | NE | NE | 5 | 3 | < 25 | < 11 | < 9.7 | < 0.93 | NA | NA |
| Thallium - Method 6020 | NE | NE | 5 | 3 | < 0.24 | < 0.27 | < 0.23 | NA | 0.26 B | NA |
| Vanadium | NE | NE | 78 | NS | **132 BJ** | 30.6 BJ | 60 BJ | 13.7 J | < 1.8 | NA |
| Zinc | 120 | 820 | 23000 | 600 | 34.7 BJ | ***352*** | 34.1 J | 31.6 J | 5.5 B | NA |
| **Other** | | | | | | | | | | |
| Total Petroleum Hydrocarbons (TPH) | NE | NE | NS | NS | < 30 | < 38 | < 30 | < 30 | < 0.51 | NA |
| Solids, Percent | NE | NE | NS | NS | 81.6 | 68.2 | 83.9 | 87.7 | NA | NA |

Footnotes on page 7.

**Table 2. Summary of Analytical Results, O'Connor Disposal Area Surface Soil Samples, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

Results are reported in milligrams per kilogram (mg/kg)
Field blank and trip blank results are presented in microgram per liter (ug/L).

| | |
|---|---|
| < | Not detected. |
| DUP | Sample duplicate. |
| NA | Not analyzed. |
| NS | No standard. |
| B | Inorganic B: Result is between the detection limit and quantification limit. |
| J | Estimated result. |
| R | Rejected result. |
| SVOC | Semi-volatile organic compound. |
| VOC | Volatile organic compound. |
| (1) | Lowest Effect Level (LEL) - New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations March 2009. |
| (2) | Severe Effect Level (SEL) - New Jersey Department of Environmental Protection Guidance for Sediment Quality Evaluations March 2009. |
| (3) | Detection limits of non-detected PAHs plus values of detected PAHs were summed together for coomparison to criteria value. |
| ***Italics/Bold*** | Value is above the LEL |
| | Value is above the SEL |
| (a) | Marine/estuary value |
| NE | Not established |
| **Bold** | Value is above the Residential Direct Contact Soil Cleanup Criteria threshold value. |
| | Value is above the Impact to Groundwater Soil Cleanup Criteria threshold value. |
| * | Sample was collected from a wetland area of the O'Connor Disposal Area |

**Table 3. Test Trench and Test Pit Summary, O'Connor Disposal Area, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Test Pit/Trench ID | Date Completed | Total Depth (ft) | ACOE Personel Present | H2M Personnel Present | Depth to Groundwater (ft.) | Depth to Mine Waste Rock or Tailings (ft.) | Depth to Bedrock or Refusal (ft.) | Depth to Native Soil (ft.) | Depth to Fill (ft.) | Depth to Paint Sludge (ft.) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OC-ITP-01 | 3/22/2007 | 9.5 | Y | Y | Not Observed | 4.5 | Not Observed | 7.5 | 0 | 5 | Paint sludge observed on surface (July 2006). Fill soil contains 20% debris/rubbish consisting of lumber scrap, rubber windshield gaskets, broken glass, and small metal fragments. Paint sludge chunks observed in face of east sidewall at a depth of 6 feet. Groundwater not encountered. |
| OC-ITP-02 | 3/20/2007 | 9 | Y | Y | Not Observed | 2 | Not Observed | Not Observed | Not Observed | Not Observed | No debris or rubbish, paint sludge or groundwater observed. |
| OC-ITP-03 | 3/22/2007 | 11 | Y | Y | Not Observed | 3 | Not Observed | Not Observed | 0 | Not Observed | Paint sludge observed at 2 ft below ground surface (July 2006). Fill soil contained 30% debris/rubbish consisting of broken glass and brick, plastic bits, some plastic sheeting, plastic toy fragment, metals scrap, 1-inch diameter steel cable, fragment of 1/8-inch thick steel plate. Groundwater not encountered. |
| OC-ITP-04 | 3/22/2007 | 9 | Y | Y | 5.5 | 5 | Not Observed | Not Observed | 1 | Not Observed | Fill soil composed of re-worked mine tailings contained 50%-60% debris/rubbish material consisting of lumber scrap and wood fragments, plastic sheeting and cones, plastic strapping, cardboard, small metallic scrap debris, and a large metal piece with ridged rim. "Slime" mine tailings at base of test pit. One 55 gallon drum observed (July 2006). Groundwater observed at 5 ft, entered excavation rapidly from base of fill layer |
| OC-ITP-05 | 3/22/2007 | 16.5 | Y | Y | 16 | 15 | Not Observed | Not Observed | 0 | Not Observed | Fill soil composed of silty sand in upper part and mine tailings in lower part of test pit mixed with 60% debris/rubbish consisting of plastic sheeting, plastic cones, plastic bits, extensive lumber scrap (framing lumber and planking) and wood fragments, rubber windshield gaskets, small metal debris, cardboard and paper, and carpet remnants. Lumber scrap more prevalent in lower half of test pit. Groundwater encountered at 16 feet. |
| OC-ITP-O6 | 3/22/2007 | 15 | Y | Y | 14.5 | Not Observed | Not Observed | Not Observed | 0 | Not Observed | Fill soil composed of sand sandy silt contained 60% debris/rubbish in upper 5 feet and re-worked mine tailings contained 50% debris/rubbish in lower 9 feet of test pit. Debris/rubbish consisted of lumber scrap and wood fragments, carpet remnants, cloth material, plastic sheeting, plastic cones, plastic caps, rubber windshield gaskets, styrofoam bits, blank auto warranty cards (plastic), paper and cardboard. Paint sludge observed from 4.5 to 8 ft bg (July 2006). Groundwater encountered at 14.5 ft |
| OC-ITP-07 | 3/22/2007 | 14.5 | Y | Y | 12.5 | 13 | Not Observed | Not Observed | 0 | Not Observed | Fill soil composed of sandy silt contained 50%-60% debris/rubbish consisting of lumber scrap and wood fragments, plastic sheeting, plastic cones, plastic bits, rubber gaskets, metal fragments, and some cardboard. Paint sludge observed at 5.5 - 6.4 ft bg (July 2006) and on the surface (June 2007). |
| OC-ITP-08 | 3/22/2007 | 6.5 | Y | Y | 4 | 0.5 | Not Observed | 3.5 | Not Observed | Not Observed | Some surfical metal debris observed above snow cover. Groundwater encountered at 4 feet. |

**Table 3. Test Trench and Test Pit Summary, O'Connor Disposal Area, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Test Pit/Trench ID | Date Completed | Total Depth (ft) | ACOE Personel Present | H2M Personnel Present | Depth to Groundwater (ft.) | Depth to Mine Waste Rock or Tailings (ft.) | Depth to Bedrock or Refusal (ft.) | Depth to Native Soil (ft.) | Depth to Fill (ft.) | Depth to Paint Sludge (ft.) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OC-ITP-09 | 3/22/2007 | 6.5 | Y | Y | 3 | 1.5 | Not Observed | 2.5 | 0 | Not Observed | Surface debris/rubbish present in upper 6 inches of soil consisting of tires, metal strapping and pieces, and plastic bits. A 1-foot thick layer of peat overlies a 1-foot thick layer of mine tailings. Groundwater encountered at 3 feet. |
| OC-ITP-10 | 3/21/2007 | 11.5 | Y | Y | 11 | Not Observed | Not Observed | 0 | Not Observed | Not Observed | Native soil from surface to base of test pit. Surface paint sludge observed (August 2006). Groundwater encountered at 11 feet. |
| OC-ITT-01 | 3/20/2007 | 9 | Y | Y | 7 | Not Observed | Not Observed | 2 | 0 | Not Observed | Fill soil with rubbish on east side of trench and clean fill on west side of trench. Native soil at 1.5 feet. Paint sludge observed on surface and 1 ft bg (July 2006). Groundwater encountered at 7 feet. |
| OC-ITT-01A | 3/21/2007 | 6 | Y | Y | 5.5 | Not Observed | Not Observed | 5 | 0 | 3 | Re-worked soil with debris and rubbish consisting of tires, plastic sheeting, plastic caps and a hub cap. Paint sludge observed in middle section of trench 14 feet wide and possibly 3 feet in thickness. Native soil observed beneath paint sludge along both exposed sides. Groundwater encountered at 5.5 feet in native soil at east end of trench. |
| OC-ITT-02 | 3/20/2007 | 9.5 | Y | Y | Not Observed | 2 | Not Observed | 8 | 0 | Not Observed | Fill soil composed of clayey sand overlies mine waste rock. Native soil (sand and gravel with clayey sand) observed at a depth of 8 feet. Groundwater not encountered. |
| OC-ITT-03 | 3/20/2007 | 11 | Y | Y | Not Observed | 3 & 8 | Not Observed | Not Observed | 0 | Not Observed | Fill soil 3 feet thick from surface containing debris and rubbish consisting of tires, wood fragments, plastic bags, wire and metal strapping. Thin layer of mine tailings overlies re-worked soil that is on top of a thin organic soil layer formed on top of mine tailings. Groundwater not encountered. |
| OC-ITT-04 | 3/20/2007 | 15 | Y | Y | Not Observed | 2 | Not Observed | 0 | 5.5 | Not Observed | Fill soil (sand and gravel), 2 feet thick from surface overlies 3.5 feet of mine tailings. Fill soil contains plastic sheeting, plastic caps, metal straps and wood fragments. Upper half of mine tailings has some wood fragments and small metal fragments. Groundwater not encountered. |
| OC-ITT-05 | 3/20/2007 | 16 | Y | Y | Not Observed | 3.5 | Not Observed | 15 | 0 | Not Observed | Fill soil composed of silty sands with clay mixed with re-worked mine tailings contained debris and rubbish consisting of tires, plastic sheets, strapping and bags, fiberglass insulation, plastic bits and pieces, and wood fragments. Re-worked mine tailings contained plastic sheets and straps, rubber gaskets, and lumber scrap. Groundwater not encountered. |
| OC-ITT-06 | 3/21/2007 | 9 | Y | Y | Not Observed | 4 | Not Observed | 8 | 0 | Not Observed | Trench dug into slope to Peters Mine Road and extended into flat land. Mine tailings observed from surface to native soil (clayey sand and gravel). Upper 4 feet of mine tailings re-worked and contained 25%-50% debris and rubbish consisting of tires, tires with rims, wire, crushed automobiles, wood fragments, small metallic debris. Two drums (empty) on surface (August 2006) and car body on slope (March 2007). Groundwater not encountered. |

**Table 3. Test Trench and Test Pit Summary, O'Connor Disposal Area, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Test Pit/Trench ID | Date Completed | Total Depth (ft) | ACOE Personel Present | H2M Personnel Present | Depth to Groundwater (ft.) | Depth to Mine Waste Rock or Tailings (ft.) | Depth to Bedrock or Refusal (ft.) | Depth to Native Soil (ft.) | Depth to Fill (ft.) | Depth to Paint Sludge (ft.) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0C-ITT-07 | 3/21/2007 | 7 | Y | Y | 4 | 0.5 | Not Observed | Not Observed | 0 | Not Observed | Traces of debris and rubbish from surface to 1 foot consisting of wood fragments, automobile pieces in berm at north end. Mine tailings observed to a depth of 6 feet where native soil (silty gravel) encountered. Paint sludge observed at 2.1-3.5 ft (August 2006) and on the surface (June 2007). Groundwater encountered at 4 feet. |
| OC-ITT-08 | 3/21/2007 | 7 | Y | Y | 3.5 | 0.5 | Not Observed | Not Observed | Not Observed | Not Observed | Clean mine tailings to a depth of 7 feet. Thin organic soil layer formed on top of mine tailings. Some traces of surface trash litter. Strong flow of groundwater caused continual caving trench sidewalls. Groundwater encountered at 3.5 feet. |
| OC-ITT-09 | 3/21/2007 | 3.5 | Y | Y | 3.5 | 0.5 | Not Observed | 2 | Not Observed | Not Observed | Thin organic soil on surface with traces of trash/litter. Mine tailings, 1.5 feet thick, overlied native soil (silty sand with gravel and cobbles). Groundwater encountered at 3.5 feet. |
| OC-ITT-10 | 3/21/2007 | 6.5 | Y | Y | 5 | Not Observed | Not Observed | 0 | Not Observed | Not Observed | Organic soil with trace surface trash/litter overlies 6-inch thick peat layer. Native soil (clayey gravel) encountered at 1.5 feet and observed to base of trench. Groundwater encountered at 5 feet. |
| OC-ITT-11 | 3/21/2007 | 7.5 | Y | Y | Not Observed | 3 | Not Observed | 3.5 | 0 | Not Observed | Fill soil composed of re-worked organic silt with mine tailings contained 25%-50% debris and rubbish consisting of wire, metal fragments, plastic sheeting, tires, cloth pieces. Overlies thin layer of clean mine tailings. Native soil (clayey sand and gravel) encountered at 3.5 feet. Paint sludge chunks observed on surface (June 2007). Groundwater not encountered. |
| OC-ITT-12 | 3/21/2007 | 12 | Y | Y | 11 | 0.5 | Not Observed | 9.5 | 0 | Not Observed | Clean mine tailings from surface to 9.5 feet. Native soil (silt-clay and clayey sand below mine tailings. Groundwater encountered at a depth of 11 feet. |
| OC-ITT-13 | 3/21/2007 | 14.5 | Y | Y | 10.5 | 0.5 | Not Observed | Not Observed | Not Observed | Not Observed | Clean mine tailings from surface. "Slime" tailings encountered at a depth of 6.5 feet. Groundwater encountered at a depth of 10.5 feet. |
| OC-ITT-14 | 3/21/2007 | 7 | Y | Y | Not Observed | Not Observed | Not Observed | 4 | 0 | 2 | Fill soil (organic silt and silty sand with gravel) contained many tires, wood fragments, metal fragments, and pieces of rope. A paint sludge chunk was observed in the north sidewall about 6' from west end of trench. Groundwater not encountered. |

Notes:
ACOE and H2M personnel were notified of the performance of all test pits/trenches.
Observations of surface condition were obscured during the March event because of 4 to 6 inches of snow cover on the ground.
Soil samples were collected from the base of each excavation during the July/August event.
Depth to soil shows the depth where native soil that pre-dates mine waste disposal was encountered. Recent peat and surface organic soil, although native, were not used for this column.
Comments regarding the makeup of fill/soil within the test pit or test trench is a composite of observations made during preliminary test pit/test trench excavation during July 2006
and those made during subsequent efforts to re-excavate these test pits and test trenches during March 2007

**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Pits | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITP-01A | OC-ITP-01B | OC-ITP-02 | OC-ITP-03A | OC-ITP-03B | OC-TP-04 | OC-ITP-05 | OC-ITP-06A | OC-ITP-06B | OC-ITP-07 | OC-ITP-08 | OC-ITP-09 | OC-ITP-10 |
| Sample Date | Soil Remediation | Soil Screening | 7/19/2006 | 7/19/2006 | 7/18/2006 | 7/19/2006 | 7/19/2006 | 7/24/2006 | 7/20/2006 | 7/21/2006 | 7/21/2006 | 7/18/2006 | 7/26/2006 | 8/17/2006 | 8/17/2006 |
| Sample Depth | | | 4.5-5.0' | 9.5-10.0' | 7.0-7.5' | 4.0-5.0' | 10.0-10.5' | 4.0-4.5' | 14.5-15.0' | 4.0-4.5' | 14.5-15.0' | 11.5-12.0' | 5.5-6.0' | 8.5-9.0' | 9.5-10.0' |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.0005 | < 0.00052 | < 0.00064 | < 0.00056 | < 0.00051 | < 0.00064 | < 0.00076 | < 0.00062 | < 0.00054 | < 0.0007 | < 0.00053 | < 0.00058 | < 0.00052 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00049 | < 0.0005 | < 0.00063 | < 0.00054 | < 0.0005 | < 0.00062 | < 0.00074 | < 0.0006 | < 0.00053 | < 0.00068 | < 0.00052 | < 0.00056 | < 0.0005 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00045 | < 0.00047 | < 0.00058 | < 0.0005 | < 0.00046 | < 0.00058 | < 0.00069 | < 0.00056 | < 0.00049 | < 0.00064 | < 0.00048 | < 0.00052 | < 0.00047 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.0004 | < 0.00042 | < 0.00052 | < 0.00045 | < 0.00041 | < 0.00052 | < 0.00062 | < 0.0005 | < 0.00044 | < 0.00057 | < 0.00043 | < 0.00047 | < 0.00042 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00058 | < 0.0006 | < 0.00075 | < 0.00064 | < 0.00059 | < 0.00074 | < 0.00089 | < 0.00072 | < 0.00063 | < 0.00081 | < 0.00062 | < 0.00067 | < 0.0006 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.0003 | < 0.00031 | < 0.00038 | < 0.00033 | < 0.0003 | < 0.00038 | < 0.00045 | < 0.00037 | < 0.00032 | < 0.00042 | < 0.00032 | < 0.00034 | < 0.0003 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.0018 | < 0.0019 | < 0.0023 | < 0.002 | < 0.0019 | < 0.0023 | < 0.0028 | < 0.0022 | < 0.002 | < 0.0025 | < 0.0019 | < 0.0021 | < 0.0019 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00048 | < 0.00049 | < 0.00062 | < 0.00053 | < 0.00049 | < 0.00061 | < 0.00073 | < 0.00059 | < 0.00052 | < 0.00067 | < 0.00051 | < 0.00055 | < 0.00049 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00038 | < 0.0004 | < 0.0005 | < 0.00043 | < 0.00039 | < 0.00049 | < 0.00059 | < 0.00047 | < 0.00042 | < 0.00054 | < 0.00041 | < 0.00045 | < 0.0004 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.00046 | < 0.00048 | < 0.00059 | < 0.00051 | < 0.00047 | < 0.00059 | < 0.0007 | < 0.00057 | < 0.0005 | < 0.00064 | < 0.00049 | < 0.00053 | < 0.00047 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.00047 | < 0.00049 | < 0.0006 | < 0.00052 | < 0.00048 | < 0.0006 | < 0.00072 | < 0.00058 | < 0.00051 | < 0.00066 | < 0.0005 | < 0.00054 | < 0.00048 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00041 | < 0.00043 | < 0.00053 | < 0.00046 | < 0.00042 | < 0.00053 | < 0.00063 | < 0.00051 | < 0.00045 | < 0.00058 | < 0.00044 | < 0.00048 | < 0.00043 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.00039 | < 0.0004 | < 0.0005 | < 0.00043 | < 0.0004 | < 0.0005 | < 0.00059 | < 0.00048 | < 0.00042 | < 0.00055 | < 0.00042 | < 0.00045 | < 0.0004 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.0023 | < 0.0024 | < 0.003 | < 0.0026 | < 0.0024 | < 0.0029 | < 0.0035 | < 0.0028 | < 0.0025 | < 0.0032 | < 0.0025 | < 0.0027 | < 0.0024 |
| 2-Hexanone | NS | NS | < 0.0011 | < 0.0012 | < 0.0015 | < 0.0013 | < 0.0012 | < 0.0015 | < 0.0018 | < 0.0014 | < 0.0012 | < 0.0016 | < 0.0012 | < 0.0013 | < 0.0012 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.0017 | < 0.0017 | < 0.0022 | < 0.0019 | < 0.0017 | < 0.0021 | < 0.0026 | < 0.0021 | < 0.0018 | < 0.0024 | < 0.0018 | < 0.0019 | < 0.0017 |
| Acetone | 70000 | 12 | < 0.0024 | 0.0094 | 0.0097 J | < 0.0027 | < 0.0025 | 0.0268 | < 0.0037 | 0.0321 | 0.0058 J | < 0.0034 | < 0.0026 | < 0.0028 | < 0.0025 |
| Benzene | 2 | 0.005 | < 0.0004 | < 0.00042 | < 0.00052 | < 0.00045 | < 0.00041 | < 0.00052 | < 0.00062 | < 0.0005 | < 0.00044 | < 0.00057 | < 0.00043 | < 0.00047 | < 0.00042 |
| Bromodichloromethane | 1 | 0.005 | < 0.00039 | < 0.0004 | < 0.0005 | < 0.00043 | < 0.00039 | < 0.00049 | < 0.00059 | < 0.00048 | < 0.00042 | < 0.00054 | < 0.00041 | < 0.00045 | < 0.0004 |
| Bromoform | 81 | 0.02 | < 0.00037 | < 0.00038 | < 0.00047 | < 0.00041 | < 0.00038 | < 0.00047 | < 0.00056 | < 0.00045 | < 0.0004 | < 0.00051 | < 0.00039 | < 0.00042 | < 0.00038 |
| Bromomethane | 25 | 0.03 | < 0.00031 | < 0.00032 | < 0.0004 | < 0.00035 | < 0.00032 | < 0.0004 | < 0.00048 | < 0.00038 | < 0.00034 | < 0.00044 | < 0.00033 | < 0.00036 | < 0.00032 |
| Carbon disulfide | 7800 | 4 | < 0.00047 | < 0.00048 | < 0.0006 | < 0.00052 | < 0.00048 | < 0.0006 | < 0.00071 | 0.00084 J | < 0.00051 | < 0.00065 | < 0.0005 | < 0.00054 | < 0.00048 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.0008 | < 0.00083 | < 0.001 | < 0.00089 | < 0.00082 | < 0.001 | < 0.0012 | < 0.00099 | < 0.00087 | < 0.0011 | < 0.00086 | < 0.00093 | < 0.00083 |
| Chlorobenzene | 510 | 0.4 | < 0.00037 | < 0.00038 | < 0.00047 | < 0.00041 | < 0.00037 | < 0.00047 | < 0.00056 | < 0.00045 | < 0.0004 | < 0.00051 | < 0.00039 | < 0.00042 | < 0.00038 |
| Chloroethane | 220 | NS | < 0.0015 | < 0.0015 | < 0.0019 | < 0.0016 | < 0.0015 | < 0.0019 | < 0.0022 | < 0.0018 | < 0.0016 | < 0.0021 | < 0.0016 | < 0.0017 | < 0.0015 |
| Chloroform | 0.6 | 0.2 | < 0.00049 | < 0.00051 | < 0.00063 | < 0.00055 | < 0.0005 | < 0.00063 | < 0.00075 | < 0.00061 | < 0.00053 | < 0.00069 | < 0.00053 | < 0.00057 | < 0.00051 |
| Chloromethane | 4 | NS | < 0.00039 | < 0.0004 | < 0.0005 | < 0.00043 | < 0.0004 | < 0.0005 | < 0.0006 | < 0.00048 | < 0.00042 | < 0.00055 | < 0.00042 | < 0.00045 | < 0.0004 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00057 | < 0.00059 | < 0.00073 | < 0.00063 | < 0.00058 | < 0.00072 | < 0.00087 | < 0.0007 | < 0.00061 | < 0.0008 | < 0.00061 | < 0.00066 | < 0.00058 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00035 | < 0.00036 | < 0.00045 | < 0.00039 | < 0.00036 | < 0.00045 | < 0.00053 | < 0.00043 | < 0.00038 | < 0.00049 | < 0.00037 | < 0.00041 | < 0.00036 |
| Cyclohexane | NS | NS | < 0.0011 | < 0.0011 | < 0.0014 | < 0.0012 | < 0.0011 | < 0.0014 | < 0.0017 | < 0.0013 | < 0.0012 | < 0.0015 | < 0.0012 | < 0.0013 | < 0.0011 |
| Dibromochloromethane | 3 | 0.005 | < 0.00046 | < 0.00048 | < 0.0006 | < 0.00051 | < 0.00047 | < 0.00059 | < 0.00071 | < 0.00057 | < 0.0005 | < 0.00065 | < 0.0005 | < 0.00054 | < 0.00048 |
| Dichlorodifluoromethane | 490 | 25 | < 0.00067 | < 0.0007 | < 0.00086 | < 0.00074 | < 0.00069 | < 0.00086 | < 0.001 | < 0.00083 | < 0.00073 | < 0.00094 | < 0.00072 | < 0.00078 | < 0.00069 |
| Ethylbenzene | 7800 | 8 | < 0.00038 | < 0.00039 | < 0.00049 | < 0.00042 | < 0.00039 | < 0.00049 | < 0.00058 | 0.135 D | < 0.00041 | < 0.00053 | < 0.00041 | < 0.00044 | < 0.00039 |
| Freon 113 | NS | NS | < 0.00072 | < 0.00075 | < 0.00093 | < 0.0008 | < 0.00074 | < 0.00092 | < 0.0011 | < 0.00089 | < 0.00078 | < 0.001 | < 0.00077 | 0.0026 J | 0.0026 J |
| Isopropylbenzene | NS | NS | < 0.00039 | < 0.00041 | < 0.00051 | < 0.00044 | < 0.0004 | < 0.0005 | < 0.0006 | 0.125 | < 0.00043 | < 0.00055 | < 0.00042 | < 0.00046 | < 0.00041 |
| Methyl acetate | 78000 | 14 | < 0.0012 | < 0.0012 | < 0.0015 | < 0.0013 | < 0.0012 | < 0.0015 | < 0.0018 | < 0.0015 | < 0.0013 | < 0.0017 | < 0.0013 | < 0.0014 | < 0.0012 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.00047 | < 0.00049 | < 0.00061 | < 0.00052 | < 0.00048 | < 0.0006 | < 0.00072 | < 0.00058 | < 0.00051 | < 0.00066 | < 0.0005 | < 0.00055 | < 0.00049 |
| Methylcyclohexane | NS | NS | < 0.00054 | < 0.00056 | < 0.0007 | < 0.0006 | < 0.00056 | < 0.0007 | < 0.00083 | 0.0036 J | < 0.00059 | < 0.00076 | < 0.00058 | < 0.00063 | < 0.00056 |
| Methylene chloride | 34 | 0.007 | < 0.00058 | < 0.00061 | 0.00098 J | < 0.00065 | < 0.0006 | < 0.00075 | < 0.00089 | 0.00096 J | < 0.00063 | 0.0027 J | 0.0038 J | < 0.00068 | 0.0025 J |
| o-Xylene | NS | NS | < 0.00042 | < 0.00043 | < 0.00054 | < 0.00046 | < 0.00043 | < 0.00053 | < 0.00064 | 0.0905 | < 0.00045 | < 0.00058 | < 0.00045 | < 0.00048 | < 0.00043 |
| Styrene | 90 | 2 | < 0.00028 | < 0.00029 | < 0.00036 | < 0.00031 | < 0.00028 | < 0.00035 | < 0.00042 | < 0.00034 | < 0.0003 | < 0.00039 | < 0.0003 | < 0.00032 | < 0.00028 |
| Tetrachloroethene | 2 | 0.005 | < 0.0007 | < 0.00072 | < 0.0009 | < 0.00077 | < 0.00071 | < 0.00089 | < 0.0011 | < 0.00086 | < 0.00075 | < 0.00098 | < 0.00074 | < 0.00081 | < 0.00072 |
| Toluene | 6300 | 4 | < 0.00046 | < 0.00047 | < 0.00059 | < 0.00051 | < 0.00047 | < 0.00059 | < 0.0007 | 0.0019 | < 0.0005 | < 0.00064 | < 0.00049 | < 0.00053 | < 0.00047 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.00058 | < 0.0006 | < 0.00074 | < 0.00064 | < 0.00059 | < 0.00074 | < 0.00088 | < 0.00071 | < 0.00063 | < 0.00081 | < 0.00062 | < 0.00067 | < 0.0006 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.00033 | < 0.00034 | < 0.00043 | < 0.00037 | < 0.00034 | < 0.00042 | < 0.00051 | < 0.00041 | < 0.00036 | < 0.00046 | < 0.00035 | < 0.00038 | < 0.00034 |
| Trichloroethene | 7 | 0.007 | < 0.00044 | < 0.00046 | < 0.00057 | < 0.00049 | < 0.00045 | < 0.00056 | < 0.00067 | < 0.00054 | < 0.00048 | < 0.00062 | < 0.00047 | < 0.00051 | < 0.00045 |
| Trichlorofluoromethane | 23000 | 22 | < 0.00062 | < 0.00064 | < 0.00079 | < 0.00068 | < 0.00063 | < 0.00079 | < 0.00094 | < 0.00076 | < 0.00067 | < 0.00086 | < 0.00066 | < 0.00071 | < 0.00063 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.00055 | < 0.00057 | < 0.0007 | < 0.00061 | < 0.00056 | < 0.0007 | < 0.00083 | < 0.00067 | < 0.00059 | < 0.00077 | < 0.00058 | < 0.00063 | < 0.00056 |
| Xylene, -m,p | NS | NS | < 0.00074 | < 0.00077 | < 0.00096 | < 0.00082 | < 0.00076 | < 0.00095 | < 0.0011 | 1.57 D | < 0.0008 | < 0.001 | < 0.00079 | < 0.00086 | < 0.00076 |
| Xylenes | 12000 | 12 | < 0.00042 | < 0.00043 | < 0.00054 | < 0.00046 | < 0.00043 | < 0.00053 | < 0.00064 | 1.66 D | < 0.00045 | < 0.00058 | < 0.00045 | < 0.00048 | < 0.00043 |
| Total TIC, Volatile | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13.38 J | 0 | 0 | 0 | 0 | 0.0049 J |

Footnotes on Page 19.

**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Pits | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITP-01A | OC-ITP-01B | OC-ITP-02 | OC-ITP-03A | OC-ITP-03B | OC-TP-04 | OC-ITP-05 | OC-ITP-06A | OC-ITP-06B | OC-ITP-07 | OC-ITP-08 | OC-ITP-09 | OC-ITP-10 |
| Sample Date | Soil Remediation | Soil Screening | 7/19/2006 | 7/19/2006 | 7/18/2006 | 7/19/2006 | 7/19/2006 | 7/24/2006 | 7/20/2006 | 7/21/2006 | 7/21/2006 | 7/18/2006 | 7/26/2006 | 8/17/2006 | 8/17/2006 |
| Sample Depth | | | 4.5-5.0' | 9.5-10.0' | 7.0-7.5' | 4.0-5.0' | 10.0-10.5' | 4.0-4.5' | 14.5-15.0' | 4.0-4.5' | 14.5-15.0' | 11.5-12.0' | 5.5-6.0' | 8.5-9.0' | 9.5-10.0' |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | 0.0182 J | < 0.019 | < 0.018 | < 0.017 | < 0.018 | < 0.019 | < 0.019 | 0.052 J | < 0.019 | < 0.024 | < 0.018 | < 0.02 | < 0.019 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.056 | < 0.058 | < 0.054 | < 0.054 | < 0.056 | < 0.059 | < 0.061 | < 0.064 | < 0.06 | < 0.073 | < 0.056 | < 0.062 | < 0.059 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.031 | < 0.033 | < 0.031 | < 0.03 | < 0.031 | < 0.033 | < 0.034 | < 0.036 | < 0.033 | < 0.041 | < 0.031 | < 0.035 | < 0.033 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.062 | < 0.065 | < 0.061 | < 0.06 | < 0.063 | < 0.065 | < 0.068 | < 0.072 | < 0.066 | < 0.082 | < 0.062 | < 0.07 | < 0.066 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.095 | < 0.1 | < 0.093 | < 0.093 | < 0.096 | < 0.1 | < 0.1 | < 0.11 | < 0.1 | < 0.13 | < 0.095 | < 0.11 | < 0.1 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.056 | < 0.059 | < 0.055 | < 0.055 | < 0.057 | < 0.06 | < 0.061 | < 0.065 | < 0.06 | < 0.074 | < 0.056 | < 0.063 | < 0.06 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.043 | < 0.045 | < 0.042 | < 0.042 | < 0.043 | < 0.045 | < 0.047 | < 0.05 | < 0.046 | < 0.057 | < 0.043 | < 0.048 | < 0.046 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.042 | < 0.044 | < 0.041 | < 0.041 | < 0.043 | < 0.045 | < 0.046 | < 0.049 | < 0.045 | < 0.056 | < 0.042 | < 0.047 | < 0.045 |
| 2-Chloronaphthalene | NS | NS | < 0.052 | < 0.055 | < 0.051 | < 0.051 | < 0.052 | < 0.055 | < 0.057 | < 0.06 | < 0.056 | < 0.068 | < 0.052 | < 0.058 | < 0.055 |
| 2-Chlorophenol | 310 | 0.5 | < 0.032 | < 0.033 | < 0.031 | < 0.031 | < 0.032 | < 0.034 | < 0.035 | < 0.037 | < 0.034 | < 0.042 | < 0.032 | < 0.036 | < 0.034 |
| 2-Methylnaphthalene | 230 | 5 | 0.0575 J | < 0.025 | < 0.024 | < 0.024 | < 0.024 | < 0.026 | < 0.026 | 0.171 | 0.0321 J | < 0.032 | < 0.024 | < 0.027 | < 0.026 |
| 2-Methylphenol | 310 | NS | < 0.036 | < 0.038 | < 0.036 | < 0.035 | < 0.037 | < 0.038 | < 0.04 | < 0.042 | < 0.039 | < 0.048 | < 0.036 | < 0.041 | < 0.039 |
| 2-Nitroaniline | 39 | NS | < 0.023 | < 0.025 | < 0.023 | < 0.023 | < 0.024 | < 0.025 | < 0.026 | < 0.027 | < 0.025 | < 0.031 | < 0.023 | < 0.026 | < 0.025 |
| 2-Nitrophenol | NS | NS | < 0.046 | < 0.048 | < 0.045 | < 0.045 | < 0.046 | < 0.049 | < 0.05 | < 0.053 | < 0.049 | < 0.061 | < 0.046 | < 0.052 | < 0.049 |
| 3&4-Methylphenol | NS | NS | < 0.053 | < 0.056 | < 0.052 | < 0.052 | < 0.054 | < 0.056 | < 0.058 | < 0.061 | < 0.057 | < 0.07 | < 0.053 | < 0.06 | < 0.056 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.035 | < 0.037 | < 0.035 | < 0.034 | < 0.036 | < 0.037 | < 0.039 | < 0.041 | < 0.038 | < 0.047 | < 0.035 | < 0.04 | < 0.038 |
| 3-Nitroaniline | NS | NS | < 0.029 | < 0.03 | < 0.028 | < 0.028 | < 0.029 | < 0.03 | < 0.031 | < 0.033 | < 0.031 | < 0.038 | < 0.029 | < 0.032 | < 0.031 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.032 | < 0.034 | < 0.032 | < 0.031 | < 0.033 | < 0.034 | < 0.035 | < 0.037 | < 0.035 | < 0.043 | < 0.032 | < 0.036 | < 0.034 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.019 | < 0.02 | < 0.018 | < 0.018 | < 0.019 | < 0.02 | < 0.021 | < 0.022 | < 0.02 | < 0.025 | < 0.019 | < 0.021 | < 0.02 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.047 | < 0.05 | < 0.046 | < 0.046 | < 0.048 | < 0.05 | < 0.051 | < 0.054 | < 0.051 | < 0.062 | < 0.047 | < 0.053 | < 0.05 |
| 4-Chloroaniline | NS | NS | < 0.023 | < 0.024 | < 0.023 | < 0.022 | < 0.023 | < 0.024 | < 0.025 | < 0.027 | < 0.025 | < 0.03 | < 0.023 | < 0.026 | < 0.024 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.017 | < 0.018 | < 0.017 | < 0.017 | < 0.018 | < 0.018 | < 0.019 | < 0.02 | < 0.019 | < 0.023 | < 0.017 | < 0.02 | < 0.019 |
| 4-Nitroaniline | NS | NS | < 0.026 | < 0.027 | < 0.025 | < 0.025 | < 0.026 | < 0.027 | < 0.028 | < 0.03 | < 0.027 | < 0.034 | < 0.026 | < 0.029 | < 0.027 |
| 4-Nitrophenol | NS | NS | < 0.05 | < 0.053 | < 0.049 | < 0.049 | < 0.051 | < 0.053 | < 0.055 | < 0.058 | < 0.054 | < 0.066 | < 0.05 | < 0.057 | < 0.054 |
| Acenaphthene | 3400 | 74 | 0.198 | < 0.02 | < 0.019 | < 0.018 | < 0.019 | < 0.02 | < 0.021 | 0.339 | 0.3 | < 0.025 | < 0.019 | < 0.021 | < 0.02 |
| Acenaphthylene | NS | NS | 0.253 | < 0.016 | < 0.015 | < 0.015 | < 0.015 | < 0.016 | < 0.016 | < 0.017 | < 0.016 | < 0.02 | < 0.015 | < 0.017 | < 0.016 |
| Acetophenone | 2 | 2 | < 0.023 | < 0.025 | < 0.023 | < 0.023 | < 0.024 | < 0.025 | < 0.026 | < 0.027 | < 0.025 | < 0.031 | < 0.023 | < 0.026 | < 0.025 |
| Anthracene | 17000 | 1500 | 0.652 | < 0.015 | < 0.014 | < 0.014 | < 0.014 | 0.0168 J | 0.0387 J | 0.34 | 0.774 | 0.0412 J | < 0.014 | < 0.016 | < 0.015 |
| Atrazine | 210 | 0.2 | < 0.032 | < 0.034 | < 0.031 | < 0.031 | < 0.032 | < 0.034 | < 0.035 | < 0.037 | < 0.034 | < 0.042 | < 0.032 | < 0.036 | < 0.034 |
| Benzaldehyde | 6100 | NS | < 0.041 | < 0.043 | < 0.04 | < 0.04 | < 0.041 | < 0.043 | < 0.044 | < 0.047 | < 0.044 | < 0.054 | < 0.041 | < 0.046 | < 0.043 |
| Benzo(a)anthracene | 0.6 | 0.5 | **1.27** | 0.023 J | < 0.018 | < 0.017 | < 0.018 | 0.0675 J | 0.0893 | 0.407 | 0.193 | 0.132 | < 0.018 | 0.0324 J | < 0.019 |
| Benzo(a)pyrene | 0.2 | 0.2 | **1.18 J** | 0.0173 J | < 0.013 | < 0.013 J | < 0.013 | 0.0754 J | 0.0768 J | **0.315** | 0.0888 | 0.152 | < 0.013 | 0.0325 J | < 0.014 |
| Benzo(b)fluoranthene | 0.6 | 2 | **1.25 J** | < 0.018 | < 0.017 | < 0.016 J | < 0.017 | 0.1 | 0.127 | 0.377 | 0.0679 J | 0.172 | < 0.017 | 0.0403 J | < 0.018 |
| Benzo(g,h,i)perylene | 380000 | NS | 0.522 J | < 0.021 | < 0.02 | < 0.02 J | < 0.02 | 0.0861 | 0.0607 J | 0.176 | 0.0393 J | 0.104 | < 0.02 J | 0.0243 J | < 0.022 |
| Benzo(k)fluoranthene | 6 | 16 | 1.29 J | < 0.029 | < 0.027 | < 0.027 J | < 0.028 | 0.0491 J | 0.0526 J | 0.134 | 0.0851 | 0.0914 J | < 0.028 | 0.0353 J | < 0.03 |
| Benzyl butyl phthalate | 1200 | 150 | < 0.028 | < 0.029 | < 0.027 | < 0.027 | < 0.028 | < 0.03 | 0.133 | < 0.032 | < 0.03 | 0.195 | < 0.028 | < 0.031 | < 0.03 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.024 | < 0.025 | < 0.023 | < 0.023 | < 0.024 | < 0.025 | < 0.026 | < 0.028 | < 0.026 | < 0.031 | < 0.024 | < 0.027 | < 0.025 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.018 | < 0.019 | < 0.018 | < 0.018 | < 0.019 | < 0.02 | < 0.02 | < 0.021 | < 0.02 | < 0.024 | < 0.018 | < 0.021 | < 0.02 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.028 | < 0.029 | < 0.027 | < 0.027 | < 0.028 | < 0.029 | < 0.03 | < 0.032 | < 0.03 | < 0.037 | < 0.028 | < 0.031 | < 0.03 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | 0.195 | < 0.05 | < 0.046 | 0.221 | < 0.048 | 0.297 | 0.894 | 5.3 D | 0.319 | 8.83 D | < 0.047 | < 0.053 | < 0.051 |
| Caprolactam | 31000 | 8 | < 0.036 | < 0.038 | < 0.035 | < 0.035 | < 0.036 | < 0.038 | < 0.039 | < 0.041 | < 0.038 | < 0.047 | < 0.036 | < 0.04 | < 0.038 |
| Carbazole | 24 | NS | 0.356 | < 0.016 | < 0.015 | < 0.015 | < 0.015 | < 0.016 | < 0.016 | 0.103 | 0.489 | < 0.02 | < 0.015 | < 0.017 | < 0.016 |
| Chyrsene | 62 | 52 | 1.34 | 0.0219 J | 0.0181 J | 0.0237 J | < 0.014 | 0.0789 | 0.117 | 0.41 | 0.172 | 0.19 | < 0.014 | 0.0465 J | < 0.015 |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | 0.117 J | < 0.02 | < 0.019 | < 0.019 J | < 0.02 | < 0.021 | 0.022 J | 0.0463 J | < 0.021 | 0.029 J | < 0.019 J | < 0.022 | < 0.021 |
| Dibenzofuran | NS | NS | 0.157 | < 0.018 | < 0.017 | < 0.017 | < 0.017 | < 0.018 | 0.0208 J | 0.175 | 0.28 | < 0.023 | < 0.017 | < 0.019 | < 0.018 |
| Diethyl phthalate | 49000 | 57 | < 0.016 | < 0.017 | < 0.016 | < 0.015 | < 0.016 | < 0.017 | < 0.017 | < 0.018 | < 0.017 | < 0.021 | < 0.016 | < 0.018 | < 0.017 |
| Dimethyl phthalate | NS | NS | 0.0498 J | < 0.017 | < 0.016 | < 0.016 | < 0.016 | < 0.017 | < 0.017 | < 0.018 | < 0.017 | < 0.021 | < 0.016 | < 0.018 | < 0.017 |
| di-n-butyl phthalate | 6100 | 620 | < 0.024 | < 0.025 | < 0.023 | < 0.023 | < 0.024 | < 0.025 | < 0.026 | 0.0595 J | < 0.025 | 0.0928 J | < 0.024 | < 0.026 | < 0.025 |
| di-n-octylphthalate | 2400 | 3300 | < 0.032 J | < 0.033 | < 0.031 | < 0.031 J | < 0.032 | < 0.034 | < 0.035 | < 0.037 | < 0.034 | < 0.042 | < 0.032 | < 0.036 | < 0.034 |
| Fluoranthene | 2300 | 840 | 2.55 | 0.039 J | 0.0148 J | 0.0157 J | < 0.013 | 0.122 | 0.228 | 1.22 | 1.47 | 0.203 | < 0.013 | 0.087 | < 0.014 |
| Fluorene | 2300 | 110 | 0.28 | < 0.016 | < 0.015 | < 0.014 | < 0.015 | < 0.016 | 0.0437 J | 0.307 | 0.464 | < 0.02 | < 0.015 | < 0.017 | < 0.016 |

Footnotes on Page 19.

**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Pits | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITP-01A | OC-ITP-01B | OC-ITP-02 | OC-ITP-03A | OC-ITP-03B | OC-TP-04 | OC-ITP-05 | OC-ITP-06A | OC-ITP-06B | OC-ITP-07 | OC-ITP-08 | OC-ITP-09 | OC-ITP-10 |
| Sample Date | Soil Remediation | Soil Screening | 7/19/2006 | 7/19/2006 | 7/18/2006 | 7/19/2006 | 7/19/2006 | 7/24/2006 | 7/20/2006 | 7/21/2006 | 7/21/2006 | 7/18/2006 | 7/26/2006 | 8/17/2006 | 8/17/2006 |
| Sample Depth | | | 4.5-5.0' | 9.5-10.0' | 7.0-7.5' | 4.0-5.0' | 10.0-10.5' | 4.0-4.5' | 14.5-15.0' | 4.0-4.5' | 14.5-15.0' | 11.5-12.0' | 5.5-6.0' | 8.5-9.0' | 9.5-10.0' |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.021 | < 0.022 | < 0.021 | < 0.021 | < 0.022 | < 0.023 | < 0.023 | < 0.025 | < 0.023 | < 0.028 | < 0.021 | < 0.024 | < 0.023 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.024 | < 0.026 | < 0.024 | < 0.024 | < 0.025 | < 0.026 | < 0.027 | < 0.028 | < 0.026 | < 0.032 | < 0.024 | < 0.027 | < 0.026 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.027 | < 0.028 | < 0.026 | < 0.026 | < 0.027 | < 0.028 | < 0.029 | < 0.031 | < 0.029 | < 0.035 | < 0.027 | < 0.03 | < 0.028 |
| Hexachloroethane | 35 | 0.2 | < 0.019 | < 0.019 | < 0.018 | < 0.018 | < 0.019 | < 0.02 | < 0.02 | < 0.021 | < 0.02 | < 0.024 | < 0.019 | < 0.021 | < 0.02 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | 0.54 J | < 0.025 | < 0.023 | < 0.023 J | < 0.024 | 0.0609 J | 0.0465 J | 0.148 | 0.0453 J | 0.0795 J | < 0.024 J | < 0.026 | < 0.025 |
| Isophrone | 510 | 0.2 | < 0.018 | < 0.019 | < 0.018 | < 0.018 | < 0.019 | < 0.019 | < 0.02 | < 0.021 | < 0.02 | < 0.024 | < 0.018 | < 0.021 | < 0.02 |
| Naphthalene | 6 | 16 | 0.0593 J | < 0.022 | < 0.02 | < 0.02 | < 0.021 | < 0.022 | < 0.023 | 0.586 | < 0.022 | < 0.028 | < 0.021 | < 0.023 | < 0.022 |
| Nitrobenzene | 31 | 0.2 | < 0.026 | < 0.027 | < 0.025 | < 0.025 | < 0.026 | < 0.027 | < 0.028 | < 0.03 | < 0.028 | < 0.034 | < 0.026 | < 0.029 | < 0.028 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.024 | < 0.025 | < 0.023 | < 0.023 | < 0.024 | < 0.025 | < 0.026 | < 0.028 | < 0.026 | < 0.031 | < 0.024 | < 0.027 | < 0.025 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.015 | < 0.016 | < 0.015 | < 0.015 | < 0.015 | < 0.016 | < 0.017 | < 0.018 | < 0.016 | < 0.02 | < 0.015 | < 0.017 | < 0.016 |
| Pentachlorophenol | 3 | 0.3 | < 0.042 | < 0.044 | < 0.041 | < 0.04 | < 0.042 | < 0.044 | < 0.045 | < 0.048 | < 0.045 | < 0.055 | < 0.042 | < 0.047 | < 0.044 |
| Phenanthrene | NS | NS | 2.8 | < 0.017 | < 0.016 | < 0.016 | < 0.016 | 0.0519 J | 0.179 | 1.44 | 3.48 | 0.125 | < 0.016 | 0.0692 J | < 0.017 |
| Phenol | 18000 | 5 | < 0.046 | < 0.048 | < 0.045 | < 0.045 | < 0.046 | < 0.049 | < 0.05 | < 0.053 | < 0.049 | < 0.061 | < 0.046 | < 0.052 | < 0.049 |
| Pyrene | 1700 | 550 | 3.45 D | 0.0365 J | 0.0159 J | 0.0318 J | < 0.013 | 0.11 | 0.201 | 0.996 | 1.11 | 0.229 | < 0.013 | 0.0654 J | < 0.014 |
| Total TIC, Semi-Volatile | NS | NS | 12.19 J | 1.15 J | 1.22 J | 3.3 J | 0 | 6.4 J | 3.62 J | 329.3 J | 7.17 J | 23.75 J | 0 | 0 | 4.9 J |
| **PCBs** | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.007 | < 0.0074 | < 0.0068 | < 0.0069 | < 0.0071 | < 0.0075 | < 0.0077 | < 0.0081 | < 0.0076 | < 0.0093 | < 0.007 | < 0.0077 | < 0.0075 |
| PCB 1221 | 0.2 | 0.2 | < 0.022 | < 0.023 | < 0.022 | < 0.022 | < 0.023 | < 0.024 | < 0.024 | < 0.026 | < 0.024 | < 0.029 | < 0.022 | < 0.024 | < 0.024 |
| PCB 1232 | 0.2 | 0.2 | < 0.02 | < 0.021 | < 0.019 | < 0.02 | < 0.02 | < 0.021 | < 0.022 | < 0.023 | < 0.022 | < 0.026 | < 0.02 | < 0.022 | < 0.021 |
| PCB 1242 | 0.2 | 0.2 | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.013 | < 0.013 | < 0.014 | < 0.013 | 0.122 | < 0.012 | < 0.013 | < 0.012 |
| PCB 1248 | 0.2 | 0.2 | < 0.013 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.014 | < 0.014 | < 0.015 | < 0.014 | < 0.017 | < 0.013 | < 0.014 | < 0.014 |
| PCB 1254 | 0.2 | 0.2 | < 0.018 | < 0.018 | < 0.017 | **0.328** | **0.769** | 0.165 | < 0.019 | 0.149 | < 0.019 | **0.269** | < 0.017 | < 0.019 | < 0.019 |
| PCB 1260 | 0.2 | 0.2 | < 0.0075 | < 0.0079 | < 0.0072 | < 0.0073 | < 0.0076 | 0.0665 | 0.051 | < 0.0087 | < 0.008 | 0.19 | < 0.0074 | < 0.0082 | < 0.0079 |
| Total PCBs | 0.2 | 0.2 | 0 | 0 | 0 | **0.328** | **0.769** | **0.2315** | 0.051 | 0.149 | 0 | **0.581** | 0 | 0 | 0 |
| **Metals** | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | 8850 J | 13700 J | 12500 J | 7730 J | 5620 J | 8930 J | 8610 | 13700 | 10100 | 9510 J | 6910 | 8540 J | 7210 J |
| Antimony | 31 | 6 | 1.4 BJ | < 0.88 J | < 0.83 J | 13.6 J | 12 J | < 9.1 J | < 46 J | 1.4 BJ | 1.2 BJ | < 28 J | < 8.6 | < 0.92 J | < 0.88 J |
| Arsenic | 19 | 19 | 5.5 | 4.2 | 2.8 | 13.1 | 12.7 | **47.7** | **47.2 B** | 4.7 | 4.4 | **39.4 B** | **33.2** | 5.4 | 2.8 |
| Barium | 16000 | 1300 | 177 J | 60.6 J | 57.9 J | 804 J | 2080 J | 63.8 BJ | 72 B | 64.7 | 52.6 | 97.8 BJ | 29.1 BJ | 39.3 | 29.4 |
| Beryllium | 16 | 0.5 | 0.3 B | 0.4 B | 0.54 | 0.23 B | 0.23 B | < 0.24 | < 1.2 | 0.52 B | 0.33 B | < 0.73 | 0.65 B | 0.39 B | 0.32 B |
| Cadmium | 78 | 1 | 0.32 B | 0.18 B | < 0.11 | 3 | 5.4 | 5.4 B | < 6 | 0.54 B | < 0.12 | 5.1 B | < 1.1 | 0.25 BJ | 0.25 BJ |
| Calcium | NS | NS | 4810 J | 1990 J | 3320 J | 11600 J | 17200 J | 43600 J | 65900 | 6320 | 3080 | 47600 J | 33400 | 4230 | 8010 |
| Chromium | NS | NS | 33.8 J | 23.6 J | 28.3 J | 34.6 J | 69.2 J | 25.9 | < 26 | 22.8 | 21.8 | 24 BJ | 12.1 | 17 | 10.4 |
| Cobalt | 1600 | 59 | 13.3 J | 10.8 J | 23.5 J | 11.6 BJ | 13.4 BJ | 14.2 B | 14.7 B | 11.5 | 8.6 | 15.8 BJ | 14.7 B | 8.5 | 6.3 |
| Copper | 3100 | 7300 | 45.9 J | 19.2 J | 107 J | 56.3 J | 1460 J | 62.2 J | 41.9 B | 49.1 | 22 | 73.7 BJ | 37.8 | 21.5 | 17.2 |
| Iron | NS | NS | 33700 J | 22300 J | 33200 J | 50800 J | 59900 J | 61500 J | 40100 | 26500 | 21600 | 45200 J | 75700 | 22400 J | 16100 J |
| Lead | 400 | 59 | 145 | 16.9 | 10 | 165 | **430** | 211 J | 50.3 B | 74.9 | 20.6 | 145 | 7 B | 21.6 | 8.3 |
| Magnesium | NS | NS | 5560 J | 4920 J | 8260 J | 4240 J | 4290 J | 8990 J | < 100 J | 4080 J | 4100 J | 9490 BJ | 8070 | 3360 J | 3520 J |
| Manganese | 11000 | 42 | 429 J | 294 J | 547 J | 355 J | 404 J | 531 J | 409 J | 512 J | 321 J | 467 J | 388 | 304 J | 305 J |
| Mercury | 23 | 0.1 | 0.11 | 0.046 | 0.074 | 0.056 | 0.074 | 0.2 | 0.074 | 0.059 | 0.033 B | 0.18 | 0.23 | 0.036 B | < 0.012 |
| Nickel | 1600 | 31 | 27 J | 25.5 J | 21.5 J | 26.4 J | 24.5 J | 29.2 B | < 19 | 20.4 | 17.2 | 27.6 BJ | 18.1 B | 16.9 | 13.4 |
| Potassium | NS | NS | 1280 J | 1220 J | 1400 J | 1100 BJ | 1220 BJ | 1400 BJ | < 540 | 1320 | 1340 | 2390 BJ | 1420 B | 786 J | 671 J |
| Selenium | 390 | 7 | < 0.89 | < 0.92 | < 0.86 | < 4.3 | < 4.3 | < 9.5 | < 47 | < 1 | < 0.95 | < 29 | < 8.9 | < 0.95 | < 0.92 |
| Silver | 390 | 1 | < 0.25 | < 0.26 | < 0.24 | < 1.2 | < 1.2 | < 2.6 | < 13 | < 0.29 | < 0.26 | < 8 | < 2.5 | < 0.27 | < 0.26 |
| Sodium | NS | NS | < 38 | < 39 | < 37 | < 180 | < 180 | < 400 | < 2000 | 67.6 B | 102 B | 1700 B | < 380 J | 164 B | 163 B |
| Thallium | 5 | 3 | < 0.97 | < 1 | < 0.94 | < 4.6 | < 4.7 | < 10 | < 52 | < 1.1 | < 1 | < 31 | < 9.7 | < 1 | < 1 |
| Vanadium | 78 | NS | 61.9 J | 29.3 J | 53.6 J | **90.5 J** | **115 J** | **94.2 J** | **105 B** | 37.2 | 42.8 | **102 BJ** | **155** | 30.8 | 15.6 |
| Zinc | 23000 | 600 | 167 J | 51.5 J | 41.9 J | 356 J | 980 J | 240 J | 61.6 B | 148 | 44.5 | 295 J | 25.7 | 44.2 J | 39.8 J |
| **Other** | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons (TPH) | NS | NS | 841 | < 30 | 43.7 | 222 | < 29 | 186 | 210 | 1710 | 38.2 | 2140 | 63.7 J | < 33 | 60 |
| Solids, Percent | NS | NS | 89.6 | 85.2 | 91.8 | 91.9 | 89 | 84.2 | 82.4 | 77.3 | 82.7 | 68 | 89.3 | 79.8 | 84.4 |

Footnotes on Page 19.

**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Trenches | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITT-01 | OC-ITT-02 | OC-ITT-03 | OC-ITT-04 | OC-TT-05 | OC-ITT-06 | OC-ITT-07A | OC-ITT-07B | OC-ITT-08 | OC-ITT-09 | OC-ITT-10 | OC-ITT-11 | OC-ITT-12 | OC-ITT13-BT |
| Sample Date | Soil Remediation | Soil Screening | 7/20/2006 | 7/19/2006 | 7/25/2006 | 7/25/2006 | 7/24/2006 | 8/18/2006 | 8/17/2006 | 8/17/2006 | 8/16/2006 | 8/16/2006 | 8/17/2006 | 7/26/2006 | 7/25/2006 | 8/10/2006 |
| | | | 4.5-4.7' | 10.5-11.0' | 3.5-4.0' | 3.5-4.0' | 6.0-6.5' | 7.5-8.0' | 1.6-2.1' | 6.5-6.8' | 4.8-5.3' | 6.8-7.3' | 3.8-3.3' | 2.5-3.0' | 3.2-3.7' | 7.5-8.0' |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.00054 | < 0.00054 | < 0.00065 | < 0.00052 | < 0.00044 | < 0.00057 | < 0.00061 | < 0.00074 | < 0.00078 | < 0.00061 | < 0.00085 | < 0.00052 | < 0.0005 | < 0.00072 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00052 | < 0.00052 | < 0.00063 | < 0.0005 | < 0.00043 | < 0.00055 | < 0.00059 | < 0.00072 | < 0.00076 | < 0.00059 | < 0.00082 | < 0.0005 | < 0.00048 | < 0.00069 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00049 | < 0.00049 | < 0.00059 | < 0.00047 | < 0.0004 | < 0.00051 | < 0.00055 | < 0.00067 | < 0.00071 | < 0.00055 | < 0.00077 | < 0.00047 | < 0.00045 | < 0.00065 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.00043 | < 0.00044 | < 0.00053 | < 0.00042 | < 0.00036 | < 0.00046 | < 0.00049 | < 0.0006 | < 0.00063 | < 0.00049 | < 0.00069 | < 0.00042 | < 0.0004 | < 0.00058 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00062 | < 0.00062 | < 0.00076 | < 0.0006 | < 0.00051 | < 0.00066 | < 0.0007 | < 0.00086 | < 0.00091 | < 0.00071 | < 0.00099 | < 0.0006 | < 0.00058 | < 0.00083 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.00032 | < 0.00032 | < 0.00039 | < 0.00031 | < 0.00026 | < 0.00034 | < 0.00036 | < 0.00044 | < 0.00046 | < 0.00036 | < 0.0005 | < 0.00031 | < 0.00029 | < 0.00042 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.0019 | < 0.002 | < 0.0024 | < 0.0019 | < 0.0016 | < 0.0021 | < 0.0022 | < 0.0027 | < 0.0028 | < 0.0022 | < 0.0031 | < 0.0019 | < 0.0018 | < 0.0026 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00051 | < 0.00051 | < 0.00063 | < 0.00049 | < 0.00042 | < 0.00054 | < 0.00058 | < 0.00071 | < 0.00075 | < 0.00058 | < 0.00081 | < 0.00049 | < 0.00047 | < 0.00068 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00041 | < 0.00041 | < 0.0005 | < 0.0004 | < 0.00034 | < 0.00044 | < 0.00047 | < 0.00057 | < 0.0006 | < 0.00047 | < 0.00065 | < 0.0004 | < 0.00038 | < 0.00055 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.00049 | < 0.00049 | < 0.0006 | < 0.00048 | < 0.0004 | < 0.00052 | < 0.00056 | < 0.00068 | < 0.00072 | < 0.00056 | < 0.00078 | < 0.00047 | < 0.00046 | < 0.00066 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.0005 | < 0.0005 | < 0.00061 | < 0.00049 | < 0.00041 | < 0.00053 | < 0.00057 | < 0.00069 | < 0.00073 | < 0.00057 | < 0.0008 | < 0.00048 | < 0.00047 | < 0.00067 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00044 | < 0.00044 | < 0.00054 | < 0.00043 | < 0.00036 | < 0.00047 | < 0.0005 | < 0.00061 | < 0.00064 | < 0.0005 | < 0.0007 | < 0.00043 | < 0.00041 | < 0.00059 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.00042 | < 0.00042 | < 0.00051 | < 0.0004 | < 0.00034 | < 0.00044 | < 0.00047 | < 0.00057 | < 0.00061 | < 0.00047 | < 0.00066 | < 0.0004 | < 0.00039 | < 0.00056 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.0025 | < 0.0025 | < 0.003 | < 0.0024 | < 0.002 | 0.0075 J | < 0.0028 | < 0.0034 | < 0.0036 | < 0.0028 | < 0.0039 | < 0.0024 | < 0.0023 | < 0.0033 |
| 2-Hexanone | NS | NS | < 0.0012 | < 0.0012 | < 0.0015 | < 0.0012 | < 0.001 | < 0.0013 | < 0.0014 | < 0.0017 | < 0.0018 | < 0.0014 | < 0.002 | < 0.0012 | < 0.0011 | < 0.0016 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.0018 | < 0.0018 | < 0.0022 | < 0.0017 | < 0.0015 | < 0.0019 | < 0.002 | < 0.0025 | < 0.0026 | < 0.002 | < 0.0029 | < 0.0017 | < 0.0017 | < 0.0024 |
| Acetone | 70000 | 12 | 0.0152 | < 0.0026 | < 0.0032 | < 0.0025 | < 0.0021 | 0.0504 | < 0.0029 | < 0.0036 | 0.018 | 0.0206 | 0.032 | < 0.0025 | < 0.0024 | 0.0101 J |
| Benzene | 2 | 0.005 | < 0.00043 | < 0.00044 | < 0.00053 | < 0.00042 | < 0.00036 | < 0.00046 | < 0.00049 | < 0.0006 | < 0.00063 | < 0.00049 | < 0.00069 | < 0.00042 | < 0.0004 | < 0.00058 |
| Bromodichloromethane | 1 | 0.005 | < 0.00041 | < 0.00041 | < 0.0005 | < 0.0004 | < 0.00034 | < 0.00044 | < 0.00047 | < 0.00057 | < 0.0006 | < 0.00047 | < 0.00066 | < 0.0004 | < 0.00038 | < 0.00055 |
| Bromoform | 81 | 0.02 | < 0.00039 | < 0.00039 | < 0.00048 | < 0.00038 | < 0.00032 | < 0.00042 | < 0.00044 | < 0.00054 | < 0.00057 | < 0.00045 | < 0.00062 | < 0.00038 | < 0.00036 | < 0.00052 |
| Bromomethane | 25 | 0.03 | < 0.00033 | < 0.00034 | < 0.00041 | < 0.00032 | < 0.00027 | < 0.00035 | < 0.00038 | < 0.00046 | < 0.00049 | < 0.00038 | < 0.00053 | < 0.00032 | < 0.00031 | < 0.00045 |
| Carbon disulfide | 7800 | 4 | 0.0012 J | < 0.0005 | < 0.00061 | < 0.00048 | < 0.00041 | < 0.00053 | < 0.00057 | < 0.00069 | < 0.00073 | < 0.00057 | < 0.00079 | < 0.00048 | < 0.00046 | < 0.00067 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.00086 | < 0.00086 | < 0.001 | < 0.00083 | < 0.00071 | < 0.00091 | < 0.00097 | < 0.0012 | < 0.0013 | < 0.00097 | < 0.0014 | < 0.00083 | < 0.0008 | < 0.0011 |
| Chlorobenzene | 510 | 0.4 | < 0.00039 | < 0.00039 | < 0.00048 | < 0.00038 | < 0.00032 | < 0.00041 | < 0.00044 | < 0.00054 | < 0.00057 | < 0.00044 | < 0.00062 | < 0.00038 | < 0.00036 | < 0.00052 |
| Chloroethane | 220 | NS | < 0.0016 | < 0.0016 | < 0.0019 | < 0.0015 | < 0.0013 | < 0.0017 | < 0.0018 | < 0.0022 | < 0.0023 | < 0.0018 | < 0.0025 | < 0.0015 | < 0.0015 | < 0.0021 |
| Chloroform | 0.6 | 0.2 | < 0.00053 | < 0.00053 | < 0.00064 | < 0.00051 | < 0.00043 | < 0.00056 | < 0.0006 | < 0.00073 | < 0.00077 | < 0.0006 | < 0.00084 | < 0.00051 | < 0.00049 | < 0.0007 |
| Chloromethane | 4 | NS | < 0.00042 | < 0.00042 | < 0.00051 | < 0.0004 | < 0.00034 | < 0.00044 | < 0.00047 | < 0.00058 | < 0.00061 | < 0.00047 | < 0.00066 | < 0.0004 | < 0.00039 | < 0.00056 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00061 | < 0.00061 | < 0.00074 | < 0.00059 | < 0.0005 | < 0.00064 | < 0.00069 | < 0.00084 | < 0.00089 | < 0.00069 | < 0.00096 | < 0.00059 | < 0.00056 | < 0.00081 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00037 | < 0.00038 | < 0.00046 | < 0.00036 | < 0.00031 | < 0.0004 | < 0.00042 | < 0.00052 | < 0.00055 | < 0.00043 | < 0.00059 | < 0.00036 | < 0.00035 | < 0.0005 |
| Cyclohexane | NS | NS | < 0.0012 | < 0.0012 | < 0.0014 | < 0.0011 | < 0.00095 | < 0.0012 | < 0.0013 | < 0.0016 | < 0.0017 | < 0.0013 | < 0.0018 | < 0.0011 | < 0.0011 | < 0.0015 |
| Dibromochloromethane | 3 | 0.005 | < 0.0005 | < 0.0005 | < 0.00061 | < 0.00048 | < 0.00041 | < 0.00053 | < 0.00056 | < 0.00069 | < 0.00072 | < 0.00056 | < 0.00079 | < 0.00048 | < 0.00046 | < 0.00066 |
| Dichlorodifluoromethane | 490 | 25 | < 0.00072 | < 0.00072 | < 0.00088 | < 0.0007 | < 0.00059 | < 0.00076 | < 0.00081 | < 0.00099 | < 0.001 | < 0.00082 | < 0.0011 | < 0.00069 | < 0.00067 | < 0.00096 |
| Ethylbenzene | 7800 | 8 | 0.0053 | < 0.00041 | < 0.0005 | < 0.00039 | < 0.00034 | < 0.00043 | < 0.00046 | < 0.00056 | < 0.00059 | < 0.00046 | < 0.00065 | < 0.00039 | < 0.00038 | < 0.00054 |
| Freon 113 | NS | NS | < 0.00077 | < 0.00078 | 0.0018 J | < 0.00075 | < 0.00064 | 0.002 J | 0.0026 J | 0.0023 J | 0.0017 J | 0.0014 J | 0.0038 J | < 0.00075 | 0.0041 J | 0.0018 J |
| Isopropylbenzene | NS | NS | < 0.00042 | < 0.00042 | < 0.00051 | < 0.00041 | < 0.00035 | < 0.00045 | < 0.00048 | < 0.00058 | < 0.00061 | < 0.00048 | < 0.00067 | < 0.00041 | < 0.00039 | < 0.00056 |
| Methyl acetate | 78000 | 14 | < 0.0013 | < 0.0013 | < 0.0016 | < 0.0012 | < 0.0011 | < 0.0014 | < 0.0014 | < 0.0018 | < 0.0019 | < 0.0014 | < 0.002 | < 0.0012 | < 0.0012 | < 0.0017 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.00051 | < 0.00051 | < 0.00062 | < 0.00049 | < 0.00042 | < 0.00054 | < 0.00057 | < 0.0007 | < 0.00074 | < 0.00057 | < 0.0008 | < 0.00049 | < 0.00047 | < 0.00068 |
| Methylcyclohexane | NS | NS | < 0.00058 | < 0.00059 | < 0.00071 | < 0.00056 | < 0.00048 | < 0.00062 | < 0.00066 | < 0.0008 | < 0.00085 | < 0.00066 | < 0.00093 | < 0.00056 | < 0.00054 | < 0.00078 |
| Methylene chloride | 34 | 0.007 | 0.0011 J | < 0.00063 | < 0.00076 | < 0.00061 | < 0.00051 | 0.0024 J | 0.0013 J | < 0.00086 | 0.0023 J | 0.0015 J | < 0.00099 | 0.0031 J | 0.0034 J | < 0.00083 |
| o-Xylene | NS | NS | 0.01 | < 0.00045 | < 0.00055 | < 0.00043 | < 0.00037 | < 0.00047 | < 0.0005 | < 0.00062 | < 0.00065 | < 0.00051 | < 0.00071 | < 0.00043 | < 0.00041 | < 0.0006 |
| Styrene | 90 | 2 | < 0.0003 | < 0.0003 | < 0.00036 | < 0.00029 | < 0.00024 | < 0.00031 | < 0.00033 | < 0.00041 | < 0.00043 | < 0.00034 | < 0.00047 | < 0.00029 | < 0.00027 | < 0.0004 |
| Tetrachloroethene | 2 | 0.005 | < 0.00074 | < 0.00075 | < 0.00091 | < 0.00072 | < 0.00061 | < 0.00079 | < 0.00084 | < 0.001 | < 0.0011 | < 0.00085 | < 0.0012 | < 0.00072 | < 0.00069 | < 0.00099 |
| Toluene | 6300 | 4 | 0.0025 | < 0.00049 | < 0.0006 | < 0.00047 | < 0.0004 | < 0.00052 | < 0.00055 | < 0.00068 | < 0.00072 | < 0.00056 | < 0.00078 | < 0.00047 | < 0.00046 | < 0.00065 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.00062 | < 0.00062 | < 0.00076 | < 0.0006 | < 0.00051 | < 0.00065 | < 0.0007 | < 0.00085 | < 0.0009 | < 0.0007 | < 0.00098 | < 0.0006 | < 0.00057 | < 0.00083 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.00035 | < 0.00036 | < 0.00043 | < 0.00034 | < 0.00029 | < 0.00038 | < 0.0004 | < 0.00049 | < 0.00052 | < 0.0004 | < 0.00056 | < 0.00034 | < 0.00033 | < 0.00047 |
| Trichloroethene | 7 | 0.007 | < 0.00047 | < 0.00047 | < 0.00058 | < 0.00046 | < 0.00039 | < 0.0005 | < 0.00053 | < 0.00065 | < 0.00069 | < 0.00053 | < 0.00075 | < 0.00045 | < 0.00044 | < 0.00063 |
| Trichlorofluoromethane | 23000 | 22 | < 0.00066 | < 0.00066 | < 0.00081 | < 0.00064 | < 0.00054 | < 0.0007 | < 0.00075 | < 0.00091 | < 0.00096 | < 0.00075 | < 0.001 | < 0.00064 | < 0.00061 | < 0.00088 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.00058 | < 0.00059 | < 0.00071 | < 0.00057 | < 0.00048 | < 0.00062 | < 0.00066 | < 0.00081 | < 0.00085 | < 0.00066 | < 0.00093 | < 0.00056 | < 0.00054 | < 0.00078 |
| Xylene, -m,p | NS | NS | 0.018 | < 0.0008 | < 0.00097 | < 0.00077 | < 0.00065 | < 0.00084 | < 0.0009 | < 0.0011 | < 0.0012 | < 0.0009 | < 0.0013 | < 0.00077 | < 0.00074 | < 0.0011 |
| Xylenes | 12000 | 12 | 0.028 | < 0.00045 | < 0.00055 | < 0.00043 | < 0.00037 | < 0.00047 | < 0.0005 | < 0.00062 | < 0.00065 | < 0.00051 | < 0.00071 | < 0.00043 | < 0.00041 | < 0.0006 |
| Total TIC, Volatile | NS | NS | 0.0241 J | 0 | 0 | 0 | 0 | 0.006 J | 0.0062 J | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Footnotes on Page 19.

**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Trenches | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITT-01 | OC-ITT-02 | OC-ITT-03 | OC-ITT-04 | OC-TT-05 | OC-ITT-06 | OC-ITT-07A | OC-ITT-07B | OC-ITT-08 | OC-ITT-09 | OC-ITT-10 | OC-ITT-11 | OC-ITT-12 | OC-ITT13-BT |
| Sample Date | Soil Remediation | Soil Screening | 7/20/2006 | 7/19/2006 | 7/25/2006 | 7/25/2006 | 7/24/2006 | 8/18/2006 | 8/17/2006 | 8/17/2006 | 8/16/2006 | 8/16/2006 | 8/17/2006 | 7/26/2006 | 7/25/2006 | 8/10/2006 |
| | | | 4.5-4.7' | 10.5-11.0' | 3.5-4.0' | 3.5-4.0' | 6.0-6.5' | 7.5-8.0' | 1.6-2.1' | 6.5-6.8' | 4.8-5.3' | 6.8-7.3' | 3.8-3.3' | 2.5-3.0' | 3.2-3.7' | 7.5-8.0' |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | < 0.019 | < 0.018 | < 0.019 | < 0.019 | < 0.017 | < 0.017 | < 0.022 | < 0.023 | < 0.022 | < 0.02 | < 0.02 | < 0.017 | < 0.016 | < 0.022 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.059 | < 0.057 | < 0.059 | < 0.058 | < 0.052 | < 0.053 | < 0.067 | < 0.072 | < 0.07 | < 0.062 | < 0.063 | < 0.053 | < 0.051 | < 0.068 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.033 | < 0.032 | < 0.033 | < 0.033 | < 0.029 | < 0.03 | < 0.038 | < 0.04 | < 0.039 | < 0.035 | < 0.035 | < 0.03 | < 0.029 | < 0.038 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.065 | < 0.064 | < 0.066 | < 0.065 | < 0.058 | < 0.06 | < 0.075 | < 0.08 | < 0.078 | < 0.07 | < 0.07 | < 0.059 | < 0.057 | < 0.075 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.1 | < 0.097 | < 0.1 | < 0.1 | < 0.088 | < 0.091 | < 0.11 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.091 | < 0.087 | < 0.12 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.06 | < 0.058 | < 0.06 | < 0.059 | < 0.052 | < 0.054 | < 0.068 | < 0.073 | < 0.071 | < 0.063 | < 0.064 | < 0.054 | < 0.052 | < 0.069 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.045 | < 0.044 | < 0.046 | < 0.045 | < 0.04 | < 0.041 | < 0.052 | < 0.056 | < 0.054 | < 0.048 | < 0.049 | < 0.041 | < 0.04 | < 0.052 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.045 | < 0.043 | < 0.045 | < 0.044 | < 0.039 | < 0.041 | < 0.051 | < 0.055 | < 0.053 | < 0.047 | < 0.048 | < 0.04 | < 0.039 | < 0.051 |
| 2-Chloronaphthalene | NS | NS | < 0.055 | < 0.053 | < 0.055 | < 0.055 | < 0.048 | < 0.05 | < 0.063 | < 0.067 | < 0.065 | < 0.058 | < 0.059 | < 0.05 | < 0.048 | < 0.063 |
| 2-Chlorophenol | 310 | 0.5 | < 0.034 | < 0.033 | < 0.034 | < 0.033 | < 0.03 | < 0.031 | < 0.038 | < 0.041 | < 0.04 | < 0.036 | < 0.036 | < 0.03 | < 0.029 | < 0.039 |
| 2-Methylnaphthalene | 230 | 5 | < 0.026 | < 0.025 | < 0.026 | < 0.025 | < 0.022 | < 0.023 | < 0.029 | < 0.031 | < 0.03 | < 0.027 | < 0.027 | < 0.023 | < 0.022 | < 0.029 |
| 2-Methylphenol | 310 | NS | < 0.038 | < 0.037 | < 0.039 | < 0.038 | < 0.034 | < 0.035 | < 0.044 | < 0.047 | < 0.046 | < 0.041 | < 0.041 | < 0.035 | < 0.033 | < 0.044 |
| 2-Nitroaniline | 39 | NS | < 0.025 | < 0.024 | < 0.025 | < 0.025 | < 0.022 | < 0.023 | < 0.028 | < 0.03 | < 0.029 | < 0.026 | < 0.027 | < 0.022 | < 0.022 | < 0.029 |
| 2-Nitrophenol | NS | NS | < 0.049 | < 0.047 | < 0.049 | < 0.048 | < 0.043 | < 0.044 | < 0.056 | < 0.06 | < 0.058 | < 0.052 | < 0.052 | < 0.044 | < 0.042 | < 0.056 |
| 3&4-Methylphenol | NS | NS | < 0.056 | < 0.054 | < 0.056 | < 0.056 | < 0.049 | < 0.051 | < 0.064 | < 0.069 | < 0.066 | < 0.06 | < 0.06 | < 0.051 | < 0.049 | < 0.065 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.037 | < 0.036 | < 0.038 | < 0.037 | < 0.033 | < 0.034 | < 0.043 | < 0.046 | < 0.044 | < 0.04 | < 0.04 | < 0.034 | < 0.033 | < 0.043 |
| 3-Nitroaniline | NS | NS | < 0.03 | < 0.029 | < 0.031 | < 0.03 | < 0.027 | < 0.028 | < 0.035 | < 0.037 | < 0.036 | < 0.032 | < 0.033 | < 0.027 | < 0.026 | < 0.035 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.034 | < 0.033 | < 0.034 | < 0.034 | < 0.03 | < 0.031 | < 0.039 | < 0.042 | < 0.04 | < 0.036 | < 0.037 | < 0.031 | < 0.03 | < 0.039 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.02 | < 0.019 | < 0.02 | < 0.02 | < 0.018 | < 0.018 | < 0.023 | < 0.024 | < 0.024 | < 0.021 | < 0.021 | < 0.018 | < 0.017 | < 0.023 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.05 | < 0.048 | < 0.05 | < 0.05 | < 0.044 | < 0.045 | < 0.057 | < 0.061 | < 0.059 | < 0.053 | < 0.054 | < 0.045 | < 0.043 | < 0.057 |
| 4-Chloroaniline | NS | NS | < 0.024 | < 0.024 | < 0.024 | < 0.024 | < 0.021 | < 0.022 | < 0.028 | < 0.03 | < 0.029 | < 0.026 | < 0.026 | < 0.022 | < 0.021 | < 0.028 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.018 | < 0.018 | < 0.019 | < 0.018 | < 0.016 | < 0.017 | < 0.021 | < 0.023 | < 0.022 | < 0.02 | < 0.02 | < 0.017 | < 0.016 | < 0.021 |
| 4-Nitroaniline | NS | NS | < 0.027 | < 0.026 | < 0.027 | < 0.027 | < 0.024 | < 0.025 | < 0.031 | < 0.033 | < 0.032 | < 0.029 | < 0.029 | < 0.024 | < 0.024 | < 0.031 |
| 4-Nitrophenol | NS | NS | < 0.053 | < 0.052 | < 0.054 | < 0.053 | < 0.047 | < 0.048 | < 0.061 | < 0.065 | < 0.063 | < 0.057 | < 0.057 | < 0.048 | < 0.046 | < 0.061 |
| Acenaphthene | 3400 | 74 | < 0.02 | < 0.019 | < 0.02 | < 0.02 | < 0.018 | < 0.018 | < 0.023 | < 0.025 | < 0.024 | < 0.021 | < 0.022 | < 0.018 | < 0.017 | < 0.023 |
| Acenaphthylene | NS | NS | < 0.016 | < 0.015 | < 0.016 | < 0.016 | < 0.014 | < 0.014 | < 0.018 | < 0.02 | < 0.019 | < 0.017 | < 0.017 | < 0.014 | < 0.014 | < 0.018 |
| Acetophenone | 2 | 2 | < 0.025 | < 0.024 | < 0.025 | < 0.025 | < 0.022 | < 0.022 | < 0.028 | < 0.03 | < 0.029 | < 0.026 | < 0.027 | < 0.022 | < 0.022 | < 0.028 |
| Anthracene | 17000 | 1500 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.013 | < 0.014 | < 0.017 | < 0.019 | < 0.018 | < 0.016 | < 0.016 | < 0.014 | < 0.013 | < 0.017 |
| Atrazine | 210 | 0.2 | < 0.034 | < 0.033 | < 0.034 | < 0.034 | < 0.03 | < 0.031 | < 0.039 | < 0.042 | < 0.04 | < 0.036 | < 0.036 | < 0.031 | < 0.03 | < 0.039 |
| Benzaldehyde | 6100 | NS | < 0.043 | < 0.042 | < 0.043 | < 0.043 | < 0.038 | < 0.039 | < 0.049 | < 0.053 | < 0.051 | < 0.046 | < 0.046 | < 0.039 | < 0.038 | < 0.05 |
| Benzo(a)anthracene | 0.6 | 0.5 | 0.0202 J | < 0.018 | 0.0281 J | < 0.019 | < 0.017 | < 0.017 | < 0.022 | < 0.023 | 0.0415 J | < 0.02 | < 0.02 | 0.0259 J | < 0.016 | < 0.022 |
| Benzo(a)pyrene | 0.2 | 0.2 | 0.0155 J | < 0.013 | 0.0232 J | < 0.014 | < 0.012 | < 0.012 | < 0.016 | < 0.017 | 0.0267 J | < 0.014 | < 0.015 | 0.0319 J | < 0.012 | < 0.016 |
| Benzo(b)fluoranthene | 0.6 | 2 | < 0.018 | < 0.017 | 0.0181 J | < 0.018 | < 0.016 | < 0.016 | < 0.02 | < 0.022 | 0.0236 J | < 0.019 | < 0.019 | 0.0706 J | < 0.016 | < 0.021 |
| Benzo(g,h,i)perylene | 380000 | NS | < 0.021 | < 0.021 | < 0.022 | < 0.021 | < 0.019 | < 0.019 | < 0.025 | < 0.026 | < 0.025 J | < 0.023 J | < 0.023 | 0.0533 J | < 0.019 | < 0.025 |
| Benzo(k)fluoranthene | 6 | 16 | < 0.03 | < 0.029 | 0.0319 J | < 0.029 | < 0.026 | < 0.027 | < 0.034 | < 0.036 | < 0.035 | < 0.031 | < 0.032 | < 0.027 | < 0.026 | < 0.034 |
| Benzyl butyl phthalate | 1200 | 150 | < 0.03 | < 0.029 | < 0.03 | < 0.029 | < 0.026 | < 0.027 | < 0.034 | < 0.036 | < 0.035 | < 0.031 | < 0.032 | < 0.027 | < 0.026 | < 0.034 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.025 | < 0.025 | < 0.025 | < 0.025 | < 0.022 | < 0.023 | < 0.029 | < 0.031 | < 0.03 | < 0.027 | < 0.027 | < 0.023 | < 0.022 | < 0.029 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.02 | < 0.019 | < 0.02 | < 0.019 | < 0.017 | < 0.018 | < 0.022 | < 0.024 | < 0.023 | < 0.021 | < 0.021 | < 0.018 | < 0.017 | < 0.022 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.029 | < 0.029 | < 0.03 | < 0.029 | < 0.026 | < 0.027 | < 0.034 | < 0.036 | < 0.035 | < 0.031 | < 0.032 | < 0.027 | < 0.026 | < 0.034 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | < 0.05 | < 0.049 | < 0.05 | < 0.05 | < 0.044 | < 0.046 | < 0.057 | < 0.062 | < 0.059 | < 0.053 | < 0.054 | < 0.045 | < 0.044 | < 0.058 |
| Caprolactam | 31000 | 8 | < 0.038 | < 0.037 | < 0.038 | < 0.038 | < 0.033 | < 0.034 | < 0.043 | < 0.046 | < 0.045 | < 0.04 | < 0.041 | < 0.034 | < 0.033 | < 0.043 |
| Carbazole | 24 | NS | < 0.016 | < 0.015 | < 0.016 | < 0.016 | < 0.014 | < 0.014 | < 0.018 | < 0.019 | < 0.019 | < 0.017 | < 0.017 | < 0.014 | < 0.014 | < 0.018 |
| Chyrsene | 62 | 52 | 0.0218 J | < 0.014 | 0.0281 J | < 0.014 | < 0.013 | 0.0168 J | < 0.017 | < 0.018 | 0.0272 J | < 0.015 | < 0.016 | 0.0485 J | < 0.013 | < 0.017 |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | < 0.021 | < 0.02 | < 0.021 | < 0.02 | < 0.018 | < 0.019 | < 0.024 | < 0.025 | < 0.024 J | < 0.022 J | < 0.022 | < 0.019 J | < 0.018 | < 0.024 |
| Dibenzofuran | NS | NS | < 0.018 | < 0.018 | < 0.018 | < 0.018 | < 0.016 | < 0.017 | < 0.021 | < 0.022 | < 0.022 | < 0.019 | < 0.02 | < 0.016 | < 0.016 | < 0.021 |
| Diethyl phthalate | 49000 | 57 | < 0.017 | < 0.016 | < 0.017 | < 0.017 | < 0.015 | < 0.015 | < 0.019 | < 0.021 | < 0.02 | < 0.018 | < 0.018 | < 0.015 | < 0.015 | < 0.019 |
| Dimethyl phthalate | NS | NS | < 0.017 | < 0.016 | < 0.017 | < 0.017 | < 0.015 | < 0.015 | < 0.019 | < 0.021 | < 0.02 | < 0.018 | < 0.018 | < 0.015 | < 0.015 | < 0.019 |
| di-n-butyl phthalate | 6100 | 620 | < 0.025 | < 0.024 | < 0.025 | < 0.025 | < 0.022 | < 0.023 | < 0.029 | < 0.031 | < 0.03 | < 0.026 | < 0.027 | < 0.023 | < 0.022 | < 0.029 |
| di-n-octylphthalate | 2400 | 3300 | < 0.034 | < 0.033 | < 0.034 | < 0.033 | < 0.03 | < 0.03 | < 0.038 | < 0.041 | < 0.04 | < 0.036 | < 0.036 | < 0.03 | < 0.029 | < 0.039 |
| Fluoranthene | 2300 | 840 | 0.0231 J | < 0.013 | 0.0482 J | 0.0168 J | 0.0151 J | 0.0133 J | < 0.016 | 0.0356 J | 0.0451 J | < 0.015 | < 0.015 | 0.0186 J | < 0.012 | < 0.016 |
| Fluorene | 2300 | 110 | < 0.016 | < 0.015 | < 0.016 | < 0.016 | < 0.014 | < 0.014 | < 0.018 | < 0.019 | < 0.019 | < 0.017 | < 0.017 | < 0.014 | < 0.014 | < 0.018 |

Footnotes on Page 19.

**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Trenches | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITT-01 | OC-ITT-02 | OC-ITT-03 | OC-ITT-04 | OC-TT-05 | OC-ITT-06 | OC-ITT-07A | OC-ITT-07B | OC-ITT-08 | OC-ITT-09 | OC-ITT-10 | OC-ITT-11 | OC-ITT-12 | OC-ITT13-BT |
| Sample Date | Soil Remediation | Soil Screening | 7/20/2006 | 7/19/2006 | 7/25/2006 | 7/25/2006 | 7/24/2006 | 8/18/2006 | 8/17/2006 | 8/17/2006 | 8/16/2006 | 8/16/2006 | 8/17/2006 | 7/26/2006 | 7/25/2006 | 8/10/2006 |
| | | | 4.5-4.7' | 10.5-11.0' | 3.5-4.0' | 3.5-4.0' | 6.0-6.5' | 7.5-8.0' | 1.6-2.1' | 6.5-6.8' | 4.8-5.3' | 6.8-7.3' | 3.8-3.3' | 2.5-3.0' | 3.2-3.7' | 7.5-8.0' |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.023 | < 0.022 | < 0.023 | < 0.022 | < 0.02 | < 0.02 | < 0.026 | < 0.028 | < 0.027 | < 0.024 | < 0.024 | < 0.02 | < 0.02 | < 0.026 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.026 | < 0.025 | < 0.026 | < 0.026 | < 0.023 | < 0.023 | < 0.03 | < 0.032 | < 0.031 | < 0.027 | < 0.028 | < 0.023 | < 0.023 | < 0.03 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.028 | < 0.027 | < 0.028 | < 0.028 | < 0.025 | < 0.026 | < 0.032 | < 0.035 | < 0.033 | < 0.03 | < 0.03 | < 0.025 | < 0.025 | < 0.032 |
| Hexachloroethane | 35 | 0.2 | < 0.02 | < 0.019 | < 0.02 | < 0.019 | < 0.017 | < 0.018 | < 0.022 | < 0.024 | < 0.023 | < 0.021 | < 0.021 | < 0.018 | < 0.017 | < 0.023 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | < 0.025 | < 0.024 | < 0.025 | < 0.025 | < 0.022 | < 0.023 | < 0.028 | < 0.031 | < 0.029 J | < 0.026 J | < 0.027 | 0.0347 J | < 0.022 | < 0.029 |
| Isophrone | 510 | 0.2 | < 0.019 | < 0.019 | < 0.02 | < 0.019 | < 0.017 | < 0.018 | < 0.022 | < 0.024 | < 0.023 | < 0.021 | < 0.021 | < 0.018 | < 0.017 | < 0.022 |
| Naphthalene | 6 | 16 | < 0.022 | < 0.021 | < 0.022 | < 0.022 | < 0.019 | < 0.02 | < 0.025 | < 0.027 | < 0.026 | < 0.023 | < 0.024 | < 0.02 | < 0.019 | < 0.025 |
| Nitrobenzene | 31 | 0.2 | < 0.027 | < 0.027 | < 0.027 | < 0.027 | < 0.024 | < 0.025 | < 0.031 | < 0.034 | < 0.032 | < 0.029 | < 0.029 | < 0.025 | < 0.024 | < 0.031 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.025 | < 0.024 | < 0.025 | < 0.025 | < 0.022 | < 0.023 | < 0.029 | < 0.031 | < 0.03 | < 0.027 | < 0.027 | < 0.023 | < 0.022 | < 0.029 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.016 | < 0.016 | < 0.016 | < 0.016 | < 0.014 | < 0.015 | < 0.018 | < 0.02 | < 0.019 | < 0.017 | < 0.017 | < 0.015 | < 0.014 | < 0.019 |
| Pentachlorophenol | 3 | 0.3 | < 0.044 | < 0.043 | < 0.044 | < 0.044 | < 0.039 | < 0.04 | < 0.05 | < 0.054 | < 0.052 | < 0.047 | < 0.047 | < 0.04 | < 0.038 | < 0.051 |
| Phenanthrene | NS | NS | < 0.017 | < 0.017 | 0.0213 J | < 0.017 | < 0.015 | < 0.016 | < 0.02 | 0.0301 J | 0.0378 J | < 0.018 | < 0.018 | < 0.016 | < 0.015 | < 0.02 |
| Phenol | 18000 | 5 | < 0.049 | < 0.047 | < 0.049 | < 0.048 | < 0.043 | < 0.044 | < 0.056 | < 0.06 | < 0.058 | < 0.052 | < 0.052 | < 0.044 | < 0.042 | < 0.056 |
| Pyrene | 1700 | 550 | 0.025 J | < 0.013 | 0.0508 J | 0.0203 J | 0.0133 J | 0.0139 J | < 0.015 | 0.0279 J | 0.0385 J | < 0.014 | < 0.015 | 0.0252 J | < 0.012 | < 0.016 |
| Total TIC, Semi-Volatile | NS | NS | 1.53 J | 0 | 1.49 J | 2.15 J | 0 | 1.2 J | 0 | 0.48 J | 5.33 J | 1.33 J | 0.74 J | 0.2 J | 0 | 0.35 J |
| **PCBs** | | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.0073 | < 0.0072 | < 0.0075 | < 0.0074 | < 0.019 | < 0.0065 | < 0.0086 | < 0.0089 | < 0.0089 | < 0.0079 | < 0.0078 | < 0.0068 | < 0.0064 | < 0.0085 |
| PCB 1221 | 0.2 | 0.2 | < 0.023 | < 0.023 | < 0.024 | < 0.024 | < 0.06 | < 0.021 | < 0.027 | < 0.028 | < 0.028 | < 0.025 | < 0.025 | < 0.021 | < 0.02 | < 0.027 |
| PCB 1232 | 0.2 | 0.2 | < 0.021 | < 0.02 | < 0.021 | < 0.021 | < 0.055 | < 0.019 | < 0.025 | < 0.025 | < 0.025 | < 0.023 | < 0.022 | < 0.019 | < 0.018 | < 0.024 |
| PCB 1242 | 0.2 | 0.2 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.032 | < 0.011 | < 0.014 | < 0.015 | < 0.015 | < 0.013 | < 0.013 | < 0.011 | 0.14 | < 0.014 |
| PCB 1248 | 0.2 | 0.2 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.035 | < 0.012 | < 0.016 | < 0.016 | < 0.016 | < 0.014 | < 0.014 | < 0.012 | < 0.012 | < 0.015 |
| PCB 1254 | 0.2 | 0.2 | < 0.018 | 0.058 | < 0.019 | < 0.019 | < 0.048 | < 0.016 | < 0.021 | < 0.022 | < 0.022 | < 0.02 | < 0.019 | < 0.017 | < 0.016 | < 0.021 |
| PCB 1260 | 0.2 | 0.2 | < 0.0078 | < 0.0076 | 0.0569 | < 0.0079 | < 0.02 | < 0.0069 | < 0.0091 | < 0.0094 | < 0.0094 | < 0.0084 | < 0.0083 | < 0.0072 | 0.0724 | < 0.009 |
| Total PCBs | 0.2 | 0.2 | 0 | 0.058 | 0.0569 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0.2124** | 0 |
| **Metals** | | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | 16300 | 13400 J | 15000 | 17200 | 4240 J | 5510 J | 20600 J | 18900 J | 15700 | 13700 | 12600 J | 6560 | 5060 | 18100 |
| Antimony | 31 | 6 | < 0.89 J | < 0.88 J | < 0.9 | < 4.4 | < 4 J | < 8.2 J | < 1 J | < 1.1 J | < 10 J | < 0.93 J | < 24 J | < 21 | < 7.9 | < 25 J |
| Arsenic | 19 | 19 | 6.5 | 8.9 | 4.5 | 16.8 | **31.8** | **59.7** | 1 B | 2.7 B | **43.6 J** | 2.6 J | **25.5 B** | **58.9** | **57.4** | **48.1 B** |
| Barium | 16000 | 1300 | 50.9 | 58 J | 61.2 | 61.4 B | 23.9 BJ | 34 B | 79.7 | 97.4 | 75.8 B | 66.4 | 73.9 B | 102 BJ | 24.5 BJ | 110 B |
| Beryllium | 16 | 0.5 | 0.57 B | 0.64 | 0.55 B | 0.55 B | 0.14 B | < 0.21 | 0.68 | 0.6 B | < 0.27 | 0.43 B | < 0.63 | < 0.54 | 0.52 B | < 0.66 |
| Cadmium | 78 | 1 | < 0.12 | 0.18 B | < 0.12 | < 0.58 | < 0.52 | 4 BJ | 0.3 BJ | < 0.14 J | < 1.3 | 0.17 B | < 3.2 J | 3.1 B | 2.2 B | < 3.3 |
| Calcium | NS | NS | 1200 | 3980 J | < 11 | 10800 J | 27600 J | 37300 | 3560 | 4010 | 42500 J | 1090 J | 31600 | 50100 | 48700 | 64200 |
| Chromium | NS | NS | 19.2 | 18.4 J | 19.6 J | 19.8 | 13 | 11 | 35.8 | 46.5 | 23.4 | 14.7 | 21.9 B | 14.8 B | 87.4 | 25.5 B |
| Cobalt | 1600 | 59 | 8.8 | 11.7 J | 9.1 J | 9.7 B | 8.2 B | 7.4 B | 22.3 | 17.6 | 29.1 B | 5.7 B | 18.9 B | 11 B | 11.9 B | 34.2 B |
| Copper | 3100 | 7300 | 27.1 | 28.4 J | 23.4 | 21.1 | 20.4 J | 18.2 B | 8.6 | 19.9 | 146 | 8.4 | 55.6 B | 29.9 B | 29.9 | 172 |
| Iron | NS | NS | 28400 | 30200 J | 22100 | 27600 | 20100 J | 20400 J | 27900 J | 25500 J | 46200 J | 15200 J | 63400 J | 48100 | 43600 | 58500 |
| Lead | 400 | 59 | 32 | 16.5 | 17.1 | 13.2 | 8.3 BJ | 14.2 B | 0.61 B | 13.5 | 28.4 | 5.5 | 24 B | 98.2 | 8.1 B | 15.6 B |
| Magnesium | NS | NS | 3710 J | 4530 J | 3580 J | 3550 J | 5530 J | 3990 BJ | 7300 J | 6390 J | 18300 J | 2100 J | 9560 BJ | 6780 B | 6170 J | 21000 |
| Manganese | 11000 | 42 | 444 J | 592 J | 594 | 416 | 266 J | 323 J | 645 J | 791 J | 685 | 110 | 569 J | 358 | 384 | 1010 |
| Mercury | 23 | 0.1 | 0.07 | 0.044 | 0.064 | 0.052 | 0.027 B | 0.027 B | < 0.014 | 0.027 B | 1.3 | 0.028 B | 0.64 | 0.055 | 0.015 B | 1.1 |
| Nickel | 1600 | 31 | 18.7 | 23.6 J | 14.6 | 15.1 B | 11.4 B | 11.6 B | 32.6 | 43.2 | 29.8 B | 11.4 | 24.6 B | 17.2 B | 67.8 | 28 B |
| Potassium | NS | NS | 1190 | 1720 J | 789 J | < 51 J | 1410 BJ | 1120 BJ | 2040 J | 1020 J | 3120 B | 534 B | 2000 BJ | 1820 B | 1270 BJ | 3630 B |
| Selenium | 390 | 7 | < 0.93 | < 0.91 | < 0.93 | < 4.5 | < 4.1 | < 8.5 | < 1 | < 1.1 | < 11 J | < 0.97 J | < 25 | < 21 | < 8.3 | < 26 J |
| Silver | 390 | 1 | < 0.26 | < 0.25 | < 0.26 | < 1.3 | < 1.1 | < 2.4 | < 0.29 | < 0.32 | < 3 | < 0.27 | < 7 | < 6 | < 2.3 | < 7.3 |
| Sodium | NS | NS | < 39 | < 39 | < 40 J | < 190 J | < 170 | 537 B | 266 B | 238 B | 938 B | 133 B | 1530 B | < 910 J | < 350 J | < 1100 |
| Thallium | 5 | 3 | < 1 | < 1 | < 1 | < 4.9 | < 4.5 | < 9.2 | < 1.1 | < 1.2 | < 12 | < 1.1 | < 27 | < 23 | < 9 | < 29 |
| Vanadium | 78 | NS | 32.9 | 37 J | 39.8 | 56.1 | 45.7 J | 38 B | 57.5 | 48.7 | **122** | 22 | **126 B** | **102 B** | **88.2** | **155 B** |
| Zinc | 23000 | 600 | 64.3 | 65 J | 73.3 | 66.3 | 18.4 J | 215 J | 23.7 J | 39 J | 78 | 37.9 | 58.9 BJ | 82.8 | 31.5 J | 82.4 |
| **Other** | | | | | | | | | | | | | | | | |
| Total Petroleum Hydrocarbons (TPH) | NS | NS | < 30 | < 30 | 37.1 | < 30 | < 27 | < 27 | < 34 | < 37 | 108 | < 32 | < 32 | 65.4 J | < 26 | |
| Solids, Percent | NS | NS | 85 | 87.3 | 83.7 | 85.2 | 95.9 | 93.2 | 74 | 69 | 71.5 | 79.8 | 79.1 | 93.9 | 97.6 | 73.9 |

Footnotes on Page 19.

**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Trenches | | Field Blanks | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITT-14A | OC-ITT-14B | FIELD BLANK 060718 | FIELD BLANK 060719 | FIELD BLANK 060720 | FIELD BLANK 060724 | FIELD BLANK 060725 |
| Sample Date | Soil Remediation | Soil Screening | 7/25/2006 | 7/25/2006 | 7/18/2006 | 7/19/2006 | 7/20/2006 | 7/24/2006 | 7/25/2006 |
| | | | 1.5-2.0' | 2.6-3.1' | | | | | |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.19 | < 0.00055 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.18 | < 0.00054 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.17 | < 0.0005 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.15 | < 0.00045 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.22 | < 0.00064 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.11 | < 0.00033 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.68 | < 0.002 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.18 | < 0.00053 | < 0.52 | < 0.52 | < 0.52 | < 0.52 | < 0.52 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.14 | < 0.00043 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.17 | < 0.00051 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.18 | < 0.00052 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.15 | < 0.00046 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.15 | < 0.00043 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.86 | < 0.0026 | < 2.6 | < 2.6 | < 2.6 | < 2.6 | < 2.6 |
| 2-Hexanone | NS | NS | < 0.43 | < 0.0013 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.63 | < 0.0019 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 |
| Acetone | 70000 | 12 | < 0.9 | < 0.0027 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 |
| Benzene | 2 | 0.005 | < 0.15 | < 0.00045 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Bromodichloromethane | 1 | 0.005 | < 0.14 | < 0.00043 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 |
| Bromoform | 81 | 0.02 | < 0.14 | < 0.00041 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | 1.1 J |
| Bromomethane | 25 | 0.03 | < 0.12 | < 0.00034 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Carbon disulfide | 7800 | 4 | < 0.17 | < 0.00052 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.3 | < 0.00089 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Chlorobenzene | 510 | 0.4 | < 0.14 | < 0.0004 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Chloroethane | 220 | NS | < 0.55 | < 0.0016 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 |
| Chloroform | 0.6 | 0.2 | < 0.18 | < 0.00054 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Chloromethane | 4 | NS | < 0.15 | < 0.00043 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.21 | < 0.00063 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.13 | < 0.00039 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 |
| Cyclohexane | NS | NS | < 0.4 | < 0.0012 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Dibromochloromethane | 3 | 0.005 | < 0.17 | < 0.00051 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | 0.71 J |
| Dichlorodifluoromethane | 490 | 25 | < 0.25 | < 0.00074 | < 0.75 | < 0.75 | < 0.75 | < 0.75 | < 0.75 |
| Ethylbenzene | 7800 | 8 | 31.9 | < 0.00042 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Freon 113 | NS | NS | < 0.27 | 0.0055 | < 0.69 | < 0.69 | < 0.69 | < 0.69 | < 0.69 |
| Isopropylbenzene | NS | NS | 2.02 | < 0.00043 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Methyl acetate | 78000 | 14 | < 0.45 | < 0.0013 | < 2.1 | < 2.1 | < 2.1 | < 2.1 | < 2.1 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.18 | < 0.00052 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Methylcyclohexane | NS | NS | 1.03 J | < 0.0006 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| Methylene chloride | 34 | 0.007 | < 0.22 | 0.0056 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| o-Xylene | NS | NS | 49.7 | < 0.00046 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Styrene | 90 | 2 | < 0.1 | < 0.00031 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 |
| Tetrachloroethene | 2 | 0.005 | < 0.26 | < 0.00077 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| Toluene | 6300 | 4 | 18.5 | < 0.00051 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.22 | < 0.00064 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.12 | < 0.00037 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Trichloroethene | 7 | 0.007 | < 0.16 | < 0.00049 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Trichlorofluoromethane | 23000 | 22 | < 0.23 | < 0.00068 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.2 | < 0.0006 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Xylene, -m,p | NS | NS | 175 | < 0.00082 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 |
| Xylenes | 12000 | 12 | 225 | < 0.00046 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Total TIC, Volatile | NS | NS | 159.3 J | 0 | 0 | 0 | 0 | 0 | 0 |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Trenches | | Field Blanks | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITT-14A | OC-ITT-14B | FIELD BLANK 060718 | FIELD BLANK 060719 | FIELD BLANK 060720 | FIELD BLANK 060724 | FIELD BLANK 060725 |
| Sample Date | Soil Remediation | Soil Screening | 7/25/2006 | 7/25/2006 | 7/18/2006 | 7/19/2006 | 7/20/2006 | 7/24/2006 | 7/25/2006 |
| | | | 1.5-2.0' | 2.6-3.1' | | | | | |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | < 0.019 | < 0.018 | < 0.33 | < 0.33 | < 0.35 | < 0.36 | < 0.36 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.06 | < 0.056 | < 1.9 | < 1.9 | < 2.1 | < 2.1 | < 2.1 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.034 | < 0.031 | < 1.3 | < 1.3 | < 1.4 | < 1.4 | < 1.4 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.067 | < 0.062 | < 1.6 | < 1.6 | < 1.7 | < 1.7 | < 1.7 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.1 | < 0.096 | < 1.6 | < 1.6 | < 1.8 | < 1.8 | < 1.8 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.061 | < 0.057 | < 0.89 | < 0.89 | < 0.96 | < 0.97 | < 0.99 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.046 | < 0.043 | < 0.86 | < 0.86 | < 0.92 | < 0.93 | < 0.96 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.046 | < 0.043 | < 0.56 | < 0.56 | < 0.6 | < 0.61 | < 0.62 |
| 2-Chloronaphthalene | NS | NS | < 0.056 | < 0.052 | < 0.98 | < 0.98 | < 1.1 | < 1.1 | < 1.1 |
| 2-Chlorophenol | 310 | 0.5 | < 0.034 | < 0.032 | < 0.95 | < 0.95 | < 1 | < 1 | < 1.1 |
| 2-Methylnaphthalene | 230 | 5 | 0.456 | < 0.024 | < 0.41 | < 0.41 | < 0.44 | < 0.44 | < 0.45 |
| 2-Methylphenol | 310 | NS | < 0.039 | < 0.037 | < 1.4 | < 1.4 | < 1.5 | < 1.5 | < 1.5 |
| 2-Nitroaniline | 39 | NS | < 0.025 | < 0.024 | < 0.66 | < 0.66 | < 0.71 | < 0.72 | < 0.74 |
| 2-Nitrophenol | NS | NS | < 0.05 | < 0.046 | < 1.8 | < 1.8 | < 1.9 | < 2 | < 2 |
| 3&4-Methylphenol | NS | NS | < 0.057 | < 0.053 | < 1.3 | < 1.3 | < 1.4 | < 1.4 | < 1.4 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.038 | < 0.036 | < 1.2 | < 1.2 | < 1.3 | < 1.3 | < 1.4 |
| 3-Nitroaniline | NS | NS | < 0.031 | < 0.029 | < 1.3 | < 1.3 | < 1.4 | < 1.4 | < 1.4 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.035 | < 0.033 | < 0.72 | < 0.72 | < 0.78 | < 0.78 | < 0.8 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.02 | < 0.019 | < 0.3 | < 0.3 | < 0.32 | < 0.33 | < 0.33 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.051 | < 0.047 | < 1.2 | < 1.2 | < 1.3 | < 1.3 | < 1.3 |
| 4-Chloroaniline | NS | NS | < 0.025 | < 0.023 | < 0.4 | < 0.4 | < 0.43 | < 0.43 | < 0.44 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.019 | < 0.018 | < 0.43 | < 0.43 | < 0.46 | < 0.47 | < 0.48 |
| 4-Nitroaniline | NS | NS | < 0.028 | < 0.026 | < 0.72 | < 0.72 | < 0.78 | < 0.78 | < 0.8 |
| 4-Nitrophenol | NS | NS | < 0.054 | < 0.051 | < 0.84 | < 0.84 | < 0.91 | < 0.92 | < 0.94 |
| Acenaphthene | 3400 | 74 | < 0.02 | < 0.019 | < 0.35 | < 0.35 | < 0.38 | < 0.38 | < 0.39 |
| Acenaphthylene | NS | NS | < 0.016 | < 0.015 | < 0.38 | < 0.38 | < 0.41 | < 0.41 | < 0.42 |
| Acetophenone | 2 | 2 | < 0.025 | < 0.024 | < 0.37 | < 0.37 | < 0.4 | < 0.41 | < 0.42 |
| Anthracene | 17000 | 1500 | < 0.015 | < 0.014 | < 0.4 | < 0.4 | < 0.43 | < 0.43 | < 0.44 |
| Atrazine | 210 | 0.2 | < 0.035 | < 0.032 | < 0.16 | < 0.16 | < 0.18 | < 0.18 | < 0.18 |
| Benzaldehyde | 6100 | NS | < 0.044 | < 0.041 | < 0.27 | < 0.27 | < 0.28 | < 0.29 | < 0.29 |
| Benzo(a)anthracene | 0.6 | 0.5 | 0.0868 | < 0.018 | < 0.36 | < 0.36 | < 0.38 | < 0.39 | < 0.4 |
| Benzo(a)pyrene | 0.2 | 0.2 | 0.0754 J | < 0.013 | < 0.37 | < 0.37 | < 0.39 | < 0.4 | < 0.41 |
| Benzo(b)fluoranthene | 0.6 | 2 | 0.0615 J | < 0.017 | < 0.59 | < 0.59 | < 0.64 | < 0.64 | < 0.66 |
| Benzo(g,h,i)perylene | 380000 | NS | 0.0273 J | < 0.02 | < 0.42 | < 0.42 | < 0.45 | < 0.46 | < 0.47 |
| Benzo(k)fluoranthene | 6 | 16 | 0.0834 | < 0.028 | < 0.42 | < 0.42 | < 0.45 | < 0.46 | < 0.47 |
| Benzyl butyl phthalate | 1200 | 150 | 0.0505 J | < 0.028 | < 0.59 | < 0.59 | < 0.64 | < 0.64 | < 0.66 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.026 | < 0.024 | < 0.65 | < 0.65 | < 0.7 | < 0.71 | < 0.73 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.02 | < 0.019 | < 0.53 | < 0.53 | < 0.57 | < 0.58 | < 0.59 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.03 | < 0.028 | < 0.74 | < 0.74 | < 0.79 | < 0.8 | < 0.82 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | 1.91 | < 0.048 | < 0.66 | < 0.66 | < 0.71 | < 0.72 | < 0.73 |
| Caprolactam | 31000 | 8 | < 0.038 | < 0.036 | < 0.32 | < 0.32 | < 0.34 | < 0.34 | < 0.35 |
| Carbazole | 24 | NS | < 0.016 | < 0.015 | < 0.36 | < 0.36 | < 0.39 | < 0.4 | < 0.4 |
| Chyrsene | 62 | 52 | 0.0807 | < 0.014 | < 0.25 | < 0.25 | < 0.27 | < 0.27 | < 0.28 |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | < 0.021 | < 0.02 | < 0.54 | < 0.54 | < 0.58 | < 0.59 | < 0.6 |
| Dibenzofuran | NS | NS | < 0.019 | < 0.017 | < 0.34 | < 0.34 | < 0.37 | < 0.37 | < 0.38 |
| Diethyl phthalate | 49000 | 57 | < 0.017 | < 0.016 | < 0.39 | < 0.39 | < 0.42 | < 0.42 | < 0.43 |
| Dimethyl phthalate | NS | NS | < 0.017 | < 0.016 | < 0.33 | < 0.33 | < 0.35 | < 0.36 | < 0.36 |
| di-n-butyl phthalate | 6100 | 620 | 0.05 J | < 0.024 | < 0.59 | < 0.59 | < 0.64 | < 0.64 | < 0.66 |
| di-n-octylphthalate | 2400 | 3300 | < 0.034 | < 0.032 | < 0.57 | < 0.57 | < 0.61 | < 0.62 | < 0.63 |
| Fluoranthene | 2300 | 840 | 0.129 | < 0.013 | < 0.25 | < 0.25 | < 0.27 | < 0.27 | < 0.28 |
| Fluorene | 2300 | 110 | < 0.016 | < 0.015 | < 0.45 | < 0.45 | < 0.48 | < 0.49 | < 0.5 |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | O'Connor Test Trenches | | Field Blanks | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | OC-ITT-14A | OC-ITT-14B | FIELD BLANK 060718 | FIELD BLANK 060719 | FIELD BLANK 060720 | FIELD BLANK 060724 | FIELD BLANK 060725 |
| Sample Date | Soil Remediation | Soil Screening | 7/25/2006 | 7/25/2006 | 7/18/2006 | 7/19/2006 | 7/20/2006 | 7/24/2006 | 7/25/2006 |
| | | | 1.5-2.0' | 2.6-3.1' | | | | | |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.023 | < 0.021 | < 0.54 | < 0.54 | < 0.58 | < 0.58 | < 0.6 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.026 | < 0.025 | < 0.18 | < 0.18 | < 0.19 | < 0.19 | < 0.19 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.029 | < 0.027 | < 0.41 | < 0.41 | < 0.44 | < 0.44 | < 0.45 |
| Hexachloroethane | 35 | 0.2 | < 0.02 | < 0.019 | < 0.28 | < 0.28 | < 0.3 | < 0.31 | < 0.31 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | 0.0328 J | < 0.024 | < 0.3 | < 0.3 | < 0.33 | < 0.33 | < 0.34 |
| Isophrone | 510 | 0.2 | < 0.02 | < 0.019 | < 0.59 | < 0.59 | < 0.63 | < 0.64 | < 0.65 |
| Naphthalene | 6 | 16 | 1.56 | < 0.021 | < 0.32 | < 0.32 | 0.81 J | < 0.35 | < 0.36 |
| Nitrobenzene | 31 | 0.2 | < 0.028 | < 0.026 | < 0.42 | < 0.42 | < 0.45 | < 0.46 | < 0.47 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.026 | < 0.024 | < 0.47 | < 0.47 | < 0.5 | < 0.51 | < 0.52 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.016 | < 0.015 | < 0.52 | < 0.52 | < 0.55 | < 0.56 | < 0.57 |
| Pentachlorophenol | 3 | 0.3 | < 0.045 | < 0.042 | < 1.9 | < 1.9 | < 2 | < 2.1 | < 2.1 |
| Phenanthrene | NS | NS | 0.0412 J | < 0.016 | < 0.36 | < 0.36 | < 0.39 | < 0.39 | < 0.4 |
| Phenol | 18000 | 5 | < 0.05 | < 0.046 | < 0.5 | < 0.5 | < 0.53 | < 0.54 | < 0.55 |
| Pyrene | 1700 | 550 | 0.13 | < 0.013 | < 0.34 | < 0.34 | < 0.36 | < 0.36 | < 0.37 |
| Total TIC, Semi-Volatile | NS | NS | 20.84 J | 0 | 15.8 J | 0 | 0 | 0 | 0 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.0076 | < 0.007 | < 0.094 | < 0.094 | < 0.1 | < 0.099 | < 0.1 |
| PCB 1221 | 0.2 | 0.2 | < 0.024 | < 0.022 | < 0.47 | < 0.47 | < 0.51 | < 0.49 | < 0.5 |
| PCB 1232 | 0.2 | 0.2 | < 0.022 | < 0.02 | < 0.39 | < 0.39 | < 0.42 | < 0.41 | < 0.41 |
| PCB 1242 | 0.2 | 0.2 | < 0.013 | < 0.012 | < 0.16 | < 0.16 | < 0.18 | < 0.17 | < 0.17 |
| PCB 1248 | 0.2 | 0.2 | < 0.014 | < 0.013 | < 0.15 | < 0.15 | < 0.16 | < 0.16 | < 0.16 |
| PCB 1254 | 0.2 | 0.2 | < 0.019 | < 0.017 | < 0.11 | < 0.11 | < 0.12 | < 0.11 | < 0.12 |
| PCB 1260 | 0.2 | 0.2 | 0.0609 | < 0.0074 | < 0.12 | < 0.12 | < 0.13 | < 0.12 | < 0.12 |
| Total PCBs | 0.2 | 0.2 | 0.0609 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Metals** | | | | | | | | | |
| Aluminum | 78000 | 3900 | 15200 | 17000 | < 110 J | < 110 | < 110 | < 110 | < 110 |
| Antimony | 31 | 6 | < 4.6 | < 0.84 | < 4.4 J | < 4.4 | < 4.4 | < 4.4 | < 4.4 |
| Arsenic | 19 | 19 | 9.2 B | 4 | < 3.1 | < 3.1 | < 3.1 | < 3.1 | < 3.1 |
| Barium | 16000 | 1300 | 272 | 46.1 | < 2.5 J | < 2.5 | < 2.5 | < 2.5 | 4.2 B |
| Beryllium | 16 | 0.5 | 0.47 B | 0.52 B | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Cadmium | 78 | 1 | < 0.6 | < 0.11 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 |
| Calcium | NS | NS | 5230 J | < 9.8 | < 62 J | < 62 | 278 B | < 62 | 1100 B |
| Chromium | NS | NS | 29.9 | 15.8 | < 1.6 J | < 1.6 | < 1.6 | < 1.6 | < 1.6 |
| Cobalt | 1600 | 59 | 9.7 B | 8.5 | < 1.7 J | < 1.7 | < 1.7 | < 1.7 | < 1.7 |
| Copper | 3100 | 7300 | 25.6 | 19.6 | < 2.3 J | < 2.3 | < 2.3 | < 2.3 | < 2.3 |
| Iron | NS | NS | 21500 | 23700 | < 67 J | < 67 | < 67 | < 67 | < 67 |
| Lead | 400 | 59 | 177 | 7.6 | < 2.6 | < 2.6 | < 2.6 | < 2.6 | < 2.6 |
| Magnesium | NS | NS | 3950 J | 3600 J | < 16 J | 46.7 B | 209 B | 34.4 B | 885 B |
| Manganese | 11000 | 42 | 556 | 381 | < 0.4 J | < 0.4 | 0.6 B | < 0.4 | 1.9 B |
| Mercury | 23 | 0.1 | 0.089 | 0.013 B | < 0.08 | < 0.08 | < 0.08 | < 0.08 | < 0.08 |
| Nickel | 1600 | 31 | 19.2 B | 17.1 | < 1.6 J | < 1.6 | < 1.6 | < 1.6 | < 1.6 |
| Potassium | NS | NS | 939 BJ | 993 J | < 65 J | < 65 | 84.3 BJ | < 65 J | 159 BJ |
| Selenium | 390 | 7 | < 4.8 | < 0.87 | < 3 | < 3 | < 3 | 6.5 B | < 3 |
| Silver | 390 | 1 | < 1.3 | < 0.24 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 |
| Sodium | NS | NS | < 200 J | < 37 J | < 310 | 367 B | 899 B | 464 B | 3160 BJ |
| Thallium | 5 | 3 | < 5.2 | < 0.95 | < 6.7 | < 6.7 | < 6.7 | < 6.7 | < 6.7 |
| Vanadium | 78 | NS | 36.8 | 26.2 | < 1.9 J | < 1.9 | < 1.9 | < 1.9 | < 1.9 |
| Zinc | 23000 | 600 | 110 | 44.7 J | 3.4 BJ | 4 B | < 3.3 | < 3.3 | 5.8 B |
| **Other** | | | | | | | | | |
| Total Petroleum Hydrocarbons (TPH) | NS | NS | 198 | < 29 | < 0.51 | < 0.54 | < 0.52 | < 0.54 | < 0.52 |
| Solids, Percent | NS | NS | 82.9 | 89.2 | NA | NA | NA | NA | NA |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Field Blanks | | | | Trip Blanks | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | FIELD BLANK 060726 | FIELD BLANK 060810 | FIELD BLANK 060816 | FIELDBLANK060721 | TRIP BLANK 060718 | TRIP BLANK 060719 | TRIP BLANK 060720 |
| Sample Date | Soil Remediation | Soil Screening | 7/26/2006 | 8/10/2006 | 8/16/2006 | 7/21/2006 | 7/18/2006 | 7/19/2006 | 7/20/2006 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.52 | < 0.52 | < 0.52 | < 0.52 | < 0.52 | < 0.52 | < 0.52 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 2.6 | < 2.6 | < 2.6 | < 2.6 | < 2.6 | < 2.6 | < 2.6 |
| 2-Hexanone | NS | NS | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 |
| Acetone | 70000 | 12 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 |
| Benzene | 2 | 0.005 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Bromodichloromethane | 1 | 0.005 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 |
| Bromoform | 81 | 0.02 | 3.9 J | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 |
| Bromomethane | 25 | 0.03 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Carbon disulfide | 7800 | 4 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Chlorobenzene | 510 | 0.4 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Chloroethane | 220 | NS | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 |
| Chloroform | 0.6 | 0.2 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Chloromethane | 4 | NS | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 |
| Cyclohexane | NS | NS | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Dibromochloromethane | 3 | 0.005 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 |
| Dichlorodifluoromethane | 490 | 25 | < 0.75 | < 0.75 | < 0.75 | < 0.75 | < 0.75 | < 0.75 | < 0.75 |
| Ethylbenzene | 7800 | 8 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Freon 113 | NS | NS | < 0.69 | < 0.69 | < 0.69 | < 0.69 | < 0.69 | < 0.69 | < 0.69 |
| Isopropylbenzene | NS | NS | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Methyl acetate | 78000 | 14 | < 2.1 | < 2.1 | < 2.1 | < 2.1 | < 2.1 | < 2.1 | < 2.1 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Methylcyclohexane | NS | NS | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| Methylene chloride | 34 | 0.007 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| o-Xylene | NS | NS | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Styrene | 90 | 2 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 |
| Tetrachloroethene | 2 | 0.005 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| Toluene | 6300 | 4 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Trichloroethene | 7 | 0.007 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Trichlorofluoromethane | 23000 | 22 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Xylene, -m,p | NS | NS | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 |
| Xylenes | 12000 | 12 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Total TIC, Volatile | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 | 17 J |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Field Blanks | | | | Trip Blanks | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | FIELD BLANK 060726 | FIELD BLANK 060810 | FIELD BLANK 060816 | FIELDBLANK060721 | TRIP BLANK 060718 | TRIP BLANK 060719 | TRIP BLANK 060720 |
| Sample Date | Soil Remediation | Soil Screening | 7/26/2006 | 8/10/2006 | 8/16/2006 | 7/21/2006 | 7/18/2006 | 7/19/2006 | 7/20/2006 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | < 0.35 | < 0.35 | < 0.33 | < 0.35 | NA | NA | NA |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 2.1 | < 2.1 | < 1.9 | < 2.1 | NA | NA | NA |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 1.3 | < 1.3 | < 1.3 | < 1.4 | NA | NA | NA |
| 2,4-Dichlorophenol | 180 | 0.2 | < 1.7 | < 1.7 | < 1.6 | < 1.7 | NA | NA | NA |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 1.7 | < 1.7 | < 1.6 | < 1.8 | NA | NA | NA |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.95 | < 0.95 | < 0.89 | < 0.96 | NA | NA | NA |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.91 | < 0.91 | < 0.86 | < 0.92 | NA | NA | NA |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.59 | < 0.59 | < 0.56 | < 0.6 | NA | NA | NA |
| 2-Chloronaphthalene | NS | NS | < 1 | < 1 | < 0.98 | < 1.1 | NA | NA | NA |
| 2-Chlorophenol | 310 | 0.5 | < 1 | < 1 | < 0.95 | < 1 | NA | NA | NA |
| 2-Methylnaphthalene | 230 | 5 | < 0.43 | < 0.43 | < 0.41 | < 0.44 | NA | NA | NA |
| 2-Methylphenol | 310 | NS | < 1.4 | < 1.4 | < 1.4 | < 1.5 | NA | NA | NA |
| 2-Nitroaniline | 39 | NS | < 0.7 | < 0.7 | < 0.66 | < 0.71 | NA | NA | NA |
| 2-Nitrophenol | NS | NS | < 1.9 | < 1.9 | < 1.8 | < 1.9 | NA | NA | NA |
| 3&4-Methylphenol | NS | NS | < 1.4 | < 1.4 | < 1.3 | < 1.4 | NA | NA | NA |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 1.3 | < 1.3 | < 1.2 | < 1.3 | NA | NA | NA |
| 3-Nitroaniline | NS | NS | < 1.3 | < 1.3 | < 1.3 | < 1.4 | NA | NA | NA |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.77 | < 0.77 | < 0.72 | < 0.78 | NA | NA | NA |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.32 | < 0.32 | < 0.3 | < 0.32 | NA | NA | NA |
| 4-Chloro-3-Methylphenol | NS | NS | < 1.3 | < 1.3 | < 1.2 | < 1.3 | NA | NA | NA |
| 4-Chloroaniline | NS | NS | < 0.42 | < 0.42 | < 0.4 | < 0.43 | NA | NA | NA |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.46 | < 0.46 | < 0.43 | < 0.46 | NA | NA | NA |
| 4-Nitroaniline | NS | NS | < 0.77 | < 0.77 | < 0.72 | < 0.78 | NA | NA | NA |
| 4-Nitrophenol | NS | NS | < 0.9 | < 0.9 | < 0.84 | < 0.91 | NA | NA | NA |
| Acenaphthene | 3400 | 74 | < 0.37 | < 0.37 | < 0.35 | < 0.38 | NA | NA | NA |
| Acenaphthylene | NS | NS | < 0.41 | < 0.41 | < 0.38 | < 0.41 | NA | NA | NA |
| Acetophenone | 2 | 2 | < 0.4 | < 0.4 | < 0.37 | < 0.4 | NA | NA | NA |
| Anthracene | 17000 | 1500 | < 0.42 | < 0.42 | < 0.4 | < 0.43 | NA | NA | NA |
| Atrazine | 210 | 0.2 | < 0.17 | < 0.17 | < 0.16 | < 0.18 | NA | NA | NA |
| Benzaldehyde | 6100 | NS | < 0.28 | < 0.28 | < 0.27 | < 0.28 | NA | NA | NA |
| Benzo(a)anthracene | 0.6 | 0.5 | < 0.38 | < 0.38 | < 0.36 | < 0.38 | NA | NA | NA |
| Benzo(a)pyrene | 0.2 | 0.2 | < 0.39 | < 0.39 | < 0.37 | < 0.39 | NA | NA | NA |
| Benzo(b)fluoranthene | 0.6 | 2 | < 0.63 | < 0.63 | < 0.59 | < 0.64 | NA | NA | NA |
| Benzo(g,h,i)perylene | 380000 | NS | < 0.45 | < 0.45 | < 0.42 | < 0.45 | NA | NA | NA |
| Benzo(k)fluoranthene | 6 | 16 | < 0.45 | < 0.45 | < 0.42 | < 0.45 | NA | NA | NA |
| Benzyl butyl phthalate | 1200 | 150 | < 0.63 | < 0.63 | < 0.59 | < 0.64 | NA | NA | NA |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.7 | < 0.7 | < 0.65 | < 0.7 | NA | NA | NA |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.56 | < 0.56 | < 0.53 | < 0.57 | NA | NA | NA |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.79 | < 0.79 | < 0.74 | < 0.79 | NA | NA | NA |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | < 0.7 | < 0.7 | < 0.66 | < 0.71 | NA | NA | NA |
| Caprolactam | 31000 | 8 | < 0.34 | < 0.34 | < 0.32 | < 0.34 | NA | NA | NA |
| Carbazole | 24 | NS | < 0.39 | < 0.39 | < 0.36 | < 0.39 | NA | NA | NA |
| Chyrsene | 62 | 52 | < 0.27 | < 0.27 | < 0.25 | < 0.27 | NA | NA | NA |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | < 0.58 | < 0.58 | < 0.54 | < 0.58 | NA | NA | NA |
| Dibenzofuran | NS | NS | < 0.37 | < 0.37 | < 0.34 | < 0.37 | NA | NA | NA |
| Diethyl phthalate | 49000 | 57 | < 0.41 | < 0.41 | < 0.39 | < 0.42 | NA | NA | NA |
| Dimethyl phthalate | NS | NS | < 0.35 | < 0.35 | < 0.33 | < 0.35 | NA | NA | NA |
| di-n-butyl phthalate | 6100 | 620 | < 0.63 | < 0.63 | < 0.59 | < 0.64 | NA | NA | NA |
| di-n-octylphthalate | 2400 | 3300 | < 0.61 | < 0.61 | < 0.57 | < 0.61 | NA | NA | NA |
| Fluoranthene | 2300 | 840 | < 0.26 | < 0.26 | < 0.25 | < 0.27 | NA | NA | NA |
| Fluorene | 2300 | 110 | < 0.48 | < 0.48 | < 0.45 | < 0.48 | NA | NA | NA |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Field Blanks | | | | Trip Blanks | | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | FIELD BLANK 060726 | FIELD BLANK 060810 | FIELD BLANK 060816 | FIELDBLANK060721 | TRIP BLANK 060718 | TRIP BLANK 060719 | TRIP BLANK 060720 |
| Sample Date | Soil Remediation | Soil Screening | 7/26/2006 | 8/10/2006 | 8/16/2006 | 7/21/2006 | 7/18/2006 | 7/19/2006 | 7/20/2006 |
| **Validation Status** | **Standard** | **Level** | **Final** | **Final** | **Final** | **Final** | **Final** | **Final** | **Final** |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.57 | < 0.57 | < 0.54 | < 0.58 | NA | NA | NA |
| Hexachlorobutadiene | 6 | 0.6 | < 0.19 | < 0.19 | < 0.18 | < 0.19 | NA | NA | NA |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.43 | < 0.43 | < 0.41 | < 0.44 | NA | NA | NA |
| Hexachloroethane | 35 | 0.2 | < 0.3 | < 0.3 | < 0.28 | < 0.3 | NA | NA | NA |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | < 0.32 | < 0.32 | < 0.3 | < 0.33 | NA | NA | NA |
| Isophrone | 510 | 0.2 | < 0.63 | < 0.63 | < 0.59 | < 0.63 | NA | NA | NA |
| Naphthalene | 6 | 16 | < 0.34 | < 0.34 | < 0.32 | < 0.35 | NA | NA | NA |
| Nitrobenzene | 31 | 0.2 | < 0.45 | < 0.45 | < 0.42 | < 0.45 | NA | NA | NA |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.5 | < 0.5 | < 0.47 | < 0.5 | NA | NA | NA |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.55 | < 0.55 | < 0.52 | < 0.55 | NA | NA | NA |
| Pentachlorophenol | 3 | 0.3 | < 2 | < 2 | < 1.9 | < 2 | NA | NA | NA |
| Phenanthrene | NS | NS | < 0.39 | < 0.39 | < 0.36 | < 0.39 | NA | NA | NA |
| Phenol | 18000 | 5 | < 0.53 | < 0.53 | < 0.5 | < 0.53 | NA | NA | NA |
| Pyrene | 1700 | 550 | < 0.36 | < 0.36 | < 0.34 | < 0.36 | NA | NA | NA |
| Total TIC, Semi-Volatile | NS | NS | 0 | 0 | 0 | 0 | NA | NA | NA |
| **PCBs** | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.1 | < 0.094 | < 0.094 | < 0.11 | NA | NA | NA |
| PCB 1221 | 0.2 | 0.2 | < 0.52 | < 0.47 | < 0.47 | < 0.53 | NA | NA | NA |
| PCB 1232 | 0.2 | 0.2 | < 0.43 | < 0.39 | < 0.39 | < 0.44 | NA | NA | NA |
| PCB 1242 | 0.2 | 0.2 | < 0.18 | < 0.16 | < 0.16 | < 0.18 | NA | NA | NA |
| PCB 1248 | 0.2 | 0.2 | < 0.17 | < 0.15 | < 0.15 | < 0.17 | NA | NA | NA |
| PCB 1254 | 0.2 | 0.2 | < 0.12 | < 0.11 | < 0.11 | < 0.12 | NA | NA | NA |
| PCB 1260 | 0.2 | 0.2 | < 0.13 | < 0.12 | < 0.12 | < 0.13 | NA | NA | NA |
| Total PCBs | 0.2 | 0.2 | 0 | 0 | 0 | 0 | NA | NA | NA |
| **Metals** | | | | | | | | | |
| Aluminum | 78000 | 3900 | < 110 | < 110 | < 110 | < 110 | NA | NA | NA |
| Antimony | 31 | 6 | < 4.4 | < 4.4 | < 4.4 | < 4.4 | NA | NA | NA |
| Arsenic | 19 | 19 | < 3.1 | < 3.1 | < 3.1 | < 3.1 | NA | NA | NA |
| Barium | 16000 | 1300 | < 2.5 | < 2.5 | < 2.5 | < 2.5 | NA | NA | NA |
| Beryllium | 16 | 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | NA | NA |
| Cadmium | 78 | 1 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | NA | NA | NA |
| Calcium | NS | NS | < 62 | < 62 | 79.9 B | < 62 | NA | NA | NA |
| Chromium | NS | NS | < 1.6 | < 1.6 | < 1.6 | < 1.6 | NA | NA | NA |
| Cobalt | 1600 | 59 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | NA | NA | NA |
| Copper | 3100 | 7300 | < 2.3 | < 2.3 | < 2.3 | < 2.3 | NA | NA | NA |
| Iron | NS | NS | < 67 | < 67 | < 67 | < 67 | NA | NA | NA |
| Lead | 400 | 59 | < 2.6 | < 2.6 | 4 | < 2.6 | NA | NA | NA |
| Magnesium | NS | NS | < 16 | < 16 | < 16 | < 16 | NA | NA | NA |
| Manganese | 11000 | 42 | < 0.4 | < 0.4 | 0.4 B | < 0.4 | NA | NA | NA |
| Mercury | 23 | 0.1 | < 0.08 | < 0.08 | < 0.08 | < 0.08 | NA | NA | NA |
| Nickel | 1600 | 31 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | NA | NA | NA |
| Potassium | NS | NS | < 65 | < 65 | < 65 | < 65 J | NA | NA | NA |
| Selenium | 390 | 7 | < 3 | 3.2 B | < 3 | 3.1 B | NA | NA | NA |
| Silver | 390 | 1 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | NA | NA | NA |
| Sodium | NS | NS | 840 B | 948 B | 1070 B | < 310 | NA | NA | NA |
| Thallium | 5 | 3 | < 6.7 | < 6.7 | < 6.7 | < 6.7 | NA | NA | NA |
| Vanadium | 78 | NS | < 1.9 | < 1.9 | < 1.9 | < 1.9 | NA | NA | NA |
| Zinc | 23000 | 600 | < 3.3 | 5 B | 10.1 B | 3.8 B | NA | NA | NA |
| **Other** | | | | | | | | | |
| Total Petroleum Hydrocarbons (TPH) | NS | NS | < 0.51 | NA | < 0.51 | < 0.52 | NA | NA | NA |
| Solids, Percent | NS | NS | NA | NA | NA | NA | NA | NA | NA |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Trip Blanks | | | |
|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | TRIP BLANK 060724 | TRIP BLANK 060725 | TRIP BLANK 060726 | TRIP BLANK 060810 |
| Sample Date | Soil Remediation | Soil Screening | 7/24/2006 | 7/25/2006 | 7/26/2006 | 8/10/2006 |
| Validation Status | Standard | Level | Final | Final | Final | Final |
| **VOC** | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.32 | < 0.32 | < 0.32 | < 0.32 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.33 | < 0.33 | < 0.33 | < 0.33 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.16 | < 0.16 | < 0.16 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 1.1 | < 1.1 | < 1.1 | < 1.1 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.52 | < 0.52 | < 0.52 | < 0.52 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.32 | < 0.32 | < 0.32 | < 0.32 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.24 | < 0.24 | < 0.24 | < 0.24 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 2.6 | < 2.6 | < 2.6 | < 2.6 |
| 2-Hexanone | NS | NS | < 1.3 | < 1.3 | < 1.3 | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 1.1 | < 1.1 | < 1.1 | < 1.1 |
| Acetone | 70000 | 12 | < 2.4 | < 2.4 | < 2.4 | < 2.4 |
| Benzene | 2 | 0.005 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Bromodichloromethane | 1 | 0.005 | < 0.17 | < 0.17 | < 0.17 | < 0.17 |
| Bromoform | 81 | 0.02 | < 0.54 | < 0.54 | < 0.54 | < 0.54 |
| Bromomethane | 25 | 0.03 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Carbon disulfide | 7800 | 4 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Chlorobenzene | 510 | 0.4 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Chloroethane | 220 | NS | < 0.56 | < 0.56 | < 0.56 | < 0.56 |
| Chloroform | 0.6 | 0.2 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Chloromethane | 4 | NS | < 0.35 | < 0.35 | < 0.35 | < 0.35 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.15 | < 0.15 | < 0.15 | < 0.15 |
| Cyclohexane | NS | NS | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Dibromochloromethane | 3 | 0.005 | < 0.19 | < 0.19 | < 0.19 | < 0.19 |
| Dichlorodifluoromethane | 490 | 25 | < 0.75 | < 0.75 | < 0.75 | < 0.75 |
| Ethylbenzene | 7800 | 8 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Freon 113 | NS | NS | < 0.69 | < 0.69 | < 0.69 | < 0.69 |
| Isopropylbenzene | NS | NS | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Methyl acetate | 78000 | 14 | < 2.1 | < 2.1 | < 2.1 | < 2.1 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Methylcyclohexane | NS | NS | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| Methylene chloride | 34 | 0.007 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| o-Xylene | NS | NS | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Styrene | 90 | 2 | < 0.16 | < 0.16 | < 0.16 | < 0.16 |
| Tetrachloroethene | 2 | 0.005 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| Toluene | 6300 | 4 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.42 | < 0.42 | < 0.42 | < 0.42 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Trichloroethene | 7 | 0.007 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Trichlorofluoromethane | 23000 | 22 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Xylene, -m,p | NS | NS | < 0.42 | < 0.42 | < 0.42 | < 0.42 |
| Xylenes | 12000 | 12 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Total TIC, Volatile | NS | NS | 0 | 0 | 0 | 0 |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Trip Blanks | | | |
|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | TRIP BLANK 060724 | TRIP BLANK 060725 | TRIP BLANK 060726 | TRIP BLANK 060810 |
| Sample Date | Soil Remediation | Soil Screening | 7/24/2006 | 7/25/2006 | 7/26/2006 | 8/10/2006 |
| Validation Status | Standard | Level | Final | Final | Final | Final |
| **SVOC** | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | NA | NA | NA | NA |
| 2,4,5-Trichlorophenol | 6100 | 44 | NA | NA | NA | NA |
| 2,4,6-Trichlorophenol | 19 | 0.2 | NA | NA | NA | NA |
| 2,4-Dichlorophenol | 180 | 0.2 | NA | NA | NA | NA |
| 2,4-Dimethylphenol | 1200 | 0.7 | NA | NA | NA | NA |
| 2,4-Dinitrophenol | 120 | 0.3 | NA | NA | NA | NA |
| 2,4-Dinitrotoluene | 0.7 | NS | NA | NA | NA | NA |
| 2,6-Dinitrotoluene | 0.7 | NS | NA | NA | NA | NA |
| 2-Chloronaphthalene | NS | NS | NA | NA | NA | NA |
| 2-Chlorophenol | 310 | 0.5 | NA | NA | NA | NA |
| 2-Methylnaphthalene | 230 | 5 | NA | NA | NA | NA |
| 2-Methylphenol | 310 | NS | NA | NA | NA | NA |
| 2-Nitroaniline | 39 | NS | NA | NA | NA | NA |
| 2-Nitrophenol | NS | NS | NA | NA | NA | NA |
| 3&4-Methylphenol | NS | NS | NA | NA | NA | NA |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | NA | NA | NA | NA |
| 3-Nitroaniline | NS | NS | NA | NA | NA | NA |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | NA | NA | NA | NA |
| 4-Bromophenyl phenyl ether | NS | NS | NA | NA | NA | NA |
| 4-Chloro-3-Methylphenol | NS | NS | NA | NA | NA | NA |
| 4-Chloroaniline | NS | NS | NA | NA | NA | NA |
| 4-Chlorophenyl phenyl ether | NS | NS | NA | NA | NA | NA |
| 4-Nitroaniline | NS | NS | NA | NA | NA | NA |
| 4-Nitrophenol | NS | NS | NA | NA | NA | NA |
| Acenaphthene | 3400 | 74 | NA | NA | NA | NA |
| Acenaphthylene | NS | NS | NA | NA | NA | NA |
| Acetophenone | 2 | 2 | NA | NA | NA | NA |
| Anthracene | 17000 | 1500 | NA | NA | NA | NA |
| Atrazine | 210 | 0.2 | NA | NA | NA | NA |
| Benzaldehyde | 6100 | NS | NA | NA | NA | NA |
| Benzo(a)anthracene | 0.6 | 0.5 | NA | NA | NA | NA |
| Benzo(a)pyrene | 0.2 | 0.2 | NA | NA | NA | NA |
| Benzo(b)fluoranthene | 0.6 | 2 | NA | NA | NA | NA |
| Benzo(g,h,i)perylene | 380000 | NS | NA | NA | NA | NA |
| Benzo(k)fluoranthene | 6 | 16 | NA | NA | NA | NA |
| Benzyl butyl phthalate | 1200 | 150 | NA | NA | NA | NA |
| bis(2-Chloroethoxy)methane | NS | NS | NA | NA | NA | NA |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | NA | NA | NA | NA |
| bis(2-Chloroisopropyl)ether | 23 | 3 | NA | NA | NA | NA |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | NA | NA | NA | NA |
| Caprolactam | 31000 | 8 | NA | NA | NA | NA |
| Carbazole | 24 | NS | NA | NA | NA | NA |
| Chyrsene | 62 | 52 | NA | NA | NA | NA |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | NA | NA | NA | NA |
| Dibenzofuran | NS | NS | NA | NA | NA | NA |
| Diethyl phthalate | 49000 | 57 | NA | NA | NA | NA |
| Dimethyl phthalate | NS | NS | NA | NA | NA | NA |
| di-n-butyl phthalate | 6100 | 620 | NA | NA | NA | NA |
| di-n-octylphthalate | 2400 | 3300 | NA | NA | NA | NA |
| Fluoranthene | 2300 | 840 | NA | NA | NA | NA |
| Fluorene | 2300 | 110 | NA | NA | NA | NA |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Trip Blanks | | | |
|---|---|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | TRIP BLANK 060724 | TRIP BLANK 060725 | TRIP BLANK 060726 | TRIP BLANK 060810 |
| Sample Date | Soil Remediation | Soil Screening | 7/24/2006 | 7/25/2006 | 7/26/2006 | 8/10/2006 |
| **Validation Status** | **Standard** | **Level** | **Final** | **Final** | **Final** | **Final** |
| Hexachlorobenzene | 0.3 | 0.2 | NA | NA | NA | NA |
| Hexachlorobutadiene | 6 | 0.6 | NA | NA | NA | NA |
| Hexachlorocyclopentadiene | 45 | 210 | NA | NA | NA | NA |
| Hexachloroethane | 35 | 0.2 | NA | NA | NA | NA |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | NA | NA | NA | NA |
| Isophrone | 510 | 0.2 | NA | NA | NA | NA |
| Naphthalene | 6 | 16 | NA | NA | NA | NA |
| Nitrobenzene | 31 | 0.2 | NA | NA | NA | NA |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | NA | NA | NA | NA |
| N-Nitrosodiphenylamine | 99 | 0.2 | NA | NA | NA | NA |
| Pentachlorophenol | 3 | 0.3 | NA | NA | NA | NA |
| Phenanthrene | NS | NS | NA | NA | NA | NA |
| Phenol | 18000 | 5 | NA | NA | NA | NA |
| Pyrene | 1700 | 550 | NA | NA | NA | NA |
| Total TIC, Semi-Volatile | NS | NS | NA | NA | NA | NA |
| **PCBs** | | | | | | |
| PCB 1016 | 0.2 | 0.2 | NA | NA | NA | NA |
| PCB 1221 | 0.2 | 0.2 | NA | NA | NA | NA |
| PCB 1232 | 0.2 | 0.2 | NA | NA | NA | NA |
| PCB 1242 | 0.2 | 0.2 | NA | NA | NA | NA |
| PCB 1248 | 0.2 | 0.2 | NA | NA | NA | NA |
| PCB 1254 | 0.2 | 0.2 | NA | NA | NA | NA |
| PCB 1260 | 0.2 | 0.2 | NA | NA | NA | NA |
| Total PCBs | 0.2 | 0.2 | NA | NA | NA | NA |
| **Metals** | | | | | | |
| Aluminum | 78000 | 3900 | NA | NA | NA | NA |
| Antimony | 31 | 6 | NA | NA | NA | NA |
| Arsenic | 19 | 19 | NA | NA | NA | NA |
| Barium | 16000 | 1300 | NA | NA | NA | NA |
| Beryllium | 16 | 0.5 | NA | NA | NA | NA |
| Cadmium | 78 | 1 | NA | NA | NA | NA |
| Calcium | NS | NS | NA | NA | NA | NA |
| Chromium | NS | NS | NA | NA | NA | NA |
| Cobalt | 1600 | 59 | NA | NA | NA | NA |
| Copper | 3100 | 7300 | NA | NA | NA | NA |
| Iron | NS | NS | NA | NA | NA | NA |
| Lead | 400 | 59 | NA | NA | NA | NA |
| Magnesium | NS | NS | NA | NA | NA | NA |
| Manganese | 11000 | 42 | NA | NA | NA | NA |
| Mercury | 23 | 0.1 | NA | NA | NA | NA |
| Nickel | 1600 | 31 | NA | NA | NA | NA |
| Potassium | NS | NS | NA | NA | NA | NA |
| Selenium | 390 | 7 | NA | NA | NA | NA |
| Silver | 390 | 1 | NA | NA | NA | NA |
| Sodium | NS | NS | NA | NA | NA | NA |
| Thallium | 5 | 3 | NA | NA | NA | NA |
| Vanadium | 78 | NS | NA | NA | NA | NA |
| Zinc | 23000 | 600 | NA | NA | NA | NA |
| **Other** | | | | | | |
| Total Petroleum Hydrocarbons (TPH) | NS | NS | NA | NA | NA | NA |
| Solids, Percent | NS | NS | NA | NA | NA | NA |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Trip Blanks | |
|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | TRIP BLANK 060816 | TRIPBLANK060721 |
| Sample Date | Soil Remediation | Soil Screening | 8/16/2006 | 7/21/2006 |
| Validation Status | Standard | Level | Final | Final |
| **VOC** | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.28 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.28 | < 0.28 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.32 | < 0.32 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.23 | < 0.23 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.33 | < 0.33 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.16 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 1.1 | < 1.1 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.52 | < 0.52 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.2 | < 0.2 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.32 | < 0.32 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.24 | < 0.24 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 2.6 | < 2.6 |
| 2-Hexanone | NS | NS | < 1.3 | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 1.1 | < 1.1 |
| Acetone | 70000 | 12 | < 2.4 | < 2.4 |
| Benzene | 2 | 0.005 | < 0.21 | < 0.21 |
| Bromodichloromethane | 1 | 0.005 | < 0.17 | < 0.17 |
| Bromoform | 81 | 0.02 | < 0.54 | < 0.54 |
| Bromomethane | 25 | 0.03 | < 0.22 | < 0.22 |
| Carbon disulfide | 7800 | 4 | < 0.21 | < 0.21 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.29 | < 0.29 |
| Chlorobenzene | 510 | 0.4 | < 0.22 | < 0.22 |
| Chloroethane | 220 | NS | < 0.56 | < 0.56 |
| Chloroform | 0.6 | 0.2 | < 0.22 | < 0.22 |
| Chloromethane | 4 | NS | < 0.35 | < 0.35 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.18 | < 0.18 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.15 | < 0.15 |
| Cyclohexane | NS | NS | < 0.5 | < 0.5 |
| Dibromochloromethane | 3 | 0.005 | < 0.19 | < 0.19 |
| Dichlorodifluoromethane | 490 | 25 | < 0.75 | < 0.75 |
| Ethylbenzene | 7800 | 8 | < 0.2 | < 0.2 |
| Freon 113 | NS | NS | < 0.69 | < 0.69 |
| Isopropylbenzene | NS | NS | < 0.2 | < 0.2 |
| Methyl acetate | 78000 | 14 | < 2.1 | < 2.1 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.31 | < 0.31 |
| Methylcyclohexane | NS | NS | < 0.18 | < 0.18 |
| Methylene chloride | 34 | 0.007 | < 0.27 | < 0.27 |
| o-Xylene | NS | NS | < 0.31 | < 0.31 |
| Styrene | 90 | 2 | < 0.16 | < 0.16 |
| Tetrachloroethene | 2 | 0.005 | < 0.28 | < 0.28 |
| Toluene | 6300 | 4 | < 0.2 | < 0.2 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.42 | < 0.42 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.2 | < 0.2 |
| Trichloroethene | 7 | 0.007 | < 0.29 | < 0.29 |
| Trichlorofluoromethane | 23000 | 22 | < 0.25 | < 0.25 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.29 | < 0.29 |
| Xylene, -m,p | NS | NS | < 0.42 | < 0.42 |
| Xylenes | 12000 | 12 | < 0.31 | < 0.31 |
| Total TIC, Volatile | NS | NS | 0 | 0 |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Trip Blanks | |
|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | TRIP BLANK 060816 | TRIPBLANK060721 |
| Sample Date | Soil Remediation | Soil Screening | 8/16/2006 | 7/21/2006 |
| Validation Status | Standard | Level | Final | Final |
| **SVOC** | | | | |
| 1,1'-Biphenyl | 3100 | 90 | NA | NA |
| 2,4,5-Trichlorophenol | 6100 | 44 | NA | NA |
| 2,4,6-Trichlorophenol | 19 | 0.2 | NA | NA |
| 2,4-Dichlorophenol | 180 | 0.2 | NA | NA |
| 2,4-Dimethylphenol | 1200 | 0.7 | NA | NA |
| 2,4-Dinitrophenol | 120 | 0.3 | NA | NA |
| 2,4-Dinitrotoluene | 0.7 | NS | NA | NA |
| 2,6-Dinitrotoluene | 0.7 | NS | NA | NA |
| 2-Chloronaphthalene | NS | NS | NA | NA |
| 2-Chlorophenol | 310 | 0.5 | NA | NA |
| 2-Methylnaphthalene | 230 | 5 | NA | NA |
| 2-Methylphenol | 310 | NS | NA | NA |
| 2-Nitroaniline | 39 | NS | NA | NA |
| 2-Nitrophenol | NS | NS | NA | NA |
| 3&4-Methylphenol | NS | NS | NA | NA |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | NA | NA |
| 3-Nitroaniline | NS | NS | NA | NA |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | NA | NA |
| 4-Bromophenyl phenyl ether | NS | NS | NA | NA |
| 4-Chloro-3-Methylphenol | NS | NS | NA | NA |
| 4-Chloroaniline | NS | NS | NA | NA |
| 4-Chlorophenyl phenyl ether | NS | NS | NA | NA |
| 4-Nitroaniline | NS | NS | NA | NA |
| 4-Nitrophenol | NS | NS | NA | NA |
| Acenaphthene | 3400 | 74 | NA | NA |
| Acenaphthylene | NS | NS | NA | NA |
| Acetophenone | 2 | 2 | NA | NA |
| Anthracene | 17000 | 1500 | NA | NA |
| Atrazine | 210 | 0.2 | NA | NA |
| Benzaldehyde | 6100 | NS | NA | NA |
| Benzo(a)anthracene | 0.6 | 0.5 | NA | NA |
| Benzo(a)pyrene | 0.2 | 0.2 | NA | NA |
| Benzo(b)fluoranthene | 0.6 | 2 | NA | NA |
| Benzo(g,h,i)perylene | 380000 | NS | NA | NA |
| Benzo(k)fluoranthene | 6 | 16 | NA | NA |
| Benzyl butyl phthalate | 1200 | 150 | NA | NA |
| bis(2-Chloroethoxy)methane | NS | NS | NA | NA |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | NA | NA |
| bis(2-Chloroisopropyl)ether | 23 | 3 | NA | NA |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | NA | NA |
| Caprolactam | 31000 | 8 | NA | NA |
| Carbazole | 24 | NS | NA | NA |
| Chyrsene | 62 | 52 | NA | NA |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | NA | NA |
| Dibenzofuran | NS | NS | NA | NA |
| Diethyl phthalate | 49000 | 57 | NA | NA |
| Dimethyl phthalate | NS | NS | NA | NA |
| di-n-butyl phthalate | 6100 | 620 | NA | NA |
| di-n-octylphthalate | 2400 | 3300 | NA | NA |
| Fluoranthene | 2300 | 840 | NA | NA |
| Fluorene | 2300 | 110 | NA | NA |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location | Residential | Default Impact to | Trip Blanks | |
|---|---|---|---|---|
| Sample Name | Direct Contact | Groundwater | TRIP BLANK 060816 | TRIPBLANK060721 |
| Sample Date | Soil Remediation | Soil Screening | 8/16/2006 | 7/21/2006 |
| **Validation Status** | **Standard** | **Level** | **Final** | **Final** |
| Hexachlorobenzene | 0.3 | 0.2 | NA | NA |
| Hexachlorobutadiene | 6 | 0.6 | NA | NA |
| Hexachlorocyclopentadiene | 45 | 210 | NA | NA |
| Hexachloroethane | 35 | 0.2 | NA | NA |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | NA | NA |
| Isophrone | 510 | 0.2 | NA | NA |
| Naphthalene | 6 | 16 | NA | NA |
| Nitrobenzene | 31 | 0.2 | NA | NA |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | NA | NA |
| N-Nitrosodiphenylamine | 99 | 0.2 | NA | NA |
| Pentachlorophenol | 3 | 0.3 | NA | NA |
| Phenanthrene | NS | NS | NA | NA |
| Phenol | 18000 | 5 | NA | NA |
| Pyrene | 1700 | 550 | NA | NA |
| Total TIC, Semi-Volatile | NS | NS | NA | NA |
| **PCBs** | | | | |
| PCB 1016 | 0.2 | 0.2 | NA | NA |
| PCB 1221 | 0.2 | 0.2 | NA | NA |
| PCB 1232 | 0.2 | 0.2 | NA | NA |
| PCB 1242 | 0.2 | 0.2 | NA | NA |
| PCB 1248 | 0.2 | 0.2 | NA | NA |
| PCB 1254 | 0.2 | 0.2 | NA | NA |
| PCB 1260 | 0.2 | 0.2 | NA | NA |
| Total PCBs | 0.2 | 0.2 | NA | NA |
| **Metals** | | | | |
| Aluminum | 78000 | 3900 | NA | NA |
| Antimony | 31 | 6 | NA | NA |
| Arsenic | 19 | 19 | NA | NA |
| Barium | 16000 | 1300 | NA | NA |
| Beryllium | 16 | 0.5 | NA | NA |
| Cadmium | 78 | 1 | NA | NA |
| Calcium | NS | NS | NA | NA |
| Chromium | NS | NS | NA | NA |
| Cobalt | 1600 | 59 | NA | NA |
| Copper | 3100 | 7300 | NA | NA |
| Iron | NS | NS | NA | NA |
| Lead | 400 | 59 | NA | NA |
| Magnesium | NS | NS | NA | NA |
| Manganese | 11000 | 42 | NA | NA |
| Mercury | 23 | 0.1 | NA | NA |
| Nickel | 1600 | 31 | NA | NA |
| Potassium | NS | NS | NA | NA |
| Selenium | 390 | 7 | NA | NA |
| Silver | 390 | 1 | NA | NA |
| Sodium | NS | NS | NA | NA |
| Thallium | 5 | 3 | NA | NA |
| Vanadium | 78 | NS | NA | NA |
| Zinc | 23000 | 600 | NA | NA |
| **Other** | | | | |
| Total Petroleum Hydrocarbons (TPH) | NS | NS | NA | NA |
| Solids, Percent | NS | NS | NA | NA |

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**Table 4. Summary of Analytical Results, O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

Results are reported in milligrams per kilogram (mg/kg), except for trip blanks and field blanks which are in micrograms per liter (ug/l).

| | |
|---|---|
| < | Not detected. |
| NA | Not analyzed. |
| NS | No standard. |
| D | Dilution. |
| B | Inorganic B: Result is between the detection limit and quantification limit. |
| J | Estimated result. |
| SVOC | Semi-volatile organic compound. |
| VOC | Volatile organic compound. |
| **Bold** | Value is above the Residential Direct Contact Soil Cleanup Criteria threshold value. |
| | Value is above the Impact to Groundwater Soil Cleanup Criteria threshold value. |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T1-0+10(11.0-12.0) | T1-1+00(6.0-6.5) | T8-0+0(6.0-7.0) | T8-1+00(6.0-7.0) | T8-2+00(10.0-11.0) | T8-3+00(10.0-11.0) | T8-3+94(10.0-11.0) | F-T1-1+96 | F-T1-3+42 | T1-2+00(8.0-9.0) | T1-3+00(8.0-9.0) | F-T1-4+15 | F-T7-0+94 |
| Sample Date | Soil Remediation | Soil Screening | 1/19/2010 | 1/20/2010 | 1/21/2010 | 1/21/2010 | 1/25/2010 | 1/25/2010 | 1/25/2010 | 1/26/2010 | 1/26/2010 | 1/26/2010 | 1/26/2010 | 1/27/2010 | 1/27/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.00012 | < 0.00013 | < 0.00011 | < 0.0001 | 0.0017 J | < 0.00013 | < 0.00011 | < 0.00011 | < 0.00013 | < 0.00011 | < 0.0001 | < 0.00014 | < 0.00018 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00027 | < 0.00029 | < 0.00024 | < 0.00023 | < 0.00027 | < 0.00029 | < 0.00026 | < 0.00025 | < 0.0003 | < 0.00025 | < 0.00023 | < 0.00031 | < 0.00042 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00017 | < 0.00018 | < 0.00015 | < 0.00015 | < 0.00017 | < 0.00018 | < 0.00017 | < 0.00016 | < 0.00019 | < 0.00016 | < 0.00015 | < 0.0002 | < 0.00027 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.00013 | < 0.00014 | < 0.00011 | < 0.00011 | 0.00066 J | < 0.00014 | < 0.00012 | < 0.00012 | < 0.00014 | < 0.00012 | < 0.00011 | < 0.00015 | < 0.0002 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00062 | < 0.00065 | < 0.00055 | < 0.00053 | < 0.00061 | < 0.00066 | < 0.00059 | < 0.00056 | < 0.00068 | < 0.00057 | < 0.00053 | < 0.0007 | < 0.00096 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.00032 | < 0.00034 | < 0.00029 | < 0.00028 | < 0.00032 | < 0.00034 | < 0.00031 | < 0.00029 | < 0.00035 | < 0.0003 | < 0.00028 | < 0.00036 | < 0.0005 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.00051 | < 0.00053 | < 0.00045 | < 0.00043 | < 0.0005 | < 0.00054 | < 0.00048 | < 0.00045 | < 0.00055 | < 0.00047 | < 0.00043 | < 0.00057 | < 0.00078 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00013 | < 0.00013 | < 0.00011 | < 0.00011 | < 0.00013 | < 0.00014 | < 0.00012 | < 0.00012 | < 0.00014 | < 0.00012 | < 0.00011 | < 0.00014 | < 0.0002 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00025 | < 0.00026 | < 0.00022 | < 0.00022 | < 0.00025 | < 0.00027 | < 0.00024 | < 0.00023 | < 0.00028 | < 0.00023 | < 0.00022 | < 0.00029 | < 0.00039 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.00032 | < 0.00034 | < 0.00029 | < 0.00028 | < 0.00032 | < 0.00034 | < 0.00031 | < 0.00029 | < 0.00035 | < 0.0003 | < 0.00028 | < 0.00036 | < 0.0005 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.00012 | < 0.00013 | < 0.00011 | < 0.0001 | < 0.00012 | < 0.00013 | < 0.00012 | < 0.00011 | < 0.00013 | < 0.00011 | < 0.0001 | < 0.00014 | < 0.00019 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00026 | < 0.00027 | < 0.00023 | < 0.00022 | < 0.00025 | < 0.00027 | < 0.00025 | < 0.00023 | < 0.00028 | < 0.00024 | < 0.00022 | < 0.00029 | < 0.0004 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.00032 | < 0.00033 | < 0.00028 | < 0.00027 | < 0.00031 | < 0.00033 | < 0.0003 | < 0.00028 | < 0.00035 | < 0.00029 | < 0.00027 | < 0.00036 | < 0.00049 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.0018 | < 0.0019 | < 0.0016 | < 0.0016 | < 0.0018 | < 0.002 | < 0.0018 | < 0.0017 | < 0.002 | < 0.0017 | < 0.0016 | < 0.0021 | < 0.0028 |
| 2-Hexanone | NS | NS | < 0.0009 | < 0.00094 | < 0.0008 | < 0.00077 | < 0.00089 | < 0.00095 | < 0.00086 | < 0.00081 | < 0.00099 | < 0.00083 | < 0.00077 | < 0.001 | < 0.0014 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.00076 | < 0.00079 | < 0.00067 | < 0.00065 | 0.0061 J | < 0.0008 | < 0.00073 | < 0.00068 | < 0.00083 | < 0.0007 | < 0.00065 | < 0.00086 | < 0.0012 |
| Acetone | 70000 | 12 | < 0.0021 | < 0.0022 | < 0.0018 J | < 0.0018 J | < 0.0021 | < 0.0022 | < 0.002 | < 0.0019 | < 0.0023 | < 0.0019 | < 0.0018 | 0.0129 | 0.142 |
| Benzene | 2 | 0.005 | < 0.00032 | < 0.00033 | < 0.00028 | < 0.00027 | < 0.00032 | < 0.00034 | < 0.00031 | < 0.00029 | < 0.00035 | < 0.00029 | < 0.00027 | < 0.00036 | < 0.00049 |
| Bromodichloromethane | 1 | 0.005 | < 0.00024 | < 0.00025 | < 0.00021 | < 0.0002 | < 0.00024 | < 0.00025 | < 0.00023 | < 0.00022 | < 0.00026 | < 0.00022 | < 0.00021 | < 0.00027 | < 0.00037 |
| Bromoform | 81 | 0.02 | < 0.00014 | < 0.00015 | < 0.00013 | < 0.00012 | < 0.00014 | < 0.00015 | < 0.00014 | < 0.00013 | < 0.00015 | < 0.00013 | < 0.00012 | < 0.00016 | < 0.00022 |
| Bromomethane | 25 | 0.03 | < 0.00038 | < 0.0004 | < 0.00033 | < 0.00032 | < 0.00037 | < 0.0004 | < 0.00036 | < 0.00034 | < 0.00041 | < 0.00035 | < 0.00032 | < 0.00043 | < 0.00058 |
| Carbon disulfide | 7800 | 4 | < 0.00029 | < 0.0003 | < 0.00025 | < 0.00024 | < 0.00028 | < 0.0003 | < 0.00027 | < 0.00026 | < 0.00031 | < 0.00026 | < 0.00024 | 0.00089 J | < 0.00044 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.00052 | < 0.00054 | < 0.00046 | < 0.00044 | < 0.00051 | < 0.00055 | < 0.0005 | < 0.00047 | < 0.00057 | < 0.00048 | < 0.00044 | < 0.00059 | < 0.0008 |
| Chlorobenzene | 510 | 0.4 | < 0.00032 | < 0.00033 | < 0.00028 | < 0.00027 | < 0.00031 | < 0.00034 | < 0.0003 | < 0.00028 | < 0.00035 | < 0.00029 | < 0.00027 | < 0.00036 | < 0.00049 |
| Chloroethane | 220 | NS | < 0.00094 | < 0.00098 | < 0.00083 | < 0.0008 | < 0.00092 | < 0.00099 | < 0.0009 | < 0.00084 | < 0.001 | < 0.00086 | < 0.0008 | < 0.0011 | < 0.0014 |
| Chloroform | 0.6 | 0.2 | < 0.0003 | < 0.00031 | < 0.00026 | < 0.00025 | < 0.00029 | < 0.00032 | < 0.00028 | < 0.00027 | < 0.00033 | < 0.00027 | < 0.00025 | < 0.00034 | < 0.00046 |
| Chloromethane | 4 | NS | < 0.00015 | < 0.00016 | < 0.00014 | < 0.00013 | < 0.00015 | < 0.00016 | < 0.00015 | < 0.00014 | < 0.00017 | < 0.00014 | < 0.00013 | < 0.00017 | < 0.00024 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00022 | < 0.00023 | < 0.0002 | < 0.00019 | < 0.00022 | < 0.00024 | < 0.00021 | < 0.0002 | < 0.00024 | < 0.00021 | < 0.00019 | < 0.00025 | < 0.00034 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00012 | < 0.00013 | < 0.00011 | < 0.00011 | < 0.00012 | < 0.00013 | < 0.00012 | < 0.00011 | < 0.00014 | < 0.00011 | < 0.00011 | < 0.00014 | < 0.00019 |
| Cyclohexane | NS | NS | < 0.00014 | < 0.00015 | < 0.00013 | < 0.00012 | < 0.00014 | < 0.00015 | < 0.00014 | < 0.00013 | < 0.00015 | < 0.00013 | < 0.00012 | < 0.00016 | < 0.00022 |
| Dibromochloromethane | 3 | 0.005 | < 0.0001 | < 0.00011 | < 0.000091 | < 0.000088 | < 0.0001 | < 0.00011 | < 0.000099 | < 0.000092 | < 0.00011 | < 0.000095 | < 0.000088 | < 0.00012 | < 0.00016 |
| Dichlorodifluoromethane | 490 | 25 | < 0.00089 | < 0.00093 | < 0.00078 | < 0.00075 | < 0.00087 | < 0.00094 | < 0.00085 | < 0.00079 | < 0.00097 | < 0.00082 | < 0.00076 | < 0.001 | < 0.0014 |
| Ethylbenzene | 7800 | 8 | < 0.00035 | < 0.00036 | < 0.00031 | < 0.0003 | 0.036 | < 0.00037 | < 0.00033 | 0.0166 | < 0.00038 | 0.00096 | < 0.0003 | < 0.00039 | < 0.00054 |
| Freon 113 | NS | NS | < 0.00053 | < 0.00055 | < 0.00047 | < 0.00045 | < 0.00052 | < 0.00056 | < 0.0005 | < 0.00047 | < 0.00058 | < 0.00049 | < 0.00045 | < 0.00059 | < 0.00081 |
| Isopropylbenzene | NS | NS | < 0.00049 | < 0.00051 | < 0.00043 | < 0.00041 | 0.0019 J | < 0.00051 | < 0.00046 | 0.0017 J | < 0.00053 | < 0.00045 | < 0.00041 | < 0.00055 | < 0.00075 |
| Methyl acetate | 78000 | 14 | < 0.00077 | < 0.00081 | < 0.00068 | < 0.00066 | < 0.00076 | < 0.00082 | < 0.00074 | < 0.00069 | < 0.00084 | < 0.00071 | < 0.00066 | < 0.00087 | < 0.0012 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.00026 | < 0.00028 | < 0.00023 | < 0.00022 | < 0.00026 | < 0.00028 | < 0.00025 | < 0.00024 | < 0.00029 | < 0.00024 | < 0.00023 | < 0.0003 | < 0.00041 |
| Methylcyclohexane | NS | NS | < 0.00061 | < 0.00064 | < 0.00054 | < 0.00052 | 0.00091 J | < 0.00065 | < 0.00059 | < 0.00055 | < 0.00067 | < 0.00056 | < 0.00052 | < 0.00069 | < 0.00094 |
| Methylene chloride | 34 | 0.007 | < 0.00021 | < 0.00022 | < 0.00018 | < 0.00018 | < 0.00021 | < 0.00022 | < 0.0002 | < 0.00019 | < 0.00023 | < 0.00019 | < 0.00018 | < 0.00024 | < 0.00032 |
| o-Xylene | NS | NS | < 0.00044 | < 0.00046 | < 0.00039 | < 0.00037 | 0.0574 | < 0.00046 | < 0.00042 | 0.0198 | < 0.00048 | 0.0013 | < 0.00037 | < 0.0005 | < 0.00068 |
| Styrene | 90 | 2 | < 0.0001 | < 0.0001 | < 0.000089 | < 0.000085 | < 0.000099 | < 0.00011 | < 0.000096 | < 0.00009 | < 0.00011 | < 0.000092 | < 0.000086 | < 0.00011 | < 0.00015 |
| Tetrachloroethene | 2 | 0.005 | < 0.00014 | < 0.00014 | < 0.00012 | < 0.00012 | < 0.00013 | < 0.00014 | < 0.00013 | < 0.00012 | < 0.00015 | < 0.00013 | < 0.00012 | < 0.00015 | < 0.00021 |
| Toluene | 6300 | 4 | < 0.00027 | < 0.00029 | < 0.00024 | < 0.00023 | 0.068 | < 0.00029 | < 0.00026 | 0.0041 | < 0.0003 | 0.00029 J | 0.00024 J | < 0.00031 | < 0.00042 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.00042 | < 0.00044 | < 0.00037 | < 0.00036 | < 0.00041 | < 0.00044 | < 0.0004 | < 0.00038 | < 0.00046 | < 0.00039 | < 0.00036 | < 0.00047 | < 0.00065 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.00009 | < 0.000094 | < 0.00008 | < 0.000077 | < 0.000089 | < 0.000095 | < 0.000086 | < 0.000081 | < 0.000098 | < 0.000083 | < 0.000077 | < 0.0001 | < 0.00014 |
| Trichloroethene | 7 | 0.007 | < 0.00049 | < 0.00052 | < 0.00044 | < 0.00042 | < 0.00049 | < 0.00052 | < 0.00047 | < 0.00044 | < 0.00054 | < 0.00045 | < 0.00042 | < 0.00056 | < 0.00076 |
| Trichlorofluoromethane | 23000 | 22 | < 0.00021 | < 0.00022 | < 0.00019 | < 0.00018 | < 0.00021 | < 0.00023 | < 0.00021 | < 0.00019 | < 0.00023 | < 0.0002 | < 0.00018 | < 0.00024 | < 0.00033 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.00017 | < 0.00017 | < 0.00015 | < 0.00014 | < 0.00016 | < 0.00018 | < 0.00016 | < 0.00015 | < 0.00018 | < 0.00015 | < 0.00014 | < 0.00019 | < 0.00026 |
| Xylene, -m,p | NS | NS | < 0.00044 | 0.00079 | < 0.00039 | < 0.00037 | 0.13 | < 0.00046 | < 0.00042 | 0.0628 | < 0.00048 | < 0.0004 | 0.00039 J | < 0.0005 | < 0.00068 |
| Xylenes | 12000 | 12 | < 0.00044 | 0.00079 | < 0.00039 | < 0.00037 | 0.187 | < 0.00046 | < 0.00042 | 0.0826 | < 0.00048 | 0.0016 J | 0.00049 J | < 0.0005 | < 0.00068 |
| Total TIC, Volatile | NS | NS | 0 | 0 | 0 | 0 | 0.0318 J | 0 | 0 | 0.2502 J | 0.0064 J | 0 | 0 | 0 | 0.031 J |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T1-0+10(11.0-12.0) | T1-1+00(6.0-6.5) | T8-0+0(6.0-7.0) | T8-1+00(6.0-7.0) | T8-2+00(10.0-11.0) | T8-3+00(10.0-11.0) | T8-3+94(10.0-11.0) | F-T1-1+96 | F-T1-3+42 | T1-2+00(8.0-9.0) | T1-3+00(8.0-9.0) | F-T1-4+15 | F-T7-0+94 |
| Sample Date | Soil Remediation | Soil Screening | 1/19/2010 | 1/20/2010 | 1/21/2010 | 1/21/2010 | 1/25/2010 | 1/25/2010 | 1/25/2010 | 1/26/2010 | 1/26/2010 | 1/26/2010 | 1/26/2010 | 1/27/2010 | 1/27/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | < 0.0038 | < 0.0039 | < 0.0037 | < 0.0037 | < 0.0039 | < 0.0041 | < 0.0041 | < 0.0038 | < 0.0037 | < 0.0037 | < 0.0038 | < 0.0048 | < 0.0046 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.038 | < 0.039 | < 0.037 | < 0.037 | < 0.039 | < 0.041 | < 0.041 | < 0.038 | < 0.037 | < 0.037 | < 0.038 | < 0.048 | < 0.046 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.031 | < 0.032 | < 0.03 | < 0.03 | < 0.032 | < 0.033 | < 0.033 | < 0.031 | < 0.03 | < 0.03 | < 0.031 | < 0.039 | < 0.037 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.053 | < 0.055 | < 0.052 | < 0.051 | < 0.055 | < 0.057 | < 0.057 | < 0.052 | < 0.052 | < 0.051 | < 0.053 | < 0.067 | < 0.063 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.055 | < 0.057 | < 0.054 | < 0.054 | < 0.057 | < 0.06 | < 0.059 | < 0.055 | < 0.054 | < 0.053 | < 0.055 | < 0.07 | < 0.066 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.04 | < 0.042 | < 0.039 J | < 0.039 J | < 0.041 | < 0.043 | < 0.043 | < 0.04 | < 0.039 | < 0.039 | < 0.04 | < 0.051 | < 0.048 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.014 | < 0.015 | < 0.014 J | < 0.014 J | < 0.015 | < 0.016 | < 0.015 | < 0.014 | < 0.014 | < 0.014 | < 0.014 | < 0.018 | < 0.017 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.014 | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.016 | < 0.015 |
| 2-Chloronaphthalene | NS | NS | < 0.01 | < 0.011 | < 0.01 | < 0.0099 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.0099 | < 0.0098 | < 0.01 | < 0.013 | < 0.012 |
| 2-Chlorophenol | 310 | 0.5 | < 0.033 | < 0.034 | < 0.032 | < 0.032 | < 0.034 | < 0.036 | < 0.036 | < 0.033 | < 0.032 | < 0.032 | < 0.033 | < 0.042 | < 0.04 |
| 2-Methylnaphthalene | 230 | 5 | < 0.018 | < 0.019 | < 0.018 | < 0.018 | < 0.019 | < 0.02 | < 0.02 | < 0.018 | < 0.018 | < 0.018 | < 0.018 | < 0.023 | < 0.022 |
| 2-Methylphenol | 310 | NS | < 0.037 | < 0.039 | < 0.037 | < 0.036 | < 0.039 | < 0.041 | < 0.04 | < 0.037 | < 0.037 | < 0.036 | < 0.037 | < 0.047 | < 0.045 |
| 2-Nitroaniline | 39 | NS | < 0.014 | < 0.015 | < 0.014 | < 0.014 | < 0.015 | < 0.016 | < 0.016 | < 0.014 | < 0.014 | < 0.014 | < 0.014 | < 0.018 | < 0.017 |
| 2-Nitrophenol | NS | NS | < 0.035 | < 0.036 | < 0.034 | < 0.034 | < 0.036 | < 0.038 | < 0.037 | < 0.035 | < 0.034 | < 0.033 | < 0.035 | < 0.044 | < 0.042 |
| 3&4-Methylphenol | NS | NS | < 0.041 | < 0.043 | < 0.041 | < 0.04 | < 0.043 | < 0.045 | < 0.045 | < 0.041 | < 0.041 | < 0.04 | < 0.042 | < 0.053 | < 0.05 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.0083 | < 0.0086 J | < 0.0082 | < 0.0081 | < 0.0086 | < 0.009 | < 0.009 | < 0.0083 | < 0.0081 | < 0.008 | < 0.0084 | < 0.011 | < 0.01 |
| 3-Nitroaniline | NS | NS | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.017 | < 0.016 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.04 | < 0.042 | < 0.039 J | < 0.039 J | < 0.041 | < 0.043 | < 0.043 | < 0.04 | < 0.039 | < 0.039 | < 0.04 | < 0.051 | < 0.048 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.012 | < 0.012 | < 0.011 | < 0.012 | < 0.015 | < 0.014 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.033 | < 0.034 | < 0.032 | < 0.032 | < 0.034 | < 0.036 | < 0.035 | < 0.033 | < 0.032 | < 0.032 | < 0.033 | < 0.042 | < 0.039 |
| 4-Chloroaniline | NS | NS | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.01 | < 0.01 | < 0.011 | < 0.013 | < 0.013 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.0098 | < 0.01 | < 0.0097 | < 0.0096 | < 0.01 | < 0.011 | < 0.011 | < 0.0098 | < 0.0096 | < 0.0095 | < 0.0099 | < 0.013 | < 0.012 |
| 4-Nitroaniline | NS | NS | < 0.013 | < 0.013 | < 0.013 | < 0.012 | < 0.013 | < 0.014 | < 0.014 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.016 | < 0.015 |
| 4-Nitrophenol | NS | NS | < 0.055 | < 0.057 | < 0.054 J | < 0.054 J | < 0.057 | < 0.06 | < 0.06 | < 0.055 | < 0.054 | < 0.053 | < 0.056 | < 0.07 | < 0.066 |
| Acenaphthene | 3400 | 74 | < 0.0095 | < 0.0099 | < 0.0093 | < 0.0092 | < 0.0098 | < 0.01 | < 0.01 | < 0.0095 | < 0.0093 | < 0.0092 | < 0.0095 | < 0.012 | < 0.011 |
| Acenaphthylene | NS | NS | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.01 | < 0.01 | < 0.011 | < 0.013 | < 0.013 |
| Acetophenone | 2 | 2 | < 0.0057 | < 0.006 | < 0.0057 | < 0.0056 | < 0.006 | < 0.0063 | < 0.0062 | < 0.0057 | < 0.0056 | < 0.0056 | < 0.0058 | < 0.0073 | < 0.0069 |
| Anthracene | 17000 | 1500 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.015 | < 0.014 |
| Atrazine | 210 | 0.2 | < 0.0064 | < 0.0067 | < 0.0063 | < 0.0063 | < 0.0067 | < 0.007 | < 0.0069 | < 0.0064 | < 0.0063 | < 0.0062 | < 0.0065 | < 0.0082 | < 0.0077 |
| Benzaldehyde | 6100 | NS | < 0.0075 | < 0.0078 | < 0.0074 | < 0.0073 | < 0.0078 | < 0.0082 | < 0.0081 | < 0.0075 | < 0.0074 | < 0.0073 | < 0.0076 | < 0.0096 | < 0.009 |
| Benzo(a)anthracene | 0.6 | 0.5 | < 0.011 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.014 | < 0.013 |
| Benzo(a)pyrene | 0.2 | 0.2 | < 0.01 | < 0.01 | < 0.0098 J | < 0.0097 J | < 0.01 J | < 0.011 J | < 0.011 | < 0.0099 | < 0.0098 | < 0.0096 | < 0.01 | < 0.013 | < 0.012 |
| Benzo(b)fluoranthene | 0.6 | 2 | < 0.011 | < 0.011 | < 0.011 J | < 0.011 J | < 0.011 J | < 0.012 J | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.014 | < 0.013 |
| Benzo(g,h,i)perylene | 380000 | NS | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.015 | < 0.015 |
| Benzo(k)fluoranthene | 6 | 16 | < 0.012 | < 0.013 | < 0.012 J | < 0.012 J | < 0.013 J | < 0.013 J | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.016 | < 0.015 |
| Benzyl butyl phthalate | 1200 | 150 | < 0.019 | < 0.02 | < 0.019 | < 0.018 | < 0.02 | < 0.021 | < 0.02 | < 0.019 | < 0.019 | < 0.018 | < 0.019 | < 0.024 | < 0.023 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.017 | < 0.016 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.0098 | < 0.01 | < 0.0097 | < 0.0096 | < 0.01 | < 0.011 | < 0.011 | < 0.0098 | < 0.0096 | < 0.0095 | < 0.0099 | 0.0152 J | 0.119 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.0097 | < 0.01 | < 0.0095 | < 0.0095 | < 0.01 | < 0.011 | < 0.01 | < 0.0097 | < 0.0095 | < 0.0094 | < 0.0098 | < 0.012 | < 0.012 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | < 0.029 | < 0.03 | < 0.028 | < 0.028 | < 0.03 | < 0.031 | < 0.031 | 0.0721 | < 0.028 | < 0.028 | < 0.029 | < 0.037 | 0.0418 J |
| Caprolactam | 31000 | 8 | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.01 | < 0.0099 | < 0.01 | < 0.013 | < 0.012 |
| Carbazole | 24 | NS | < 0.015 | < 0.016 | < 0.015 | < 0.015 | < 0.016 | < 0.016 | < 0.016 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.019 | < 0.018 |
| Chrysene | 62 | 52 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.014 | < 0.013 |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | < 0.011 | < 0.012 | < 0.011 J | < 0.011 J | < 0.012 J | < 0.012 J | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.014 | < 0.013 |
| Dibenzofuran | NS | NS | < 0.0097 | < 0.01 | < 0.0095 | < 0.0095 | < 0.01 | < 0.011 | < 0.01 | < 0.0097 | < 0.0095 | < 0.0094 | < 0.0098 | < 0.012 | < 0.012 |
| Diethyl phthalate | 49000 | 57 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.014 | < 0.013 |
| Dimethyl phthalate | NS | NS | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.013 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.015 | < 0.014 |
| di-n-butyl phthalate | 6100 | 620 | < 0.0073 | < 0.0076 | < 0.0071 | < 0.0071 | < 0.0075 | < 0.0079 | < 0.0078 | < 0.0072 | < 0.0071 | < 0.007 | < 0.0073 | < 0.0092 | < 0.0087 |
| di-n-octylphthalate | 2400 | 3300 | < 0.016 | < 0.017 | < 0.016 J | < 0.016 J | < 0.017 J | < 0.017 J | < 0.017 | < 0.016 | < 0.016 | < 0.015 | < 0.016 | < 0.02 | < 0.019 |
| Fluoranthene | 2300 | 840 | < 0.014 | < 0.015 | < 0.014 | < 0.014 | < 0.015 | < 0.016 | < 0.016 | < 0.014 | < 0.014 | < 0.014 | < 0.014 | < 0.018 | < 0.017 |
| Fluorene | 2300 | 110 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.014 | < 0.013 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T1-0+10(11.0-12.0) | T1-1+00(6.0-6.5) | T8-0+0(6.0-7.0) | T8-1+00(6.0-7.0) | T8-2+00(10.0-11.0) | T8-3+00(10.0-11.0) | T8-3+94(10.0-11.0) | F-T1-1+96 | F-T1-3+42 | T1-2+00(8.0-9.0) | T1-3+00(8.0-9.0) | F-T1-4+15 | F-T7-0+94 |
| Sample Date | Soil Remediation | Soil Screening | 1/19/2010 | 1/20/2010 | 1/21/2010 | 1/21/2010 | 1/25/2010 | 1/25/2010 | 1/25/2010 | 1/26/2010 | 1/26/2010 | 1/26/2010 | 1/26/2010 | 1/27/2010 | 1/27/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.011 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.014 | < 0.013 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.0091 | < 0.0095 | < 0.0089 | < 0.0089 | < 0.0094 | < 0.0099 | < 0.0098 | < 0.0091 | < 0.0089 | < 0.0088 | < 0.0091 | < 0.012 | < 0.011 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.033 | < 0.035 | < 0.033 | < 0.033 | < 0.035 J | < 0.036 J | < 0.036 J | < 0.033 | < 0.033 | < 0.032 | < 0.034 | < 0.042 | < 0.04 |
| Hexachloroethane | 35 | 0.2 | < 0.0091 | < 0.0095 | < 0.0089 | < 0.0089 | < 0.0094 | < 0.0099 | < 0.0098 | < 0.0091 | < 0.0089 | < 0.0088 | < 0.0091 | < 0.012 | < 0.011 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 J | < 0.012 J | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.014 | < 0.014 |
| Isophrone | 510 | 0.2 | < 0.0088 | < 0.0092 | < 0.0086 | < 0.0086 | < 0.0091 | < 0.0096 | < 0.0095 | < 0.0088 | < 0.0086 | < 0.0085 | < 0.0088 | < 0.011 | < 0.011 |
| Naphthalene | 6 | 16 | < 0.0089 | < 0.0093 | < 0.0088 | < 0.0087 | < 0.0093 | < 0.0097 | < 0.0096 | < 0.0089 | < 0.0087 | < 0.0086 | < 0.009 | < 0.011 | < 0.011 |
| Nitrobenzene | 31 | 0.2 | < 0.0094 | < 0.0098 | < 0.0093 | < 0.0092 | < 0.0098 | < 0.01 | < 0.01 | < 0.0094 | < 0.0093 | < 0.0091 | < 0.0095 | < 0.012 | < 0.011 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.008 | < 0.0083 | < 0.0078 | < 0.0078 | < 0.0083 | < 0.0087 | < 0.0086 | < 0.008 | < 0.0078 | < 0.0077 | < 0.008 | < 0.01 | < 0.0096 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.019 | < 0.02 | < 0.019 | < 0.019 | < 0.02 | < 0.021 | < 0.021 | < 0.019 | < 0.019 | < 0.019 | < 0.02 | < 0.025 | < 0.023 |
| Pentachlorophenol | 3 | 0.3 | < 0.056 | < 0.058 | < 0.055 | < 0.055 | < 0.058 | < 0.061 | < 0.06 | < 0.056 | < 0.055 | < 0.054 | < 0.056 | < 0.071 | < 0.067 |
| Phenanthrene | NS | NS | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.016 | < 0.016 | < 0.015 | < 0.015 | < 0.014 | < 0.015 | < 0.019 | < 0.018 |
| Phenol | 18000 | 5 | < 0.034 | < 0.036 | < 0.034 | < 0.033 | < 0.036 | < 0.037 | < 0.037 | < 0.034 | < 0.034 | < 0.033 | < 0.035 | < 0.044 | < 0.041 |
| Pyrene | 1700 | 550 | < 0.013 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.014 | < 0.014 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.016 | < 0.015 |
| Total TIC, Semi-Volatile | NS | NS | 0 | 0.53 | 0 | 0 | 0 | 0 | 0 | 2.27 J | 0 | 0 | 0.65 J | 0 | 0.2 J |
| **PCBs** | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.014 | < 0.014 |
| PCB 1221 | 0.2 | 0.2 | < 0.022 | < 0.022 | < 0.022 | < 0.021 | < 0.022 | < 0.023 | < 0.023 | < 0.023 | < 0.022 | < 0.021 | < 0.022 | < 0.027 | < 0.025 |
| PCB 1232 | 0.2 | 0.2 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.013 | < 0.012 |
| PCB 1242 | 0.2 | 0.2 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.014 | < 0.014 |
| PCB 1248 | 0.2 | 0.2 | < 0.0067 | < 0.0066 | < 0.0065 | < 0.0064 | < 0.0065 | < 0.0069 | < 0.0068 | < 0.0068 | < 0.0066 | < 0.0064 | < 0.0066 | < 0.008 | < 0.0076 |
| PCB 1254 | 0.2 | 0.2 | < 0.0085 | < 0.0084 | < 0.0083 | < 0.0082 | < 0.0083 | < 0.0087 | < 0.0086 | < 0.0086 | 0.0952 | < 0.0082 | < 0.0084 | < 0.01 | 0.095 |
| PCB 1260 | 0.2 | 0.2 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.016 | < 0.015 |
| Total PCBs | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0952 | 0 | 0 | 0 | 0.095 |
| **Metals** | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | 14500 | 17400 | 10500 | 11900 | 14100 | 17000 | 15100 | 10300 J | 8080 J | 6560 J | 12200 J | 14900 J | 15500 J |
| Antimony | 31 | 6 | < 0.64 | < 0.45 J | < 0.44 | < 0.46 | < 0.43 | < 0.49 | < 0.47 | 8.9 J | < 0.45 J | < 0.43 J | 0.56 J | < 2.1 J | 2.6 J |
| Arsenic | 19 | 19 | 5.5 | 6.8 J | 4.2 | 4.4 | 4.5 | 8.5 | 6.7 | 7 J | 3.5 J | 2.1 J | 2.7 J | **54.7** | **24.3** |
| Barium | 16000 | 1300 | 52.4 | 65.9 | 38.9 | 43.9 | 62.9 | 44.6 | 60.4 | 611 J | 40.4 J | 47.9 J | 85.8 J | 143 J | 64 J |
| Beryllium | 16 | 0.5 | 0.6 | 0.91 | 0.51 | 0.54 | 0.65 | 0.75 | 0.8 | 0.36 J | 0.34 J | 0.24 J | 0.41 J | 0.43 J | 0.53 J |
| Cadmium | 78 | 1 | 0.45 B | 0.44 | < 0.033 | < 0.035 | 0.34 B | 0.55 B | 0.43 B | 0.79 | 0.31 J | 0.42 J | 0.52 B | < 0.15 | 1.8 B |
| Calcium | NS | NS | 1300 | 673 J | 1320 | 828 | 663 | 847 | 1140 | 3850 J | 3760 J | 3060 J | 2650 J | 51700 J | 19600 J |
| Chromium | NS | NS | 19.1 | 24.1 | 14.2 | 15.5 | 16.6 | 23 | 20.2 | 61.2 J | 16.4 J | 23.2 J | 19.9 J | 25.8 | 22 |
| Cobalt | 1600 | 59 | 10.2 | 11.4 | 8.3 | 8.2 | 8.7 | 15.9 | 8.8 | 12.3 J | 8.3 J | 11 J | 13.5 J | 22.2 B | 13.4 B |
| Copper | 3100 | 7300 | 23.7 | 27.2 | 19 | 19 | 20.7 | 43.5 | 25.6 | 32.8 J | 40.1 J | 106 J | 78.6 J | 82.4 | 40.7 |
| Iron | NS | NS | 24500 | 29300 | 20800 | 22600 | 22200 | 33600 | 25000 | 30100 J | 19900 J | 23100 J | 26900 J | 50600 J | 45800 J |
| Lead | 400 | 59 | 22.8 | 13.4 | 9.4 | 12.9 | 13.4 | 18.3 | 12 | **477** | 10.1 | 21.3 | 25.4 | 13.3 | 68.6 |
| Magnesium | NS | NS | 4130 | 4630 | 3340 | 3510 | 3500 | 6040 | 3980 | 6010 | 3520 | 4610 | 4990 | 16100 J | 6510 J |
| Manganese | 11000 | 42 | 581 | 707 J | 658 | 513 | 583 | 801 | 496 | 492 J | 322 J | 340 J | 511 J | 721 J | 374 J |
| Mercury | 23 | 0.1 | 0.036 | < 0.012 | < 0.012 | < 0.012 | 0.023 B | 0.039 | 0.024 B | 0.077 | 0.19 | 0.14 | 0.051 | 0.072 | 0.19 |
| Nickel | 1600 | 31 | 23.8 | 25.1 | 21.1 | 20.2 | 19.9 | 26 | 22.7 | 28.9 | 18.3 | 16.8 | 18.1 | 39.8 | 23.5 |
| Potassium | NS | NS | 1830 | 2270 | 1160 | 1220 | 1330 | 1670 | 2030 | 1840 J | 1010 J | 1190 J | 1490 J | 5830 J | 1480 J |
| Selenium | 390 | 7 | 0.78 B | < 0.42 | < 0.41 | < 0.43 | < 0.4 | < 0.45 | 0.65 B | 1.8 B | 1.3 B | 1.7 B | 2.1 B | < 3.8 | < 1.9 |
| Silver | 390 | 1 | < 0.14 | < 0.13 | < 0.12 | < 0.13 | < 0.12 | < 0.13 | 0.15 B | 0.29 B | 0.15 B | 0.33 B | 0.4 B | < 1.1 | < 0.57 |
| Sodium | NS | NS | 124 B | < 1100 | 55.3 B | 49.7 B | 57.2 J | 106 B | 109 B | 92.3 B | 81.5 B | 162 B | 94.5 B | 479 J | < 5200 |
| Thallium | 5 | 3 | < 0.93 | < 0.22 | < 0.22 | < 0.23 | < 0.21 | < 0.24 | < 0.23 | < 0.23 | < 0.22 | < 0.21 | 0.28 B | < 1 | < 1 |
| Vanadium | 78 | NS | 26.3 | 30.1 | 16.2 | 18.3 | 23.8 | 28.5 | 26.9 | 51.9 J | 31 J | 50.3 J | 42.6 J | **131** | **95** |
| Zinc | 23000 | 600 | 56.8 | 60.2 | 49.6 | 47.9 | 44.6 | 54.5 | 59.8 | 88.6 J | 34.1 J | 30.8 J | 37.1 J | 39 J | 155 J |
| **Other** | | | | | | | | | | | | | | | |
| Solids, Percent | NS | NS | 86 | 88 | 88.7 | 89.6 | 88.7 | 84.1 | 85.9 | 86.2 | 88.7 | 90.5 | 86.9 | 72.8 | 77 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | F-T7-1+85 | T1-4+10(12.5-13.5) | T7-0+00(10.0-11.0) | T7-1+00(9.5-10.5) | T7-2+00(12.0-13.0) | F-T1-5+97 | F-T6-0+84 | F-T6-1+99 | F-T7-3+00 | T1-5+10(10.0-11.0) | T1-6+10(11.0-12.0) | T6-0+00(6.0-7.0) | T6-1+00(6.0-7.0) |
| Sample Date | Soil Remediation | Soil Screening | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00014 | < 0.00014 | < 0.00017 | < 0.00013 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00012 | < 0.00013 | < 0.00014 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00033 | < 0.00034 | < 0.00034 | < 0.00033 | < 0.00033 | < 0.0004 | < 0.0003 | < 0.00029 | < 0.00025 | < 0.00029 | < 0.00026 | < 0.0003 | < 0.00033 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00021 | < 0.00021 | < 0.00021 | < 0.00021 | < 0.00021 | < 0.00025 | < 0.00019 | < 0.00018 | < 0.00016 | < 0.00018 | < 0.00017 | < 0.00019 | < 0.00021 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.00016 | < 0.00016 | < 0.00016 | < 0.00015 | < 0.00015 | < 0.00019 | < 0.00014 | < 0.00014 | < 0.00012 | < 0.00014 | < 0.00012 | < 0.00014 | < 0.00015 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00075 | < 0.00077 | < 0.00076 | < 0.00074 | < 0.00074 | < 0.0009 | < 0.00068 | < 0.00065 | < 0.00056 | < 0.00066 | < 0.0006 | < 0.00069 | < 0.00074 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.00039 | < 0.0004 | < 0.0004 | < 0.00039 | < 0.00039 | < 0.00047 | < 0.00035 | < 0.00034 | < 0.00029 | < 0.00034 | < 0.00031 | < 0.00036 | < 0.00039 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.00062 | < 0.00063 | < 0.00062 | < 0.00061 | < 0.00061 | < 0.00074 | < 0.00055 | < 0.00053 | < 0.00046 | < 0.00054 | < 0.00049 | < 0.00056 | < 0.0006 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00016 | < 0.00016 | < 0.00016 | < 0.00015 | < 0.00015 | < 0.00019 | < 0.00014 | < 0.00014 | < 0.00012 | < 0.00014 | < 0.00012 | < 0.00014 | < 0.00015 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00031 | < 0.00031 | < 0.00031 | < 0.0003 | < 0.0003 | < 0.00037 | < 0.00028 | < 0.00027 | < 0.00023 | < 0.00027 | < 0.00024 | < 0.00028 | < 0.0003 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.00039 | < 0.0004 | < 0.0004 | < 0.00039 | < 0.00039 | < 0.00047 | < 0.00035 | < 0.00034 | < 0.00029 | < 0.00034 | < 0.00031 | < 0.00036 | < 0.00039 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00018 | < 0.00013 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00012 | < 0.00013 | < 0.00015 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00031 | < 0.00032 | < 0.00032 | < 0.00031 | < 0.00031 | < 0.00038 | < 0.00028 | < 0.00027 | < 0.00023 | < 0.00027 | < 0.00025 | < 0.00028 | < 0.00031 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.00038 | < 0.00039 | < 0.00039 | < 0.00038 | < 0.00038 | < 0.00046 | < 0.00034 | < 0.00033 | < 0.00028 | < 0.00034 | < 0.0003 | < 0.00035 | < 0.00038 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.0022 | < 0.0023 | < 0.0023 | < 0.0022 | < 0.0022 | < 0.0027 | < 0.002 | < 0.0019 | < 0.0017 | < 0.002 | < 0.0018 | 0.0086 J | < 0.0022 |
| 2-Hexanone | NS | NS | < 0.0011 | < 0.0011 | < 0.0011 | < 0.0011 | < 0.0011 | < 0.0013 | < 0.00098 | < 0.00095 | < 0.00081 | < 0.00096 | < 0.00087 | < 0.001 | < 0.0011 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.00092 | < 0.00094 | < 0.00093 | < 0.00091 | < 0.00091 | < 0.0011 | < 0.00083 | < 0.0008 | < 0.00068 | < 0.00081 | < 0.00073 | < 0.00084 | < 0.00091 |
| Acetone | 70000 | 12 | < 0.0025 | 0.0118 J | 0.0266 J | < 0.0025 | 0.0087 J | 0.0134 J | < 0.0023 | < 0.0022 | < 0.0019 | 0.011 | 0.0087 J | 0.0984 | 0.0224 |
| Benzene | 2 | 0.005 | < 0.00039 | < 0.00039 | < 0.00039 | < 0.00038 | < 0.00038 | < 0.00047 | < 0.00035 | < 0.00034 | < 0.00029 | < 0.00034 | < 0.00031 | 0.00044 J | < 0.00038 |
| Bromodichloromethane | 1 | 0.005 | < 0.00029 | < 0.0003 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.00035 | < 0.00026 | < 0.00025 | < 0.00022 | < 0.00026 | < 0.00023 | < 0.00027 | < 0.00029 |
| Bromoform | 81 | 0.02 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00021 | < 0.00015 | < 0.00015 | < 0.00013 | < 0.00015 | < 0.00014 | < 0.00016 | < 0.00017 |
| Bromomethane | 25 | 0.03 | < 0.00046 | < 0.00047 | < 0.00046 | < 0.00045 | < 0.00045 | < 0.00055 | < 0.00041 | < 0.0004 | < 0.00034 | < 0.0004 | < 0.00036 | < 0.00042 | < 0.00045 |
| Carbon disulfide | 7800 | 4 | < 0.00035 | < 0.00035 | 0.00091 J | < 0.00034 | < 0.00034 | < 0.00042 | < 0.00031 | < 0.0003 | < 0.00026 | 0.0006 J | 0.0013 J | 0.0022 J | 0.0015 J |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.00063 | < 0.00064 | < 0.00064 | < 0.00062 | < 0.00062 | < 0.00076 | < 0.00057 | < 0.00055 | < 0.00047 | < 0.00055 | < 0.0005 | < 0.00057 | < 0.00062 |
| Chlorobenzene | 510 | 0.4 | < 0.00039 | < 0.00039 | < 0.00039 | < 0.00038 | < 0.00038 | < 0.00046 | < 0.00035 | < 0.00033 | < 0.00029 | < 0.00034 | < 0.00031 | < 0.00035 | < 0.00038 |
| Chloroethane | 220 | NS | < 0.0011 | < 0.0012 | < 0.0011 | < 0.0011 | < 0.0011 | < 0.0014 | < 0.001 | < 0.00099 | < 0.00084 | < 0.001 | < 0.0009 | < 0.001 | < 0.0011 |
| Chloroform | 0.6 | 0.2 | < 0.00036 | < 0.00037 | < 0.00036 | < 0.00036 | < 0.00036 | < 0.00043 | < 0.00033 | < 0.00031 | < 0.00027 | < 0.00032 | < 0.00029 | < 0.00033 | < 0.00036 |
| Chloromethane | 4 | NS | < 0.00019 | < 0.00019 | < 0.00019 | < 0.00019 | < 0.00019 | < 0.00023 | < 0.00017 | < 0.00016 | < 0.00014 | < 0.00016 | < 0.00015 | < 0.00017 | < 0.00018 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00027 | < 0.00028 | < 0.00027 | < 0.00027 | < 0.00027 | < 0.00033 | < 0.00024 | < 0.00024 | < 0.0002 | < 0.00024 | < 0.00022 | < 0.00025 | < 0.00027 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00018 | < 0.00014 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00012 | < 0.00014 | < 0.00015 |
| Cyclohexane | NS | NS | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00021 | < 0.00015 | < 0.00015 | < 0.00013 | < 0.00015 | < 0.00014 | < 0.00016 | < 0.00017 |
| Dibromochloromethane | 3 | 0.005 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00012 | < 0.00012 | < 0.00015 | < 0.00011 | < 0.00011 | < 0.000093 | < 0.00011 | < 0.000099 | < 0.00011 | < 0.00012 |
| Dichlorodifluoromethane | 490 | 25 | < 0.0011 | < 0.0011 | < 0.0011 | < 0.0011 | < 0.0011 | < 0.0013 | < 0.00097 | < 0.00093 | < 0.0008 | < 0.00094 | < 0.00085 | < 0.00098 | < 0.0011 |
| Ethylbenzene | 7800 | 8 | < 0.00042 | < 0.00043 | < 0.00043 | < 0.00042 | < 0.00042 | < 0.00051 | < 0.00038 | < 0.00037 | < 0.00031 | < 0.00037 | < 0.00033 | < 0.00038 | < 0.00041 |
| Freon 113 | NS | NS | < 0.00064 | < 0.00065 | < 0.00064 | < 0.00063 | < 0.00063 | < 0.00077 | < 0.00057 | < 0.00055 | < 0.00047 | < 0.00056 | < 0.00051 | < 0.00058 | < 0.00063 |
| Isopropylbenzene | NS | NS | < 0.00059 | < 0.0006 | < 0.00059 | < 0.00058 | < 0.00058 | < 0.00071 | < 0.00053 | < 0.00051 | < 0.00044 | < 0.00052 | < 0.00047 | < 0.00054 | < 0.00058 |
| Methyl acetate | 78000 | 14 | < 0.00094 | < 0.00095 | < 0.00094 | < 0.00092 | < 0.00092 | < 0.0011 | < 0.00084 | < 0.00081 | < 0.00069 | < 0.00082 | < 0.00074 | < 0.00085 | < 0.00092 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.00032 | < 0.00033 | < 0.00032 | < 0.00032 | < 0.00032 | < 0.00038 | < 0.00029 | < 0.00028 | < 0.00024 | < 0.00028 | < 0.00025 | < 0.00029 | < 0.00031 |
| Methylcyclohexane | NS | NS | < 0.00074 | < 0.00076 | < 0.00075 | < 0.00073 | < 0.00073 | < 0.00089 | < 0.00067 | < 0.00065 | < 0.00055 | < 0.00065 | < 0.00059 | < 0.00068 | < 0.00073 |
| Methylene chloride | 34 | 0.007 | < 0.00025 | < 0.00026 | < 0.00026 | < 0.00025 | < 0.00025 | < 0.0003 | < 0.00023 | < 0.00022 | < 0.00019 | < 0.00022 | < 0.0002 | < 0.00023 | < 0.00025 |
| o-Xylene | NS | NS | < 0.00053 | < 0.00054 | < 0.00054 | < 0.00053 | < 0.00053 | < 0.00064 | 0.0069 | < 0.00046 | < 0.0004 | < 0.00047 | < 0.00042 | < 0.00049 | < 0.00052 |
| Styrene | 90 | 2 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00015 | < 0.00011 | < 0.00011 | < 0.00009 | < 0.00011 | < 0.000096 | < 0.00011 | < 0.00012 |
| Tetrachloroethene | 2 | 0.005 | < 0.00016 | < 0.00017 | < 0.00017 | < 0.00016 | < 0.00016 | < 0.0002 | 0.0105 | < 0.00014 | < 0.00012 | < 0.00014 | < 0.00013 | < 0.00015 | < 0.00016 |
| Toluene | 6300 | 4 | < 0.00033 | < 0.00034 | < 0.00033 | < 0.00033 | < 0.00033 | < 0.0004 | < 0.0003 | < 0.00029 | < 0.00025 | < 0.00029 | < 0.00026 | < 0.0003 | < 0.00033 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.00051 | < 0.00052 | < 0.00051 | < 0.0005 | < 0.0005 | < 0.00061 | < 0.00046 | < 0.00044 | < 0.00038 | < 0.00045 | < 0.0004 | < 0.00046 | < 0.0005 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00013 | < 0.000098 | < 0.000095 | < 0.000081 | < 0.000096 | < 0.000086 | < 0.000099 | < 0.00011 |
| Trichloroethene | 7 | 0.007 | < 0.0006 | < 0.00061 | < 0.0006 | < 0.00059 | < 0.00059 | < 0.00072 | < 0.00054 | < 0.00052 | < 0.00044 | < 0.00052 | < 0.00047 | < 0.00054 | < 0.00059 |
| Trichlorofluoromethane | 23000 | 22 | < 0.00026 | < 0.00027 | < 0.00026 | < 0.00026 | < 0.00026 | < 0.00031 | < 0.00023 | < 0.00023 | < 0.00019 | < 0.00023 | < 0.00021 | < 0.00024 | < 0.00026 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.0002 | < 0.00021 | < 0.0002 | < 0.0002 | < 0.0002 | < 0.00024 | < 0.00018 | < 0.00018 | < 0.00015 | < 0.00018 | < 0.00016 | < 0.00018 | < 0.0002 |
| Xylene, -m,p | NS | NS | < 0.00053 | < 0.00054 | < 0.00054 | < 0.00053 | < 0.00053 | < 0.00064 | 0.0065 | < 0.00046 | < 0.0004 | < 0.00047 | < 0.00042 | < 0.00049 | < 0.00052 |
| Xylenes | 12000 | 12 | < 0.00053 | < 0.00054 | < 0.00054 | < 0.00053 | < 0.00053 | < 0.00064 | 0.0134 | < 0.00046 | < 0.0004 | < 0.00047 | < 0.00042 | < 0.00049 | < 0.00052 |
| Total TIC, Volatile | NS | NS | 0.0091 J | 0.0083 J | 0.0086 J | 0 | 0.0096 J | 0.012 J | 0.014 J | 0 | 0 | 0.0056 J | 0 | 0 | 0.012 J |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | F-T7-1+85 | T1-4+10(12.5-13.5) | T7-0+00(10.0-11.0) | T7-1+00(9.5-10.5) | T7-2+00(12.0-13.0) | F-T1-5+97 | F-T6-0+84 | F-T6-1+99 | F-T7-3+00 | T1-5+10(10.0-11.0) | T1-6+10(11.0-12.0) | T6-0+00(6.0-7.0) | T6-1+00(6.0-7.0) |
| Sample Date | Soil Remediation | Soil Screening | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | < 0.0044 | < 0.0044 | < 0.0047 | < 0.0047 | < 0.0048 | < 0.0063 | < 0.0043 | < 0.0041 | < 0.0041 | < 0.0046 | < 0.0041 | < 0.0045 | < 0.0048 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.044 | < 0.044 | < 0.047 | < 0.047 | < 0.048 | < 0.063 | < 0.043 | < 0.041 | < 0.041 | < 0.046 J | < 0.041 | < 0.045 | < 0.048 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.035 | < 0.036 | < 0.038 | < 0.038 | < 0.039 | < 0.051 | < 0.035 | < 0.033 | < 0.033 | < 0.037 | < 0.033 | < 0.037 | < 0.039 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.061 | < 0.061 | < 0.065 | < 0.066 | < 0.066 | < 0.087 | < 0.06 | < 0.057 | < 0.056 | < 0.063 | < 0.057 | < 0.063 | < 0.066 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.063 | < 0.064 | < 0.067 | < 0.069 | < 0.069 | < 0.091 | < 0.062 | < 0.059 | < 0.059 | < 0.066 | < 0.059 | < 0.066 | < 0.069 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.046 | < 0.046 | < 0.049 | < 0.05 | < 0.05 | < 0.066 | < 0.045 | < 0.043 | < 0.043 | < 0.048 J | < 0.043 | < 0.048 | < 0.05 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.016 | < 0.017 | < 0.018 | < 0.018 | < 0.018 | < 0.024 | < 0.016 | < 0.015 | < 0.015 | < 0.017 | < 0.015 | < 0.017 | < 0.018 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.014 | < 0.014 | < 0.015 | < 0.016 | < 0.016 | < 0.021 | < 0.014 | < 0.013 | < 0.013 | < 0.015 | < 0.013 | < 0.015 | < 0.016 |
| 2-Chloronaphthalene | NS | NS | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.017 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.011 | < 0.012 | < 0.013 |
| 2-Chlorophenol | 310 | 0.5 | < 0.038 | < 0.038 | < 0.041 | < 0.041 | < 0.041 | < 0.054 | < 0.038 | < 0.036 | < 0.035 | < 0.04 | < 0.036 | < 0.039 | < 0.042 |
| 2-Methylnaphthalene | 230 | 5 | < 0.021 | < 0.021 | < 0.022 | < 0.023 | < 0.023 | < 0.03 | < 0.021 | < 0.02 | < 0.019 | < 0.022 | < 0.02 | < 0.022 | < 0.023 |
| 2-Methylphenol | 310 | NS | < 0.043 | < 0.043 | < 0.046 | < 0.047 | < 0.047 | < 0.061 | < 0.042 | < 0.04 | < 0.04 | < 0.045 | < 0.04 | < 0.045 | < 0.047 |
| 2-Nitroaniline | 39 | NS | < 0.017 | < 0.017 | < 0.018 | < 0.018 | < 0.018 | < 0.024 | < 0.016 | < 0.016 | < 0.015 | < 0.017 | < 0.016 | < 0.017 | < 0.018 |
| 2-Nitrophenol | NS | NS | < 0.04 | < 0.04 | < 0.043 | < 0.043 | < 0.043 | < 0.057 | < 0.039 | < 0.037 | < 0.037 | < 0.042 | < 0.037 | < 0.041 | < 0.044 |
| 3&4-Methylphenol | NS | NS | < 0.048 | < 0.048 | < 0.051 | < 0.052 | < 0.052 | < 0.069 | < 0.047 | < 0.045 | < 0.044 | < 0.05 J | < 0.045 | < 0.05 | < 0.052 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.0096 | < 0.0096 | < 0.01 | < 0.01 | < 0.01 | < 0.014 | < 0.0094 | < 0.009 | < 0.0089 | < 0.01 | < 0.009 | < 0.0099 | < 0.01 |
| 3-Nitroaniline | NS | NS | < 0.015 | < 0.015 | < 0.016 | < 0.016 | < 0.016 | < 0.022 | < 0.015 | < 0.014 | < 0.014 | < 0.016 | < 0.014 | < 0.016 | < 0.016 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.046 | < 0.046 | < 0.049 | < 0.05 | < 0.05 | < 0.066 | < 0.045 | < 0.043 | < 0.043 | < 0.048 | < 0.043 | < 0.048 | < 0.05 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.014 | < 0.014 | < 0.015 | < 0.015 | < 0.015 | < 0.02 | < 0.013 | < 0.013 | < 0.013 | < 0.014 | < 0.013 | < 0.014 | < 0.015 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.038 | < 0.038 | < 0.04 | < 0.041 | < 0.041 | < 0.054 | < 0.037 | < 0.035 | < 0.035 | < 0.039 | < 0.035 | < 0.039 | < 0.041 |
| 4-Chloroaniline | NS | NS | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.017 | < 0.012 | < 0.011 | < 0.011 | < 0.013 | < 0.011 | < 0.012 | < 0.013 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.016 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.011 | < 0.012 | < 0.012 |
| 4-Nitroaniline | NS | NS | < 0.015 | < 0.015 | < 0.016 | < 0.016 | < 0.016 | < 0.021 | < 0.015 | < 0.014 | < 0.014 | < 0.015 | < 0.014 | < 0.015 | < 0.016 |
| 4-Nitrophenol | NS | NS | < 0.064 | < 0.064 | < 0.068 | < 0.069 | < 0.069 | < 0.091 | < 0.063 | < 0.06 | < 0.059 | < 0.067 | < 0.06 | < 0.066 | < 0.07 |
| Acenaphthene | 3400 | 74 | < 0.011 | < 0.011 | 0.0551 | < 0.012 | < 0.012 | < 0.016 | < 0.011 | 0.0122 J | < 0.01 | < 0.011 | < 0.01 | < 0.011 | < 0.012 |
| Acenaphthylene | NS | NS | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.017 | < 0.012 | < 0.011 | < 0.011 | < 0.013 | < 0.011 | < 0.012 | < 0.013 |
| Acetophenone | 2 | 2 | < 0.0066 | < 0.0067 | < 0.0071 | < 0.0072 | < 0.0072 | < 0.0095 | < 0.0065 | < 0.0062 | < 0.0061 | < 0.0069 | < 0.0062 | < 0.0069 | < 0.0072 |
| Anthracene | 17000 | 1500 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.019 | 0.0154 J | 0.0902 | < 0.012 | < 0.014 | < 0.012 | < 0.014 | < 0.014 |
| Atrazine | 210 | 0.2 | < 0.0074 | < 0.0075 | < 0.0079 | < 0.008 | < 0.0081 | < 0.011 | < 0.0073 | < 0.0069 | < 0.0069 | < 0.0078 | < 0.0069 | < 0.0077 | < 0.0081 |
| Benzaldehyde | 6100 | NS | < 0.0087 | < 0.0087 | < 0.0092 | < 0.0094 | < 0.0094 | < 0.012 | < 0.0086 | < 0.0081 | < 0.008 | < 0.0091 | < 0.0081 | < 0.009 | < 0.0095 |
| Benzo(a)anthracene | 0.6 | 0.5 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.018 | 0.0538 | 0.42 | < 0.011 | < 0.013 | < 0.011 | 0.0184 J | 0.0391 J |
| Benzo(a)pyrene | 0.2 | 0.2 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.016 | 0.052 | **0.388** | < 0.011 | < 0.012 | < 0.011 | < 0.012 | 0.0213 J |
| Benzo(b)fluoranthene | 0.6 | 2 | < 0.013 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.018 | 0.0771 | 0.363 | < 0.012 | < 0.013 | < 0.012 | < 0.013 | < 0.014 |
| Benzo(g,h,i)perylene | 380000 | NS | < 0.014 | < 0.014 | < 0.015 | < 0.015 | < 0.015 | < 0.02 | 0.036 J | 0.26 | < 0.013 | < 0.015 | < 0.013 | < 0.015 | < 0.015 |
| Benzo(k)fluoranthene | 6 | 16 | < 0.014 | < 0.014 | < 0.015 | < 0.015 | < 0.015 | < 0.02 | 0.0208 J | 0.316 | < 0.013 | < 0.015 | < 0.013 | < 0.015 | < 0.015 |
| Benzyl butyl phthalate | 1200 | 150 | < 0.022 | < 0.022 | < 0.023 | < 0.024 | < 0.024 | < 0.031 | < 0.022 | < 0.02 | < 0.02 | < 0.023 | < 0.02 | < 0.023 | < 0.024 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.015 | < 0.015 | < 0.016 | < 0.016 | < 0.017 | < 0.022 | < 0.015 | < 0.014 | < 0.014 | < 0.016 | < 0.014 | < 0.016 | < 0.017 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.011 | < 0.011 | 0.102 | 0.0725 J | < 0.012 | < 0.016 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.011 | < 0.012 | < 0.012 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.016 | < 0.011 | < 0.01 | < 0.01 | < 0.012 | < 0.01 | < 0.012 | < 0.012 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | < 0.033 | < 0.033 | < 0.035 | < 0.036 | < 0.036 | 1.3 | 0.138 | 1.14 | 0.0352 J | < 0.035 | < 0.031 | < 0.034 | 3.59 |
| Caprolactam | 31000 | 8 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.017 | < 0.012 | < 0.011 | < 0.011 | < 0.012 J | < 0.011 | < 0.012 | < 0.013 |
| Carbazole | 24 | NS | < 0.017 | < 0.018 | < 0.019 | < 0.019 | < 0.019 | < 0.025 | < 0.017 | 0.0213 J | < 0.016 | < 0.018 | < 0.016 | < 0.018 | < 0.019 |
| Chrysene | 62 | 52 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.018 | 0.0586 | 0.411 | < 0.012 | < 0.013 | < 0.012 | 0.0191 J | 0.0434 |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.018 | < 0.013 | 0.0736 | < 0.012 | < 0.013 | < 0.012 | < 0.013 | < 0.014 |
| Dibenzofuran | NS | NS | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.016 | < 0.011 | < 0.01 | < 0.01 | < 0.012 | < 0.01 | < 0.012 | < 0.012 |
| Diethyl phthalate | 49000 | 57 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.018 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.012 | < 0.013 | < 0.014 |
| Dimethyl phthalate | NS | NS | < 0.013 | < 0.013 | 0.0553 J | < 0.014 | < 0.014 | < 0.019 | < 0.013 | < 0.012 | < 0.012 | < 0.014 | < 0.012 | < 0.014 | < 0.014 |
| di-n-butyl phthalate | 6100 | 620 | < 0.0084 | < 0.0084 | < 0.0089 | < 0.0091 | < 0.0091 | < 0.012 | < 0.0083 | < 0.0078 | < 0.0078 | < 0.0087 | < 0.0078 | < 0.0087 | < 0.0091 |
| di-n-octylphthalate | 2400 | 3300 | < 0.018 | < 0.018 | < 0.02 | < 0.02 | < 0.02 | < 0.026 | < 0.018 | < 0.017 | < 0.017 | < 0.019 | < 0.017 | < 0.019 | < 0.02 |
| Fluoranthene | 2300 | 840 | < 0.017 | < 0.017 | < 0.018 | < 0.018 | < 0.018 | 0.0297 J | 0.0904 | 0.753 | 0.0151 J | < 0.017 | < 0.016 | 0.0308 J | 0.0928 |
| Fluorene | 2300 | 110 | < 0.012 | < 0.012 | 0.0241 J | < 0.013 | < 0.013 | < 0.018 | < 0.012 | 0.0122 J | < 0.011 | < 0.013 | < 0.012 | < 0.013 | < 0.014 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | F-T7-1+85 | T1-4+10(12.5-13.5) | T7-0+00(10.0-11.0) | T7-1+00(9.5-10.5) | T7-2+00(12.0-13.0) | F-T1-5+97 | F-T6-0+84 | F-T6-1+99 | F-T7-3+00 | T1-5+10(10.0-11.0) | T1-6+10(11.0-12.0) | T6-0+00(6.0-7.0) | T6-1+00(6.0-7.0) |
| Sample Date | Soil Remediation | Soil Screening | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/27/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 | 1/28/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.018 | < 0.012 | < 0.012 | < 0.011 | < 0.013 | < 0.011 | < 0.013 | < 0.013 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.015 | < 0.01 | < 0.0098 | < 0.0097 | < 0.011 | < 0.0098 | < 0.011 | < 0.011 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.038 | < 0.039 | < 0.041 | < 0.042 | < 0.042 | < 0.055 | < 0.038 | < 0.036 | < 0.036 | < 0.04 | < 0.036 | < 0.04 | < 0.042 |
| Hexachloroethane | 35 | 0.2 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.015 | < 0.01 | < 0.0098 | < 0.0097 | < 0.011 | < 0.0098 | < 0.011 | < 0.011 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.019 | < 0.013 | 0.237 | < 0.012 | < 0.014 | < 0.012 | < 0.014 | < 0.014 |
| Isophrone | 510 | 0.2 | < 0.01 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.015 | < 0.01 | < 0.0095 | < 0.0094 | < 0.011 | < 0.0095 | < 0.011 | < 0.011 |
| Naphthalene | 6 | 16 | < 0.01 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.015 | < 0.01 | < 0.0096 | < 0.0095 | < 0.011 | < 0.0096 | < 0.011 | < 0.011 |
| Nitrobenzene | 31 | 0.2 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.016 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.01 | < 0.011 | < 0.012 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.0092 | < 0.0092 | < 0.0098 | < 0.01 | < 0.01 | < 0.013 | < 0.0091 | < 0.0086 | < 0.0085 | < 0.0096 | < 0.0086 | < 0.0095 | < 0.01 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.023 | < 0.023 | < 0.024 | < 0.024 | < 0.024 | < 0.032 | < 0.022 | < 0.021 | < 0.021 | < 0.024 | < 0.021 | < 0.023 | < 0.025 |
| Pentachlorophenol | 3 | 0.3 | < 0.064 | < 0.065 | < 0.069 | < 0.07 | < 0.07 | < 0.092 | < 0.064 | < 0.06 | < 0.06 | < 0.067 J | < 0.06 | < 0.067 | < 0.07 |
| Phenanthrene | NS | NS | < 0.017 | < 0.017 | < 0.018 | < 0.019 | < 0.019 | < 0.025 | 0.0416 | 0.259 | < 0.016 | < 0.018 | < 0.016 | < 0.018 | 0.0819 |
| Phenol | 18000 | 5 | < 0.04 | < 0.04 | < 0.042 | < 0.043 | < 0.043 | < 0.057 | < 0.039 | < 0.037 | < 0.037 | < 0.041 | < 0.037 | < 0.041 | < 0.043 |
| Pyrene | 1700 | 550 | < 0.014 | < 0.015 | < 0.015 | < 0.016 | < 0.016 | 0.0298 J | 0.1 | 0.646 | 0.0154 J | < 0.015 | 0.0153 J | 0.0387 J | 0.0966 |
| Total TIC, Semi-Volatile | NS | NS | 0 | 1.3 J | 1.97 J | 0 | 0 | 3.5 J | 0 | 2.06 J | 0 | 0 | 0 | 4.2 J | 0.67 J |
| **PCBs** | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.019 | < 0.013 | < 0.012 | < 0.012 | < 0.014 | < 0.012 | < 0.014 | < 0.014 |
| PCB 1221 | 0.2 | 0.2 | < 0.024 | < 0.024 | < 0.026 | < 0.026 | < 0.026 | < 0.034 | < 0.024 | < 0.022 | < 0.023 | < 0.026 | < 0.023 | < 0.025 | < 0.026 |
| PCB 1232 | 0.2 | 0.2 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.017 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.011 | < 0.012 | < 0.013 |
| PCB 1242 | 0.2 | 0.2 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.019 | < 0.013 | < 0.012 | < 0.012 | < 0.014 | < 0.012 | < 0.014 | < 0.014 |
| PCB 1248 | 0.2 | 0.2 | < 0.0072 | < 0.0073 | < 0.0077 | < 0.0079 | < 0.0079 | **1.13** | < 0.0071 | < 0.0067 | < 0.0068 | < 0.0077 | < 0.0068 | < 0.0075 | < 0.0079 |
| PCB 1254 | 0.2 | 0.2 | < 0.0092 | < 0.0093 | < 0.0097 | < 0.01 | < 0.01 | < 0.013 | 0.0528 | < 0.0085 | < 0.0086 | < 0.0098 | < 0.0086 | < 0.0096 | < 0.01 |
| PCB 1260 | 0.2 | 0.2 | < 0.014 | < 0.014 | < 0.015 | < 0.015 | < 0.015 | < 0.02 | < 0.014 | < 0.013 | < 0.013 | < 0.015 | < 0.013 | < 0.015 | < 0.016 |
| Total PCBs | 0.2 | 0.2 | 0 | 0 | 0 | 0 | 0 | **1.13** | 0.0528 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Metals** | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | 12500 J | 14400 J | 9330 J | 8510 J | 8870 J | 12600 J | 13300 J | 11900 J | 10300 J | 13200 J | 7350 J | 13800 J | 27600 J |
| Antimony | 31 | 6 | < 2 J | 0.77 J | 0.47 B | < 2 J | < 4.1 J | < 3.9 J | 4.7 J | 0.75 J | 17 J | < 4 J | < 2.5 J | < 8.1 J | 4.9 J |
| Arsenic | 19 | 19 | **52.3** | 4 | 4.2 | **70.8** | **73.2** | **89.2** | **58.6** | 4.9 J | **22.8** | **71.6** | **67.9** | **94.6** | **57.4** |
| Barium | 16000 | 1300 | 57.9 J | 43.8 J | 53.9 J | 56.1 J | 65.8 J | 91.4 J | 81.3 J | 50.8 J | 55.2 J | 87.8 J | 59.4 J | 84.9 J | 162 J |
| Beryllium | 16 | 0.5 | 0.49 J | 0.43 J | 0.28 | 0.4 J | < 0.2 | 0.49 J | < 2.4 | 0.43 | 0.44 J | 0.37 J | < 0.25 | < 2 | 1.3 J |
| Cadmium | 78 | 1 | 0.78 J | 0.36 J | 0.2 J | 0.25 J | < 0.3 | 0.67 J | 2.9 B | 0.53 B | 1.9 B | < 0.3 | < 0.18 | 1.8 B | 2.9 B |
| Calcium | NS | NS | 54500 J | 998 J | 2460 J | 59800 J | 65100 J | 77900 J | 52800 J | 1970 J | 12200 J | 71200 J | 65300 J | 83600 J | 66400 J |
| Chromium | NS | NS | 14.8 | 16.1 | 12.6 | 13.8 | 15.1 | 24.8 | 22.8 J | 18.3 J | 21.5 | 19.8 | 14.8 | 24.1 J | 41.5 J |
| Cobalt | 1600 | 59 | 16.1 B | 8.1 | 5.4 | 16.9 B | 15.1 B | 23.6 B | 17.3 J | 8.5 J | 14.4 B | 21.9 B | 13.2 B | 27.3 J | 45 J |
| Copper | 3100 | 7300 | 41.8 | 20 | 8.9 | 75.5 | 39.4 | 90.8 | 57.5 J | 32.2 J | 94.5 | 92.6 | 42.5 | 195 J | 241 J |
| Iron | NS | NS | 77600 J | 18000 J | 10900 J | 50400 J | 46200 J | 58300 J | 64100 J | 22100 J | 37400 J | 52100 J | 38300 J | 72800 J | 120000 J |
| Lead | 400 | 59 | 23.9 | 9.9 | 6.6 | 21.2 | 13.6 | 65.4 | 81.5 | 63.7 | 168 | 18.2 | 11 | 36.1 | 64.1 |
| Magnesium | NS | NS | 12300 J | 2510 J | 1980 J | 10600 J | 11200 J | 15700 J | 11000 J | 3720 J | 3520 J | 16400 J | 9670 J | 16500 J | 33500 J |
| Manganese | 11000 | 42 | 511 J | 153 J | 95.4 | 501 J | 448 J | 697 J | 646 J | 405 J | 313 J | 690 J | 414 J | 862 J | 1540 J |
| Mercury | 23 | 0.1 | 0.25 | 0.038 B | 0.061 | 0.35 | 0.03 B | 0.29 | 0.22 | 0.016 B | 0.16 | 0.18 | 0.029 B | 1 | 2.9 |
| Nickel | 1600 | 31 | 22.1 | 14.6 | 9.2 | 27.6 | 22.2 | 34.9 | 25.8 J | 19.9 J | 22.6 | 30.9 | 21.5 | 29.9 J | 50.1 J |
| Potassium | NS | NS | 1900 J | 898 J | 695 J | 2520 J | 3410 J | 3610 J | 2520 J | 1040 J | 1240 J | 3540 J | 3000 J | 2480 J | 4090 J |
| Selenium | 390 | 7 | < 1.8 | < 2.6 | < 1.9 | < 1.8 | < 3.8 | < 3.6 | < 4.4 | 0.45 B | < 2.1 | < 3.7 | < 2.3 | < 7.5 | 6.1 B |
| Silver | 390 | 1 | < 0.55 | 0.21 B | 0.2 B | < 0.55 | < 1.1 | < 1.1 | < 1.3 | < 0.13 | < 0.13 | < 1.1 | < 1.4 | < 1.1 | < 1.1 |
| Sodium | NS | NS | 390 J | < 1300 | < 970 | 519 J | 528 J | 730 B | 331 B | 93 B | < 5800 | 728 B | 477 J | 670 B | 918 B |
| Thallium | 5 | 3 | < 1.9 | < 0.25 | < 0.19 | < 2 | < 0.99 | < 1.9 | < 2.3 | < 0.24 | < 1.1 | < 2 | < 1.2 | < 2 | < 2 |
| Vanadium | 78 | NS | **160** | 26.6 | 21.9 | **129** | **109** | **152** | **154 J** | 27.7 J | **85.6** | **125** | **99.2** | **203 J** | **316 J** |
| Zinc | 23000 | 600 | 47.2 J | 41.4 J | 35.3 J | 29.2 J | 32.2 J | 153 J | 136 J | 67.8 J | 264 J | 41.8 J | 19 J | 78.5 J | 147 J |
| **Other** | | | | | | | | | | | | | | | |
| Solids, Percent | NS | NS | 79.9 | 80 | 75.2 | 74.2 | 73 | 55.5 | 81.5 | 85.9 | 86 | 76 | 85.4 | 76.7 | 73.4 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T6-2+00(12.0-13.0) | T7-3+00(10.0-11.0) | T7-3+10(10.0-11.0) | F-T6-3+10 | F-T6-4+52 | T6-3+00(19.0-20.0) | T6-4+00(19.0-20.0) | T6-4+64(13.5-14.5) | F-T1-6+30 | F-T1-7+25 | F-T1-7+25 Dup | F-T5-0+50 | T1-7+10(19.0-20.0) |
| Sample Date | Soil Remediation | Soil Screening | 1/28/2010 | 1/28/2010 | 1/28/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.00011 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00011 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00013 | < 0.00012 | < 0.00029 | < 0.00012 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00025 | < 0.00029 | < 0.00024 | < 0.0003 | < 0.00026 | < 0.00028 | < 0.00029 | < 0.00027 | < 0.00027 | < 0.0003 | < 0.00027 | < 0.00066 | < 0.00026 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00016 | < 0.00019 | < 0.00015 | < 0.00019 | < 0.00016 | < 0.00018 | < 0.00018 | < 0.00017 | < 0.00017 | < 0.00019 | < 0.00017 | < 0.00042 | < 0.00017 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.00012 | < 0.00014 | < 0.00012 | < 0.00014 | < 0.00012 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00014 | < 0.00012 | < 0.00031 | < 0.00012 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00057 | < 0.00067 | < 0.00055 | < 0.00068 | < 0.00058 | < 0.00064 | < 0.00065 | < 0.00062 | < 0.00062 | < 0.00068 | < 0.0006 | < 0.0015 | < 0.0006 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.0003 | < 0.00035 | < 0.00029 | < 0.00035 | < 0.0003 | < 0.00033 | < 0.00034 | < 0.00032 | < 0.00032 | < 0.00035 | < 0.00031 | < 0.00078 | < 0.00031 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.00047 | < 0.00054 | < 0.00045 | < 0.00055 | < 0.00048 | < 0.00052 | < 0.00053 | < 0.0005 | < 0.00051 | < 0.00056 | < 0.00049 | < 0.0012 | < 0.00049 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00012 | < 0.00014 | < 0.00011 | < 0.00014 | < 0.00012 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00014 | < 0.00012 | < 0.00031 | < 0.00012 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00023 | < 0.00027 | < 0.00023 | < 0.00028 | < 0.00024 | < 0.00026 | < 0.00026 | < 0.00025 | < 0.00025 | < 0.00028 | < 0.00024 | < 0.00061 | < 0.00024 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.0003 | < 0.00035 | < 0.00029 | < 0.00035 | < 0.0003 | < 0.00033 | < 0.00034 | < 0.00032 | < 0.00032 | < 0.00035 | < 0.00031 | < 0.00078 | < 0.00031 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.00011 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00013 | < 0.00012 | < 0.00012 | < 0.00013 | < 0.00012 | < 0.00029 | < 0.00012 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00024 | < 0.00028 | < 0.00023 | < 0.00028 | < 0.00024 | < 0.00026 | < 0.00027 | < 0.00026 | < 0.00026 | < 0.00028 | < 0.00025 | < 0.00062 | < 0.00025 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.00029 | < 0.00034 | < 0.00028 | < 0.00035 | < 0.0003 | < 0.00032 | < 0.00033 | < 0.00031 | < 0.00032 | < 0.00035 | < 0.00031 | < 0.00076 | < 0.0003 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.0017 | < 0.002 | < 0.0016 | < 0.002 | < 0.0017 | < 0.0019 | < 0.0019 | < 0.0018 | < 0.0018 | < 0.002 | < 0.0018 | < 0.0045 | < 0.0018 J |
| 2-Hexanone | NS | NS | < 0.00083 | < 0.00097 | < 0.0008 | < 0.00099 | < 0.00085 | < 0.00093 | < 0.00094 | < 0.00089 | < 0.0009 | < 0.00099 | < 0.00087 | < 0.0022 | < 0.00087 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.0007 | < 0.00082 | < 0.00068 | < 0.00083 | < 0.00071 | < 0.00078 | < 0.00079 | < 0.00075 | < 0.00076 | < 0.00083 | < 0.00073 | < 0.0018 | < 0.00073 J |
| Acetone | 70000 | 12 | 0.0038 J | < 0.0022 | < 0.0019 | < 0.0023 | < 0.002 | < 0.0021 | 0.034 J | < 0.0021 J | < 0.0021 | < 0.0023 | < 0.002 | 1.13 EJ | 0.0244 J |
| Benzene | 2 | 0.005 | < 0.0003 | < 0.00034 | < 0.00028 | < 0.00035 | < 0.0003 | < 0.00033 | < 0.00033 | < 0.00032 | < 0.00032 | < 0.00035 | < 0.00031 | < 0.00077 | < 0.00031 |
| Bromodichloromethane | 1 | 0.005 | < 0.00022 | < 0.00026 | < 0.00021 | < 0.00026 | < 0.00023 | < 0.00025 | < 0.00025 | < 0.00024 | < 0.00024 | < 0.00026 | < 0.00023 | < 0.00058 | < 0.00023 |
| Bromoform | 81 | 0.02 | < 0.00013 | < 0.00015 | < 0.00013 | < 0.00015 | < 0.00013 | < 0.00015 | < 0.00015 | < 0.00014 | < 0.00014 | < 0.00016 | < 0.00014 | < 0.00034 | < 0.00014 |
| Bromomethane | 25 | 0.03 | < 0.00035 | < 0.00041 | < 0.00034 | < 0.00041 | < 0.00036 | < 0.00039 | < 0.00039 | < 0.00038 | < 0.00038 | < 0.00042 | < 0.00037 | < 0.00092 | < 0.00036 |
| Carbon disulfide | 7800 | 4 | < 0.00026 | < 0.00031 | < 0.00025 | < 0.00031 | < 0.00027 | < 0.00029 | < 0.0003 | < 0.00028 | < 0.00029 | < 0.00031 | < 0.00028 | < 0.00069 | 0.00054 J |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.00048 | < 0.00056 | < 0.00046 | < 0.00057 | < 0.00049 | < 0.00053 | < 0.00054 | < 0.00052 | < 0.00052 | < 0.00057 | < 0.0005 | < 0.0013 | < 0.0005 |
| Chlorobenzene | 510 | 0.4 | < 0.00029 | < 0.00034 | < 0.00028 | < 0.00035 | < 0.0003 | < 0.00033 | < 0.00033 | < 0.00032 | < 0.00032 | < 0.00035 | < 0.00031 | < 0.00077 | < 0.00031 |
| Chloroethane | 220 | NS | < 0.00087 | < 0.001 | < 0.00083 | < 0.001 | < 0.00088 | < 0.00096 | < 0.00098 | < 0.00093 | < 0.00094 | < 0.001 | < 0.00091 | < 0.0023 | < 0.0009 |
| Chloroform | 0.6 | 0.2 | < 0.00028 | < 0.00032 | < 0.00027 | < 0.00033 | < 0.00028 | < 0.00031 | < 0.00031 | < 0.0003 | < 0.0003 | < 0.00033 | < 0.00029 | < 0.00072 | < 0.00029 |
| Chloromethane | 4 | NS | < 0.00014 | < 0.00017 | < 0.00014 | < 0.00017 | < 0.00015 | < 0.00016 | < 0.00016 | < 0.00015 | < 0.00015 | < 0.00017 | < 0.00015 | < 0.00037 | < 0.00015 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00021 | < 0.00024 | < 0.0002 | < 0.00025 | < 0.00021 | < 0.00023 | < 0.00023 | < 0.00022 | < 0.00022 | < 0.00025 | < 0.00022 | < 0.00054 | < 0.00022 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00012 | < 0.00013 | < 0.00011 | < 0.00014 | < 0.00012 | < 0.00013 | < 0.00013 | < 0.00012 | < 0.00012 | < 0.00014 | < 0.00012 | < 0.0003 | < 0.00012 |
| Cyclohexane | NS | NS | < 0.00013 | < 0.00015 | < 0.00013 | < 0.00015 | < 0.00013 | < 0.00015 | < 0.00015 | < 0.00014 | < 0.00014 | < 0.00016 | < 0.00014 | < 0.00034 | < 0.00014 |
| Dibromochloromethane | 3 | 0.005 | < 0.000095 | < 0.00011 | < 0.000092 | < 0.00011 | < 0.000097 | < 0.00011 | < 0.00011 | < 0.0001 | < 0.0001 | < 0.00011 | < 0.0001 | < 0.00025 | < 0.000099 |
| Dichlorodifluoromethane | 490 | 25 | < 0.00082 | < 0.00095 | < 0.00079 | < 0.00097 | < 0.00083 | < 0.00091 | < 0.00092 | < 0.00088 | < 0.00089 | < 0.00097 | < 0.00086 | < 0.0021 | < 0.00085 |
| Ethylbenzene | 7800 | 8 | < 0.00032 | < 0.00037 | < 0.00031 | < 0.00038 | < 0.00033 | < 0.00036 | < 0.00036 | < 0.00034 | < 0.00035 | < 0.00038 | < 0.00034 | < 0.00084 | < 0.00033 |
| Freon 113 | NS | NS | < 0.00049 | < 0.00057 | < 0.00047 | < 0.00058 | < 0.00049 | < 0.00054 | < 0.00055 | < 0.00052 | < 0.00053 | < 0.00058 | < 0.00051 | < 0.0013 | < 0.00051 |
| Isopropylbenzene | NS | NS | < 0.00045 | < 0.00052 | < 0.00043 | < 0.00053 | < 0.00046 | < 0.0005 | < 0.00051 | < 0.00048 | < 0.00049 | < 0.00053 | < 0.00047 | < 0.0012 | < 0.00047 |
| Methyl acetate | 78000 | 14 | < 0.00071 | < 0.00083 | < 0.00069 | < 0.00084 | < 0.00072 | < 0.00079 | < 0.0008 | < 0.00076 | < 0.00077 | < 0.00085 | < 0.00075 | < 0.0019 | < 0.00074 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.00024 | < 0.00028 | < 0.00024 | < 0.00029 | < 0.00025 | < 0.00027 | < 0.00028 | < 0.00026 | < 0.00026 | < 0.00029 | < 0.00026 | < 0.00064 | < 0.00025 |
| Methylcyclohexane | NS | NS | < 0.00057 | < 0.00066 | < 0.00055 | < 0.00067 | < 0.00058 | < 0.00063 | < 0.00064 | < 0.00061 | < 0.00061 | < 0.00067 | < 0.00059 | < 0.0015 | < 0.00059 |
| Methylene chloride | 34 | 0.007 | < 0.00019 | < 0.00022 | < 0.00019 | < 0.00023 | < 0.0002 | < 0.00021 | < 0.00022 | < 0.00021 | < 0.00021 | < 0.00023 | < 0.0002 | < 0.00051 | < 0.0002 |
| o-Xylene | NS | NS | < 0.00041 | < 0.00047 | < 0.00039 | < 0.00048 | < 0.00041 | < 0.00045 | < 0.00046 | < 0.00044 | < 0.00044 | < 0.00048 | < 0.00042 | < 0.0011 | < 0.00042 |
| Styrene | 90 | 2 | < 0.000093 | < 0.00011 | < 0.000089 | < 0.00011 | < 0.000094 | < 0.0001 | < 0.0001 | < 0.000099 | < 0.0001 | < 0.00011 | < 0.000097 | < 0.00024 | < 0.000096 |
| Tetrachloroethene | 2 | 0.005 | < 0.00013 | < 0.00015 | < 0.00012 | < 0.00015 | < 0.00013 | < 0.00014 | < 0.00014 | < 0.00013 | < 0.00014 | < 0.00015 | < 0.00013 | < 0.00033 | < 0.00013 |
| Toluene | 6300 | 4 | < 0.00025 | < 0.00029 | < 0.00024 | < 0.0003 | < 0.00026 | < 0.00028 | < 0.00029 | < 0.00027 | 0.00077 J | 0.00077 J | 0.00058 J | 0.00079 J | 0.00064 J |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.00039 | < 0.00045 | < 0.00037 | < 0.00046 | < 0.0004 | < 0.00043 | < 0.00044 | < 0.00042 | < 0.00042 | < 0.00046 | < 0.00041 | < 0.001 | < 0.0004 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.000083 | < 0.000097 | < 0.00008 | < 0.000098 | < 0.000085 | < 0.000092 | < 0.000094 | < 0.000089 | < 0.00009 | < 0.000099 | < 0.000087 | < 0.00022 | < 0.000086 |
| Trichloroethene | 7 | 0.007 | < 0.00046 | < 0.00053 | < 0.00044 | < 0.00054 | < 0.00046 | < 0.00051 | < 0.00051 | < 0.00049 | < 0.00049 | < 0.00054 | < 0.00048 | < 0.0012 | < 0.00047 |
| Trichlorofluoromethane | 23000 | 22 | < 0.0002 | < 0.00023 | < 0.00019 | < 0.00023 | < 0.0002 | < 0.00022 | < 0.00022 | < 0.00021 | < 0.00021 | < 0.00024 | < 0.00021 | < 0.00052 | < 0.00021 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.00015 | < 0.00018 | < 0.00015 | < 0.00018 | < 0.00016 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00018 | < 0.00016 | < 0.0004 | < 0.00016 |
| Xylene, -m,p | NS | NS | < 0.00041 | < 0.00047 | < 0.00039 | < 0.00048 | < 0.00041 | < 0.00045 | < 0.00046 | < 0.00044 | < 0.00044 | < 0.00048 | < 0.00042 | < 0.0011 | < 0.00042 |
| Xylenes | 12000 | 12 | < 0.00041 | < 0.00047 | < 0.00039 | < 0.00048 | < 0.00041 | < 0.00045 | < 0.00046 | < 0.00044 | < 0.00044 | < 0.00048 | < 0.00042 | < 0.0011 | < 0.00042 |
| Total TIC, Volatile | NS | NS | 0.0076 J | 0.0064 J | 0 | 0 | 0 | 0 | 0 | 0 | 0.011 J | 0.012 J | 0.0074 J | 0 | 0.0097 J |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T6-2+00(12.0-13.0) | T7-3+00(10.0-11.0) | T7-3+10(10.0-11.0) | F-T6-3+10 | F-T6-4+52 | T6-3+00(19.0-20.0) | T6-4+00(19.0-20.0) | T6-4+64(13.5-14.5) | F-T1-6+30 | F-T1-7+25 | F-T1-7+25 Dup | F-T5-0+50 | T1-7+10(19.0-20.0) |
| Sample Date | Soil Remediation | Soil Screening | 1/28/2010 | 1/28/2010 | 1/28/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | < 0.0042 | < 0.0041 | < 0.0042 | < 0.0041 | < 0.0037 | < 0.0041 | < 0.0038 | < 0.0038 | < 0.004 | < 0.0038 | < 0.0038 | < 0.0054 | < 0.0039 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.042 | < 0.041 | < 0.042 | < 0.041 | < 0.037 | < 0.041 | < 0.038 | < 0.038 | < 0.04 | < 0.038 | < 0.038 | < 0.054 | < 0.039 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.034 | < 0.033 | < 0.034 | < 0.034 | < 0.03 | < 0.033 | < 0.031 | < 0.03 | < 0.032 | < 0.031 | < 0.031 | < 0.044 | < 0.032 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.058 | < 0.057 | < 0.058 | < 0.057 | < 0.052 | < 0.057 | < 0.053 | < 0.052 | < 0.055 | < 0.053 | < 0.053 | < 0.075 | < 0.054 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.061 | < 0.059 | < 0.06 | < 0.06 | < 0.054 | < 0.059 | < 0.055 | < 0.054 | < 0.058 | < 0.055 | < 0.055 | < 0.078 | < 0.057 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.044 | < 0.043 | < 0.044 | < 0.044 | < 0.039 | < 0.043 | < 0.04 | < 0.04 | < 0.042 | < 0.04 | < 0.04 | < 0.057 | < 0.041 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.016 | < 0.015 | < 0.016 | < 0.016 | < 0.014 | < 0.015 | < 0.014 | < 0.014 | < 0.015 | < 0.014 | < 0.014 | < 0.02 | < 0.015 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.014 | < 0.013 | < 0.014 | < 0.014 | < 0.012 | < 0.013 | < 0.013 | < 0.012 | < 0.013 | < 0.013 | < 0.012 | < 0.018 | < 0.013 |
| 2-Chloronaphthalene | NS | NS | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.0099 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.014 | < 0.01 |
| 2-Chlorophenol | 310 | 0.5 | < 0.037 | < 0.036 | < 0.036 | < 0.036 | < 0.032 | < 0.036 | < 0.033 | < 0.033 | < 0.035 | < 0.033 | < 0.033 | < 0.047 | < 0.034 |
| 2-Methylnaphthalene | 230 | 5 | < 0.02 | < 0.02 | < 0.02 | 0.0223 J | < 0.018 | < 0.02 | < 0.018 | < 0.018 | < 0.019 | < 0.018 | < 0.018 | < 0.026 | < 0.019 |
| 2-Methylphenol | 310 | NS | < 0.041 | < 0.04 | < 0.041 | < 0.041 | < 0.037 | < 0.04 | < 0.037 | < 0.037 | < 0.039 | < 0.038 | < 0.037 | < 0.053 | < 0.039 |
| 2-Nitroaniline | 39 | NS | < 0.016 | < 0.016 | < 0.016 | < 0.016 | < 0.014 | < 0.016 | < 0.014 | < 0.014 | < 0.015 | < 0.014 | < 0.014 | < 0.02 | < 0.015 |
| 2-Nitrophenol | NS | NS | < 0.039 | < 0.037 | < 0.038 | < 0.038 | < 0.034 | < 0.037 | < 0.035 | < 0.034 | < 0.036 | < 0.035 | < 0.035 | < 0.049 | < 0.036 |
| 3&4-Methylphenol | NS | NS | < 0.046 | < 0.045 | < 0.046 | < 0.045 | < 0.041 | < 0.045 | < 0.042 | < 0.041 | < 0.044 | < 0.042 | < 0.042 | < 0.059 | < 0.043 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.0092 | < 0.009 | < 0.0091 | < 0.0091 | < 0.0081 | < 0.0089 | < 0.0083 | < 0.0082 | < 0.0087 | < 0.0084 | < 0.0083 | < 0.012 | < 0.0086 |
| 3-Nitroaniline | NS | NS | < 0.015 | < 0.014 | < 0.014 | < 0.014 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.019 | < 0.014 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.044 | < 0.043 | < 0.044 | < 0.044 | < 0.039 | < 0.043 | < 0.04 | < 0.04 | < 0.042 | < 0.04 | < 0.04 | < 0.057 | < 0.041 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.017 | < 0.012 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.036 | < 0.035 | < 0.036 | < 0.036 | < 0.032 | < 0.035 | < 0.033 | < 0.032 | < 0.034 | < 0.033 | < 0.033 | < 0.046 | < 0.034 |
| 4-Chloroaniline | NS | NS | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.01 | < 0.015 | < 0.011 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.0096 | < 0.011 | < 0.0099 | < 0.0098 | < 0.01 | < 0.0099 | < 0.0099 | < 0.014 | < 0.01 |
| 4-Nitroaniline | NS | NS | < 0.014 | < 0.014 | < 0.014 | < 0.014 | < 0.012 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.018 | < 0.013 |
| 4-Nitrophenol | NS | NS | < 0.061 | < 0.06 | < 0.061 | < 0.06 | < 0.054 | < 0.06 | < 0.055 | < 0.055 | < 0.058 | < 0.056 | < 0.055 | < 0.078 | < 0.057 |
| Acenaphthene | 3400 | 74 | < 0.011 | < 0.01 | < 0.01 | < 0.01 | < 0.0093 | < 0.01 | < 0.0095 | < 0.0094 | < 0.0099 | < 0.0095 | 0.0129 J | 0.107 | < 0.0098 |
| Acenaphthylene | NS | NS | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.01 | 0.0652 | < 0.011 |
| Acetophenone | 2 | 2 | < 0.0064 | < 0.0062 | < 0.0063 | < 0.0063 | < 0.0056 | < 0.0062 | < 0.0058 | < 0.0057 | < 0.006 | < 0.0058 | < 0.0058 | < 0.0082 | < 0.0059 |
| Anthracene | 17000 | 1500 | < 0.013 | < 0.012 | < 0.013 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | 0.0149 J | 0.0474 | 0.422 | < 0.012 |
| Atrazine | 210 | 0.2 | < 0.0072 | < 0.0069 | < 0.0071 | < 0.007 | < 0.0063 | < 0.0069 | < 0.0065 | < 0.0064 | < 0.0068 | < 0.0065 | < 0.0064 | < 0.0091 | < 0.0067 |
| Benzaldehyde | 6100 | NS | < 0.0084 | < 0.0081 | < 0.0083 | < 0.0082 | < 0.0074 | < 0.0081 | < 0.0075 | < 0.0075 | < 0.0079 | < 0.0076 | < 0.0075 | < 0.011 | < 0.0078 |
| Benzo(a)anthracene | 0.6 | 0.5 | < 0.012 | < 0.011 | < 0.012 | 0.0314 J | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | 0.0579 | 0.152 | **1.66** | 0.0179 J |
| Benzo(a)pyrene | 0.2 | 0.2 | < 0.011 | < 0.011 | < 0.011 | 0.0279 J | < 0.0098 | < 0.011 | < 0.01 | < 0.0099 | < 0.01 | 0.0713 | 0.174 | **2.06** | < 0.01 |
| Benzo(b)fluoranthene | 0.6 | 2 | < 0.012 | < 0.012 | < 0.012 | 0.0416 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | 0.0774 | 0.18 | **2.22** | < 0.011 |
| Benzo(g,h,i)perylene | 380000 | NS | < 0.014 | < 0.013 | < 0.013 | 0.034 J | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | 0.0607 | 0.127 | 1.51 | < 0.013 |
| Benzo(k)fluoranthene | 6 | 16 | < 0.014 | < 0.013 | < 0.014 | 0.0261 J | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | 0.0454 | 0.0961 | 1.2 | < 0.013 |
| Benzyl butyl phthalate | 1200 | 150 | < 0.021 | < 0.02 | < 0.021 | < 0.021 | < 0.019 | < 0.02 | < 0.019 | < 0.019 | < 0.02 | < 0.019 | < 0.019 | 0.163 | < 0.02 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.015 | < 0.014 | < 0.015 | < 0.014 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.019 | < 0.014 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.0096 | < 0.011 | < 0.0099 | < 0.0098 | < 0.01 | < 0.0099 | < 0.0099 | < 0.014 | < 0.01 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.0095 | < 0.01 | < 0.0097 | < 0.0096 | < 0.01 | < 0.0098 | < 0.0097 | < 0.014 | < 0.01 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | < 0.032 | < 0.031 | < 0.032 | 0.127 | < 0.028 | < 0.031 | < 0.029 | < 0.029 | 0.272 | 0.0603 J | 0.0336 J | 0.678 | 0.0751 |
| Caprolactam | 31000 | 8 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.015 | < 0.011 |
| Carbazole | 24 | NS | < 0.017 | < 0.016 | < 0.017 | < 0.017 | < 0.015 | < 0.016 | < 0.015 | < 0.015 | < 0.016 | < 0.015 | < 0.015 | 0.119 | < 0.016 |
| Chrysene | 62 | 52 | < 0.012 | < 0.012 | < 0.012 | 0.0341 J | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | 0.0608 | 0.155 | 1.75 | 0.0141 J |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.011 | 0.0338 | **0.463** | < 0.012 |
| Dibenzofuran | NS | NS | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.0095 | < 0.01 | < 0.0097 | < 0.0096 | < 0.01 | < 0.0098 | < 0.0097 | 0.0613 J | < 0.01 |
| Diethyl phthalate | 49000 | 57 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.016 | < 0.012 |
| Dimethyl phthalate | NS | NS | < 0.013 | < 0.012 | < 0.013 | < 0.013 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.016 | < 0.012 |
| di-n-butyl phthalate | 6100 | 620 | < 0.0081 | < 0.0078 | < 0.008 | < 0.0079 | < 0.0071 | < 0.0078 | < 0.0073 | < 0.0072 | < 0.0076 | < 0.0073 | < 0.0073 | < 0.01 | < 0.0075 |
| di-n-octylphthalate | 2400 | 3300 | < 0.018 | < 0.017 | < 0.018 | < 0.017 | < 0.016 | < 0.017 | < 0.016 | < 0.016 | < 0.017 | < 0.016 | < 0.016 | < 0.023 | < 0.016 |
| Fluoranthene | 2300 | 840 | < 0.016 | < 0.016 | < 0.016 | 0.0556 | < 0.014 | < 0.016 | < 0.014 | < 0.014 | < 0.015 | 0.1 | 0.296 | 2.88 | 0.0204 J |
| Fluorene | 2300 | 110 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | 0.0143 J | 0.14 | < 0.011 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T6-2+00(12.0-13.0) | T7-3+00(10.0-11.0) | T7-3+10(10.0-11.0) | F-T6-3+10 | F-T6-4+52 | T6-3+00(19.0-20.0) | T6-4+00(19.0-20.0) | T6-4+64(13.5-14.5) | F-T1-6+30 | F-T1-7+25 | F-T1-7+25 Dup | F-T5-0+50 | T1-7+10(19.0-20.0) |
| Sample Date | Soil Remediation | Soil Screening | 1/28/2010 | 1/28/2010 | 1/28/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/1/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 | 2/2/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.012 | < 0.011 | < 0.012 | < 0.012 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.015 | < 0.011 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.01 | < 0.0098 | < 0.01 | < 0.0099 | < 0.0089 | < 0.0098 | < 0.0091 | < 0.009 | < 0.0095 | < 0.0092 | < 0.0091 | < 0.013 | < 0.0094 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.037 | < 0.036 | < 0.037 | < 0.036 | < 0.033 | < 0.036 | < 0.033 | < 0.033 | < 0.035 | < 0.034 | < 0.033 | < 0.047 | < 0.034 |
| Hexachloroethane | 35 | 0.2 | < 0.01 | < 0.0098 | < 0.01 | < 0.0099 | < 0.0089 | < 0.0098 | < 0.0091 | < 0.009 | < 0.0095 | < 0.0092 | < 0.0091 | < 0.013 | < 0.0094 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | < 0.013 | < 0.012 | < 0.012 | 0.0261 J | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | 0.0511 | 0.0996 | **1.34** | < 0.012 |
| Isophrone | 510 | 0.2 | < 0.0098 | < 0.0095 | < 0.0097 | < 0.0096 | < 0.0086 | < 0.0095 | < 0.0088 | < 0.0087 | < 0.0092 | < 0.0089 | < 0.0088 | < 0.012 | < 0.0091 |
| Naphthalene | 6 | 16 | < 0.0099 | < 0.0096 | < 0.0098 | < 0.0097 | < 0.0087 | < 0.0096 | < 0.009 | < 0.0088 | < 0.0094 | < 0.009 | < 0.0089 | < 0.013 | < 0.0092 |
| Nitrobenzene | 31 | 0.2 | < 0.011 | < 0.01 | < 0.01 | < 0.01 | < 0.0093 | < 0.01 | < 0.0095 | < 0.0094 | < 0.0099 | < 0.0095 | < 0.0095 | < 0.013 | < 0.0098 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.0089 | < 0.0086 | < 0.0088 | < 0.0087 | < 0.0078 | < 0.0086 | < 0.008 | < 0.0079 | < 0.0084 | < 0.008 | < 0.008 | < 0.011 | < 0.0082 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.022 | < 0.021 | < 0.021 | < 0.021 | < 0.019 | < 0.021 | < 0.02 | < 0.019 | < 0.02 | < 0.02 | < 0.02 | < 0.028 | < 0.02 |
| Pentachlorophenol | 3 | 0.3 | < 0.062 | < 0.06 | < 0.061 | < 0.061 | < 0.055 | < 0.06 | < 0.056 | < 0.055 | < 0.059 | < 0.056 | < 0.056 | < 0.079 | < 0.058 |
| Phenanthrene | NS | NS | < 0.017 | < 0.016 | < 0.016 | 0.0279 J | < 0.015 | < 0.016 | < 0.015 | < 0.015 | < 0.016 | 0.0506 | 0.136 | 1.12 | < 0.015 |
| Phenol | 18000 | 5 | < 0.038 | < 0.037 | < 0.038 | < 0.037 | < 0.034 | < 0.037 | < 0.034 | < 0.034 | < 0.036 | < 0.035 | < 0.034 | < 0.049 | < 0.035 |
| Pyrene | 1700 | 550 | < 0.014 | < 0.014 | < 0.014 | 0.0482 | < 0.012 | < 0.014 | < 0.013 | < 0.012 | 0.0148 J | 0.0874 | 0.243 | 2.52 | 0.0198 J |
| Total TIC, Semi-Volatile | NS | NS | 0 | 0 | 0 | 1.32 J | 0.14 J | 0 | 2.88 J | 0 | 0.35 J | 0.13 J | 0 | 22.09 J | 0.67 J |
| **PCBs** | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.017 | < 0.012 |
| PCB 1221 | 0.2 | 0.2 | < 0.023 | < 0.023 | < 0.023 | < 0.024 | < 0.022 | < 0.024 | < 0.022 | < 0.022 | < 0.023 | < 0.022 | < 0.023 | < 0.032 | < 0.023 |
| PCB 1232 | 0.2 | 0.2 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.015 | < 0.011 |
| PCB 1242 | 0.2 | 0.2 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.017 | < 0.012 |
| PCB 1248 | 0.2 | 0.2 | < 0.007 | < 0.0068 | < 0.0069 | < 0.0073 | < 0.0066 | < 0.0072 | < 0.0067 | < 0.0065 | < 0.007 | < 0.0067 | < 0.0068 | < 0.0095 | < 0.0069 |
| PCB 1254 | 0.2 | 0.2 | < 0.0088 | < 0.0086 | < 0.0087 | **0.242** | < 0.0084 | < 0.0091 | < 0.0085 | < 0.0083 | < 0.0089 | < 0.0085 | < 0.0086 | 0.162 | < 0.0088 |
| PCB 1260 | 0.2 | 0.2 | < 0.014 | < 0.013 | < 0.013 | 0.173 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.014 | **0.302 J** | < 0.013 J | < 0.019 | < 0.014 |
| Total PCBs | 0.2 | 0.2 | 0 | 0 | 0 | **0.415** | 0 | 0 | 0 | 0 | 0 | **0.302 J** | 0 | 0.162 | 0 |
| **Metals** | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | 9980 J | 20100 J | 17400 J | 12700 | 9760 | 7390 | 19300 | 13300 | 2380 | 14800 | 13700 | 11800 | 8470 |
| Antimony | 31 | 6 | < 4.8 J | 3.6 J | 0.98 J | 0.9 B | < 9.3 | < 10 | < 0.46 | < 0.44 | < 0.48 J | < 0.45 J | 0.76 J | 7.9 J | < 4.6 J |
| Arsenic | 19 | 19 | **69.4** | 10.9 | 3.8 | 8.3 | **63.3** | **72.1** | 10.1 | 6.8 | 1.1 B | 4.8 | 4.7 | 7.3 | **69.6** |
| Barium | 16000 | 1300 | 65 J | 88.4 J | 39.7 J | 69.8 | 62.6 B | 63.9 B | 166 | 57.9 | 18.3 J | 66.7 J | 66.4 J | 166 J | 62.8 J |
| Beryllium | 16 | 0.5 | < 2.4 | 0.28 | 0.65 J | 0.45 | 0.22 J | < 1.3 | 0.46 | 0.64 | 0.2 B | 0.55 | 0.49 | 0.38 | 0.3 B |
| Cadmium | 78 | 1 | 1.2 B | 1.4 | 0.3 J | 2.3 | < 0.7 | < 0.77 | < 0.034 | 0.044 B | < 0.036 | 3.4 | 2.6 | 8.7 | < 0.34 |
| Calcium | NS | NS | 67500 J | 8570 J | 958 J | 5790 | 42100 J | 52000 J | 5490 | 1580 | 9270 J | 1470 J | 5970 J | 3260 J | 57000 J |
| Chromium | NS | NS | 18.9 J | 42.2 | 14.9 | 19.9 | 20.1 B | 16.6 B | 20 | 17.1 | 5.5 | 18.5 | 24.9 | 26.8 | 14 |
| Cobalt | 1600 | 59 | 18.8 J | 21.7 | 6.1 | 9.6 | 14.1 B | 15.8 B | 9.6 | 9.9 | 2.4 B | 9.4 | 9 | 9.3 | 13.8 B |
| Copper | 3100 | 7300 | 72.2 J | 111 | 11.1 | 36.7 | 39.6 B | 49.7 B | 17.4 | 22.4 | 10.3 J | 21 J | 23.9 J | 80.6 J | 57.4 J |
| Iron | NS | NS | 66000 J | 75200 J | 18900 J | 23700 | 32500 | 37100 | 23700 | 22800 | 6290 J | 20700 J | 19100 J | 33000 J | 57900 J |
| Lead | 400 | 59 | 13.3 | 34.3 | 8.3 | 137 | 117 | 7.8 | 70.8 | 15.2 | 2.9 | 35.1 | 58.2 | 400 | 15.8 B |
| Magnesium | NS | NS | 13100 J | 4490 J | 2000 J | 4580 | 7360 | 9810 | 4000 | 4280 | 1030 J | 3590 J | 6970 J | 3630 J | 10000 J |
| Manganese | 11000 | 42 | 587 J | 648 J | 264 J | 470 | 376 | 458 | 394 | 510 | 196 J | 654 J | 656 J | 445 J | 485 J |
| Mercury | 23 | 0.1 | 0.12 | 0.051 | 0.031 B | 0.28 | 0.083 | 0.1 | 0.029 B | 0.04 | 0.14 J | 0.047 J | 0.03 J | 5.4 J | 0.062 J |
| Nickel | 1600 | 31 | 24.2 J | 37.4 | 13.9 | 26.4 | 21.9 | 23.9 | 23.4 | 29.3 | 4.8 | 22.4 | 33.7 | 43.1 | 21.3 B |
| Potassium | NS | NS | 2510 J | 1410 J | 632 J | 1450 | 2100 B | 3510 B | 1300 | 1810 | 570 B | 1340 | 1240 | 1300 | 2700 B |
| Selenium | 390 | 7 | < 4.4 | < 0.87 | < 0.42 | < 0.37 | < 8.6 | < 9.5 | < 0.42 | < 0.41 | < 0.44 | 0.56 B | < 0.42 | < 0.37 | < 4.2 |
| Silver | 390 | 1 | < 1.3 | < 0.26 | 0.14 B | < 0.11 | < 1.3 | < 1.4 | < 0.13 | < 0.12 | < 0.13 J | < 0.12 J | 0.15 J | 0.5 J | < 1.3 J |
| Sodium | NS | NS | 532 B | < 1200 | < 1100 | < 990 | 321 J | 460 J | < 1100 | < 1100 | 82.6 B | 68.4 B | 91.9 B | 94 B | 436 B |
| Thallium | 5 | 3 | < 2.4 | < 0.46 | < 0.22 | < 0.19 | < 1.1 | < 1.3 | < 0.22 | < 0.22 | < 0.24 | < 0.22 | < 0.22 | < 0.2 | < 2.2 |
| Vanadium | 78 | NS | **175 J** | **160** | 27 | 32.4 | **88.8** | **111** | 36.5 | 20.7 | 9.3 J | 26.6 J | 27.7 J | 28 J | **133 J** |
| Zinc | 23000 | 600 | 41.6 J | 69.1 J | 55.5 J | 211 | 76.3 | 32 B | 69.3 | 60.8 | 11.7 | 123 | 168 | 531 | 31.7 |
| **Other** | | | | | | | | | | | | | | | |
| Solids, Percent | NS | NS | 82.4 | 85.7 | 83.3 | 79.9 | 88.7 | 81.1 | 86.8 | 88.2 | 83.3 | 86.8 | 86.3 | 61.3 | 84.1 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T5-0+0(8.5-9.5) | T5-1+00(9.5-10.5) | F-T2-0+65 | F-T3-0+99 | T2-0+00(9.5-10.5) | T2-1+00(7.5-8.5) | T3-0+00(5.0-6.0) | T3-0+00(5.0-6.0) Dup | T3-1+00(5.5-6.5) | T4-0+00(6.0-7.0) | T4-1+00(3.5-4.0) | F-T2-1+78 | F-T3-1+45 |
| Sample Date | Soil Remediation | Soil Screening | 2/2/2010 | 2/2/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/4/2010 | 2/4/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.00011 J | < 0.00015 | < 0.00013 | < 0.00017 | < 0.00011 | < 0.00015 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00013 | < 0.00015 | < 0.00011 | < 0.00011 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00026 | < 0.00034 | < 0.00029 | < 0.00038 | < 0.00026 | < 0.00035 | < 0.00031 | < 0.00031 | < 0.00031 | < 0.0003 | < 0.00033 | < 0.00025 | < 0.00026 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00016 | < 0.00022 | < 0.00018 | < 0.00024 | < 0.00016 | < 0.00022 | < 0.0002 | < 0.0002 | < 0.0002 | < 0.00019 | < 0.00021 | < 0.00016 | < 0.00017 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.00012 J | < 0.00016 | < 0.00014 | < 0.00018 | < 0.00012 | < 0.00016 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00014 | < 0.00016 | < 0.00012 | < 0.00012 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00059 J | < 0.00077 | < 0.00066 | < 0.00086 | < 0.00059 | < 0.00079 | < 0.00071 | < 0.0007 | < 0.0007 | < 0.00067 | < 0.00075 | < 0.00056 | < 0.00059 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.00031 | < 0.0004 | < 0.00034 | < 0.00045 | < 0.00031 | < 0.00041 | < 0.00037 | < 0.00036 | < 0.00037 | < 0.00035 | < 0.00039 | < 0.00029 | < 0.00031 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.00048 | < 0.00063 | < 0.00054 | < 0.00071 | < 0.00048 | < 0.00065 | < 0.00058 | < 0.00057 | < 0.00058 | < 0.00055 | < 0.00061 | < 0.00046 | < 0.00049 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00012 | < 0.00016 | < 0.00014 | < 0.00018 | < 0.00012 | < 0.00016 | < 0.00015 | < 0.00014 | < 0.00015 | < 0.00014 | < 0.00016 | < 0.00012 | < 0.00012 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00024 | < 0.00031 | < 0.00027 | < 0.00035 | < 0.00024 | < 0.00032 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.00027 | < 0.00031 | < 0.00023 | < 0.00024 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.00031 | < 0.0004 | < 0.00034 | < 0.00045 | < 0.00031 | < 0.00041 | < 0.00037 | < 0.00036 | < 0.00037 | < 0.00035 | < 0.00039 | < 0.00029 | < 0.00031 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.00012 J | < 0.00015 | < 0.00013 | < 0.00017 | < 0.00012 | < 0.00016 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00013 | < 0.00015 | < 0.00011 | < 0.00012 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00024 J | < 0.00032 | < 0.00027 | < 0.00036 | < 0.00024 | < 0.00033 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.00028 | < 0.00031 | < 0.00023 | < 0.00025 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.0003 | < 0.00039 | < 0.00034 | < 0.00044 | < 0.0003 | < 0.0004 | < 0.00036 | < 0.00036 | < 0.00036 | < 0.00034 | < 0.00038 | < 0.00029 | < 0.0003 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.0017 | < 0.0023 | < 0.002 | < 0.0026 | < 0.0017 | < 0.0023 | 0.0074 J | < 0.0021 | < 0.0021 | < 0.002 | < 0.0022 | < 0.0017 | < 0.0018 |
| 2-Hexanone | NS | NS | < 0.00085 | < 0.0011 | < 0.00096 | < 0.0013 | < 0.00085 | < 0.0011 | < 0.001 | < 0.001 | < 0.001 | < 0.00097 | < 0.0011 | < 0.00082 | < 0.00086 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.00072 | < 0.00094 | < 0.00081 | < 0.0011 | < 0.00072 | < 0.00097 | < 0.00087 | < 0.00086 | < 0.00086 | < 0.00082 | < 0.00092 | < 0.00069 | < 0.00073 |
| Acetone | 70000 | 12 | 0.0098 J | 0.0047 J | < 0.0022 | < 0.0029 | < 0.002 | < 0.0027 | 0.0606 | 0.061 | < 0.0024 | < 0.0023 | 0.0323 | < 0.0019 | < 0.002 |
| Benzene | 2 | 0.005 | < 0.0003 J | < 0.0004 | < 0.00034 | < 0.00045 | < 0.0003 | < 0.00041 | < 0.00036 | < 0.00036 | < 0.00036 | < 0.00034 | < 0.00039 | < 0.00029 | < 0.00031 |
| Bromodichloromethane | 1 | 0.005 | < 0.00023 J | < 0.0003 | < 0.00026 | < 0.00034 | < 0.00023 | < 0.00031 | < 0.00027 | < 0.00027 | < 0.00027 | < 0.00026 | < 0.00029 | < 0.00022 | < 0.00023 |
| Bromoform | 81 | 0.02 | < 0.00013 | < 0.00018 | < 0.00015 | < 0.0002 | < 0.00013 | < 0.00018 | < 0.00016 | < 0.00016 | < 0.00016 | < 0.00015 | < 0.00017 | < 0.00013 | < 0.00014 |
| Bromomethane | 25 | 0.03 | < 0.00036 | < 0.00047 | < 0.0004 | < 0.00053 | < 0.00036 | < 0.00048 | < 0.00043 | < 0.00043 | < 0.00043 | < 0.00041 | < 0.00046 | < 0.00034 | < 0.00036 |
| Carbon disulfide | 7800 | 4 | < 0.00027 J | 0.0018 J | < 0.0003 | < 0.0004 | 0.00069 J | < 0.00036 | 0.0017 J | 0.0013 J | < 0.00032 | < 0.00031 | < 0.00035 | < 0.00026 | < 0.00027 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.00049 J | < 0.00065 | < 0.00055 | < 0.00073 | < 0.00049 | < 0.00066 | < 0.00059 | < 0.00059 | < 0.00059 | < 0.00056 | < 0.00063 | < 0.00047 | < 0.0005 |
| Chlorobenzene | 510 | 0.4 | < 0.0003 J | < 0.00039 | < 0.00034 | < 0.00044 | < 0.0003 | < 0.0004 | < 0.00036 | < 0.00036 | < 0.00036 | < 0.00034 | < 0.00038 | < 0.00029 | < 0.0003 |
| Chloroethane | 220 | NS | < 0.00089 | < 0.0012 | < 0.001 | < 0.0013 | < 0.00089 | < 0.0012 | < 0.0011 | < 0.0011 | < 0.0011 | < 0.001 | < 0.0011 | < 0.00085 | < 0.0009 |
| Chloroform | 0.6 | 0.2 | < 0.00028 J | < 0.00037 | < 0.00032 | < 0.00042 | < 0.00028 | < 0.00038 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.00032 | < 0.00036 | < 0.00027 | < 0.00029 |
| Chloromethane | 4 | NS | < 0.00015 J | < 0.00019 | < 0.00016 | < 0.00022 | < 0.00015 | < 0.0002 | < 0.00018 | < 0.00017 | < 0.00018 | < 0.00017 | < 0.00019 | < 0.00014 | < 0.00015 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00021 J | < 0.00028 | < 0.00024 | < 0.00031 | < 0.00021 | < 0.00029 | < 0.00026 | < 0.00025 | < 0.00025 | < 0.00024 | < 0.00027 | < 0.0002 | < 0.00021 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00012 J | < 0.00015 | < 0.00013 | < 0.00017 | < 0.00012 | < 0.00016 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00013 | < 0.00015 | < 0.00011 | < 0.00012 |
| Cyclohexane | NS | NS | < 0.00013 J | < 0.00018 | < 0.00015 | < 0.0002 | < 0.00013 | < 0.00018 | < 0.00016 | < 0.00016 | < 0.00016 | < 0.00015 | < 0.00017 | < 0.00013 | < 0.00014 |
| Dibromochloromethane | 3 | 0.005 | < 0.000098 | < 0.00013 | < 0.00011 | < 0.00014 | < 0.000098 | < 0.00013 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00011 | < 0.00012 | < 0.000094 | < 0.000099 |
| Dichlorodifluoromethane | 490 | 25 | < 0.00084 J | < 0.0011 | < 0.00094 | < 0.0012 | < 0.00084 | < 0.0011 | < 0.001 | < 0.001 | < 0.001 | < 0.00095 | < 0.0011 | < 0.00081 | < 0.00085 |
| Ethylbenzene | 7800 | 8 | < 0.00033 J | < 0.00043 | < 0.00037 | < 0.00048 | < 0.00033 | < 0.00044 | < 0.0004 | < 0.00039 | < 0.00039 | < 0.00037 | < 0.00042 | < 0.00032 | 0.0027 |
| Freon 113 | NS | NS | < 0.0005 J | < 0.00065 | < 0.00056 | < 0.00073 | < 0.0005 | < 0.00067 | < 0.0006 | < 0.00059 | < 0.0006 | < 0.00057 | < 0.00064 | < 0.00048 | < 0.0005 |
| Isopropylbenzene | NS | NS | < 0.00046 J | < 0.0006 | < 0.00052 | < 0.00068 | < 0.00046 | < 0.00062 | < 0.00055 | < 0.00055 | < 0.00055 | < 0.00052 | < 0.00059 | < 0.00044 | 0.001 J |
| Methyl acetate | 78000 | 14 | < 0.00073 | < 0.00096 | < 0.00082 | < 0.0011 | < 0.00073 | < 0.00098 | < 0.00088 | < 0.00087 | < 0.00088 | < 0.00083 | < 0.00093 | < 0.0007 | < 0.00074 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.00025 | < 0.00033 | < 0.00028 | < 0.00037 | < 0.00025 | < 0.00034 | < 0.0003 | < 0.0003 | < 0.0003 | < 0.00028 | < 0.00032 | < 0.00024 | < 0.00025 |
| Methylcyclohexane | NS | NS | < 0.00058 J | < 0.00076 | < 0.00065 | < 0.00085 | < 0.00058 | < 0.00078 | < 0.0007 | < 0.00069 | < 0.0007 | < 0.00066 | < 0.00074 | < 0.00056 | < 0.00059 |
| Methylene chloride | 34 | 0.007 | < 0.0002 | < 0.00026 | < 0.00022 | < 0.00029 | < 0.0002 | < 0.00027 | < 0.00024 | < 0.00024 | < 0.00024 | < 0.00023 | < 0.00025 | < 0.00019 | < 0.0002 |
| o-Xylene | NS | NS | < 0.00042 J | < 0.00055 | < 0.00047 | 0.00075 J | < 0.00042 | < 0.00056 | < 0.0005 | < 0.0005 | 0.00064 J | < 0.00047 | 0.00069 J | < 0.0004 | 0.0204 |
| Styrene | 90 | 2 | < 0.000095 J | < 0.00012 | < 0.00011 | < 0.00014 | < 0.000095 | < 0.00013 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00012 | < 0.000091 | < 0.000096 |
| Tetrachloroethene | 2 | 0.005 | < 0.00013 J | < 0.00017 | < 0.00014 | < 0.00019 | < 0.00013 | < 0.00017 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00016 | < 0.00012 | < 0.00013 |
| Toluene | 6300 | 4 | < 0.00026 J | 0.00054 J | < 0.00029 | 0.0005 J | < 0.00026 | < 0.00035 | < 0.00031 | < 0.00031 | 0.00084 J | < 0.00029 | 0.00093 J | < 0.00025 | < 0.00026 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.0004 J | < 0.00052 | < 0.00045 | < 0.00059 | < 0.0004 | < 0.00054 | < 0.00048 | < 0.00047 | < 0.00048 | < 0.00045 | < 0.00051 | < 0.00038 | < 0.0004 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.000085 | < 0.00011 | < 0.000096 | < 0.00013 | < 0.000085 | < 0.00011 | < 0.0001 | < 0.0001 | < 0.0001 | < 0.000097 | < 0.00011 | < 0.000082 | < 0.000086 |
| Trichloroethene | 7 | 0.007 | < 0.00047 J | < 0.00061 | < 0.00053 | < 0.00069 | < 0.00047 | < 0.00063 | < 0.00056 | < 0.00056 | < 0.00056 | < 0.00053 | < 0.0006 | < 0.00045 | < 0.00047 |
| Trichlorofluoromethane | 23000 | 22 | < 0.0002 J | < 0.00027 | < 0.00023 | < 0.0003 | < 0.0002 | < 0.00027 | < 0.00024 | < 0.00024 | < 0.00024 | < 0.00023 | < 0.00026 | < 0.0002 | < 0.00021 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.00016 J | < 0.00021 | < 0.00018 | < 0.00023 | < 0.00016 | < 0.00021 | < 0.00019 | < 0.00019 | < 0.00019 | < 0.00018 | < 0.0002 | < 0.00015 | < 0.00016 |
| Xylene, -m,p | NS | NS | < 0.00042 J | < 0.00055 | < 0.00047 | < 0.00061 | < 0.00042 | < 0.00056 | < 0.0005 | < 0.0005 | < 0.0005 | < 0.00047 | < 0.00053 | < 0.0004 | 0.0228 |
| Xylenes | 12000 | 12 | < 0.00042 J | < 0.00055 | < 0.00047 | 0.00075 J | < 0.00042 | < 0.00056 | < 0.0005 | < 0.0005 | 0.00064 J | < 0.00047 | 0.00069 J | < 0.0004 | 0.0432 |
| Total TIC, Volatile | NS | NS | 0 J | 0.0073 J | 0 | 0.011 J | 0 | 0 | 0 | 0 | 0.0072 J | 0.0055 J | 0.011 J | 0 | 0.0732 J |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T5-0+0(8.5-9.5) | T5-1+00(9.5-10.5) | F-T2-0+65 | F-T3-0+99 | T2-0+00(9.5-10.5) | T2-1+00(7.5-8.5) | T3-0+00(5.0-6.0) | T3-0+00(5.0-6.0) Dup | T3-1+00(5.5-6.5) | T4-0+00(6.0-7.0) | T4-1+00(3.5-4.0) | F-T2-1+78 | F-T3-1+45 |
| Sample Date | Soil Remediation | Soil Screening | 2/2/2010 | 2/2/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/4/2010 | 2/4/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | < 0.0039 | < 0.0039 | < 0.0038 | 0.0121 J | < 0.0038 | < 0.004 | < 0.0039 | < 0.0038 | < 0.0039 | < 0.0037 | < 0.004 | < 0.0042 | < 0.004 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.039 | < 0.039 | < 0.038 | < 0.045 | < 0.038 | < 0.04 | < 0.039 | < 0.038 | < 0.039 | < 0.037 | < 0.04 | < 0.042 | < 0.04 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.032 | < 0.031 | < 0.031 | < 0.036 | < 0.031 | < 0.033 | < 0.032 | < 0.03 | < 0.031 | < 0.03 | < 0.033 | < 0.034 | < 0.032 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.055 | < 0.054 | < 0.053 | < 0.062 | < 0.053 | < 0.056 | < 0.054 | < 0.052 | < 0.054 | < 0.051 | < 0.056 | < 0.059 | < 0.055 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.057 | < 0.056 | < 0.056 | < 0.065 | < 0.055 | < 0.058 | < 0.056 | < 0.054 | < 0.056 | < 0.053 | < 0.058 | < 0.061 | < 0.057 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.041 | < 0.041 | < 0.04 | < 0.047 | < 0.04 | < 0.042 | < 0.041 | < 0.04 | < 0.041 | < 0.039 | < 0.042 | < 0.044 | < 0.042 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.015 | < 0.015 | < 0.014 | < 0.017 | < 0.014 | < 0.015 | < 0.015 | < 0.014 | < 0.015 | < 0.014 | < 0.015 | < 0.016 | < 0.015 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.013 | < 0.013 | < 0.013 | < 0.015 | < 0.012 | < 0.013 | < 0.013 | < 0.012 | < 0.013 | < 0.012 | < 0.013 | < 0.014 | < 0.013 |
| 2-Chloronaphthalene | NS | NS | < 0.011 | < 0.01 | < 0.01 | < 0.012 | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.01 | < 0.0098 | < 0.011 | < 0.011 | < 0.011 |
| 2-Chlorophenol | 310 | 0.5 | < 0.034 | < 0.034 | < 0.033 | < 0.039 | < 0.033 | < 0.035 | < 0.034 | < 0.033 | < 0.034 | < 0.032 | < 0.035 | < 0.037 | < 0.034 |
| 2-Methylnaphthalene | 230 | 5 | < 0.019 | < 0.019 | < 0.018 | 0.027 J | < 0.018 | < 0.019 | < 0.019 | < 0.018 | < 0.019 | < 0.018 | < 0.019 | < 0.02 | < 0.019 |
| 2-Methylphenol | 310 | NS | < 0.039 | < 0.038 | < 0.038 | < 0.044 | < 0.037 | < 0.04 | < 0.038 | < 0.037 | < 0.038 | < 0.036 | < 0.039 | < 0.042 | < 0.039 |
| 2-Nitroaniline | 39 | NS | < 0.015 | < 0.015 | < 0.015 | < 0.017 | < 0.014 | < 0.015 | < 0.015 | < 0.014 | < 0.015 | < 0.014 | < 0.015 | < 0.016 | < 0.015 |
| 2-Nitrophenol | NS | NS | < 0.036 | < 0.035 | < 0.035 | < 0.041 | < 0.035 | < 0.037 | < 0.036 | < 0.034 | < 0.035 | < 0.034 | < 0.037 | < 0.039 | < 0.036 |
| 3&4-Methylphenol | NS | NS | < 0.043 | < 0.042 | < 0.042 | < 0.049 | < 0.042 | < 0.044 | < 0.043 | < 0.041 | < 0.042 | < 0.04 | < 0.044 | < 0.046 | < 0.043 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.0086 | < 0.0084 | < 0.0084 | < 0.0098 | < 0.0083 | < 0.0088 | < 0.0085 | < 0.0082 | < 0.0085 | < 0.0081 | < 0.0088 | < 0.0093 | < 0.0087 |
| 3-Nitroaniline | NS | NS | < 0.014 | < 0.013 | < 0.013 | < 0.015 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.014 | < 0.015 | < 0.014 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.041 | < 0.041 | < 0.04 | < 0.047 | < 0.04 | < 0.042 | < 0.041 | < 0.04 | < 0.041 | < 0.039 | < 0.042 | < 0.044 | < 0.042 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.012 | < 0.012 | < 0.012 | < 0.014 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.012 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.034 | < 0.033 | < 0.033 | < 0.039 | < 0.033 | < 0.035 | < 0.034 | < 0.032 | < 0.033 | < 0.032 | < 0.035 | < 0.036 | < 0.034 |
| 4-Chloroaniline | NS | NS | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.01 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.01 | < 0.011 | < 0.012 | < 0.011 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.01 | < 0.01 | < 0.01 | < 0.012 | < 0.0099 | < 0.01 | < 0.01 | < 0.0098 | < 0.01 | < 0.0096 | < 0.01 | < 0.011 | < 0.01 |
| 4-Nitroaniline | NS | NS | < 0.013 | < 0.013 | < 0.013 | < 0.015 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.012 | < 0.013 | < 0.014 | < 0.013 |
| 4-Nitrophenol | NS | NS | < 0.057 | < 0.056 | < 0.056 | < 0.065 | < 0.055 | < 0.059 | < 0.057 | < 0.055 | < 0.057 | < 0.054 | < 0.058 | < 0.062 | < 0.058 |
| Acenaphthene | 3400 | 74 | < 0.0098 | < 0.0096 | < 0.0096 | 0.0234 J | < 0.0095 | < 0.01 | < 0.0097 | < 0.0094 | < 0.0097 | < 0.0092 | < 0.01 | < 0.011 | < 0.0099 |
| Acenaphthylene | NS | NS | < 0.011 | < 0.011 | < 0.011 | 0.28 | < 0.01 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.01 | < 0.011 | < 0.012 | < 0.011 |
| Acetophenone | 2 | 2 | < 0.006 | < 0.0059 | < 0.0058 | < 0.0068 | < 0.0058 | < 0.0061 | < 0.0059 | < 0.0057 | < 0.0059 | < 0.0056 | < 0.0061 | < 0.0064 | < 0.006 |
| Anthracene | 17000 | 1500 | < 0.012 | 0.0429 | < 0.012 | 0.192 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.012 | < 0.013 | < 0.012 |
| Atrazine | 210 | 0.2 | < 0.0067 | < 0.0066 | < 0.0065 | < 0.0076 | < 0.0065 | < 0.0068 | < 0.0066 | < 0.0064 | < 0.0066 | < 0.0063 | < 0.0068 | < 0.0072 | < 0.0067 |
| Benzaldehyde | 6100 | NS | < 0.0078 | < 0.0077 | < 0.0076 | < 0.0089 | < 0.0075 | < 0.008 | < 0.0077 | < 0.0075 | < 0.0077 | < 0.0073 | < 0.008 | < 0.0084 | < 0.0079 |
| Benzo(a)anthracene | 0.6 | 0.5 | < 0.011 | 0.135 | < 0.011 | **0.748** | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.012 | < 0.011 |
| Benzo(a)pyrene | 0.2 | 0.2 | < 0.01 | 0.103 | < 0.01 | **0.737** | < 0.01 | < 0.011 | 0.0991 | < 0.0099 | < 0.01 | < 0.0097 | < 0.011 | < 0.011 | < 0.01 |
| Benzo(b)fluoranthene | 0.6 | 2 | < 0.011 | 0.119 | < 0.011 | **0.861** | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.011 |
| Benzo(g,h,i)perylene | 380000 | NS | < 0.013 | 0.0765 | < 0.012 | 0.44 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.014 | < 0.013 |
| Benzo(k)fluoranthene | 6 | 16 | < 0.013 | 0.0907 | < 0.012 | 0.537 | < 0.012 | < 0.013 | < 0.013 | < 0.012 | < 0.013 | < 0.012 | < 0.013 | < 0.014 | < 0.013 |
| Benzyl butyl phthalate | 1200 | 150 | < 0.02 | < 0.019 | < 0.019 | < 0.022 | < 0.019 | < 0.02 | < 0.019 | < 0.019 | < 0.019 | < 0.018 | < 0.02 | < 0.021 | < 0.02 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.014 | < 0.013 | < 0.013 | < 0.016 | < 0.013 | < 0.014 | < 0.014 | < 0.013 | < 0.014 | < 0.013 | < 0.014 | < 0.015 | < 0.014 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.01 | < 0.01 | < 0.01 | < 0.012 | < 0.0099 | < 0.01 | < 0.01 | < 0.0098 | < 0.01 | < 0.0096 | < 0.01 | < 0.011 | < 0.01 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.01 | < 0.0099 | < 0.0098 | < 0.011 | < 0.0097 | < 0.01 | < 0.01 | < 0.0096 | < 0.0099 | < 0.0094 | < 0.01 | < 0.011 | < 0.01 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | < 0.03 | 0.498 | < 0.029 | 0.0497 J | < 0.029 | < 0.031 | < 0.03 | < 0.029 | < 0.03 | < 0.028 | < 0.031 | < 0.032 | 0.395 |
| Caprolactam | 31000 | 8 | < 0.011 | < 0.01 | < 0.01 | < 0.012 | < 0.01 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.011 |
| Carbazole | 24 | NS | < 0.016 | < 0.015 | < 0.015 | 0.207 | < 0.015 | < 0.016 | < 0.016 | < 0.015 | < 0.015 | < 0.015 | < 0.016 | < 0.017 | < 0.016 |
| Chrysene | 62 | 52 | < 0.011 | 0.154 | < 0.011 | 0.873 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | < 0.012 | 0.0297 J | < 0.011 | 0.158 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 |
| Dibenzofuran | NS | NS | < 0.01 | < 0.0099 | < 0.0098 | 0.0882 | < 0.0097 | < 0.01 | < 0.01 | < 0.0096 | < 0.0099 | < 0.0094 | < 0.01 | < 0.011 | < 0.01 |
| Diethyl phthalate | 49000 | 57 | < 0.012 | < 0.011 | < 0.011 | < 0.013 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 |
| Dimethyl phthalate | NS | NS | < 0.012 | < 0.012 | < 0.012 | < 0.014 | < 0.012 | < 0.012 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.012 | < 0.013 | < 0.012 |
| di-n-butyl phthalate | 6100 | 620 | < 0.0075 | < 0.0074 | < 0.0073 | < 0.0086 | < 0.0073 | < 0.0077 | < 0.0075 | < 0.0072 | < 0.0074 | < 0.007 | < 0.0077 | < 0.0081 | < 0.0076 |
| di-n-octylphthalate | 2400 | 3300 | < 0.016 | < 0.016 | < 0.016 | < 0.019 | < 0.016 | < 0.017 | < 0.016 | < 0.016 | < 0.016 | < 0.015 | < 0.017 | < 0.018 | < 0.017 |
| Fluoranthene | 2300 | 840 | < 0.015 | 0.352 | < 0.015 | 2.17 | < 0.014 | < 0.015 | < 0.015 | < 0.014 | < 0.015 | < 0.014 | < 0.015 | < 0.016 | < 0.015 |
| Fluorene | 2300 | 110 | < 0.011 | 0.0248 J | < 0.011 | 0.18 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.012 | < 0.011 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T5-0+0(8.5-9.5) | T5-1+00(9.5-10.5) | F-T2-0+65 | F-T3-0+99 | T2-0+00(9.5-10.5) | T2-1+00(7.5-8.5) | T3-0+00(5.0-6.0) | T3-0+00(5.0-6.0) Dup | T3-1+00(5.5-6.5) | T4-0+00(6.0-7.0) | T4-1+00(3.5-4.0) | F-T2-1+78 | F-T3-1+45 |
| Sample Date | Soil Remediation | Soil Screening | 2/2/2010 | 2/2/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/3/2010 | 2/4/2010 | 2/4/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.011 | < 0.011 | < 0.011 | < 0.013 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.012 | < 0.011 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.0094 | < 0.0092 | < 0.0092 | < 0.011 | < 0.0091 | < 0.0097 | < 0.0093 | < 0.009 | < 0.0093 | < 0.0088 | < 0.0096 | < 0.01 | < 0.0095 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.035 | < 0.034 | < 0.034 | < 0.039 | < 0.033 | < 0.035 | < 0.034 | < 0.033 | < 0.034 | < 0.032 | < 0.035 | < 0.037 | < 0.035 |
| Hexachloroethane | 35 | 0.2 | < 0.0094 | < 0.0092 | < 0.0092 | < 0.011 | < 0.0091 | < 0.0097 | < 0.0093 | < 0.009 | < 0.0093 | < 0.0088 | < 0.0096 | < 0.01 | < 0.0095 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | < 0.012 | 0.0587 | < 0.011 | 0.466 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.012 | < 0.013 | < 0.012 |
| Isophrone | 510 | 0.2 | < 0.0091 | < 0.0089 | < 0.0089 | < 0.01 | < 0.0088 | < 0.0094 | < 0.009 | < 0.0087 | < 0.009 | < 0.0085 | < 0.0093 | < 0.0098 | < 0.0092 |
| Naphthalene | 6 | 16 | < 0.0092 | < 0.0091 | < 0.009 | < 0.011 | < 0.0089 | < 0.0095 | < 0.0092 | < 0.0088 | < 0.0091 | < 0.0087 | < 0.0094 | < 0.0099 | < 0.0093 |
| Nitrobenzene | 31 | 0.2 | < 0.0098 | < 0.0096 | < 0.0096 | < 0.011 | < 0.0095 | < 0.01 | < 0.0097 | < 0.0094 | < 0.0097 | < 0.0092 | < 0.01 | < 0.011 | < 0.0099 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.0083 | < 0.0081 | < 0.0081 | < 0.0094 | < 0.008 | < 0.0085 | < 0.0082 | < 0.0079 | < 0.0082 | < 0.0077 | < 0.0084 | < 0.0089 | < 0.0083 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.02 | < 0.02 | < 0.02 | < 0.023 | < 0.02 | < 0.021 | < 0.02 | < 0.019 | < 0.02 | < 0.019 | < 0.021 | < 0.022 | < 0.02 |
| Pentachlorophenol | 3 | 0.3 | < 0.058 | < 0.057 | < 0.057 | < 0.066 | < 0.056 | < 0.059 | < 0.057 | < 0.055 | < 0.057 | < 0.054 | < 0.059 | < 0.062 | < 0.058 |
| Phenanthrene | NS | NS | < 0.015 | 0.257 | < 0.015 | 1.87 | < 0.015 | < 0.016 | < 0.015 | < 0.015 | < 0.015 | < 0.014 | < 0.016 | < 0.017 | < 0.016 |
| Phenol | 18000 | 5 | < 0.036 | < 0.035 | < 0.035 | < 0.041 | < 0.034 | < 0.036 | < 0.035 | < 0.034 | < 0.035 | < 0.033 | < 0.036 | < 0.038 | < 0.036 |
| Pyrene | 1700 | 550 | < 0.013 | 0.29 | < 0.013 | 1.43 | < 0.013 | < 0.013 | < 0.013 | < 0.012 | < 0.013 | < 0.012 | < 0.013 | < 0.014 | < 0.013 |
| Total TIC, Semi-Volatile | NS | NS | 0 | 1.88 J | 0 | 4.51 J | 0.89 J | 2 J | 0.5 J | 1.46 J | 0.53 J | 0 | 1.7 J | 0 | 1.95 J |
| **PCBs** | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.012 | < 0.012 | < 0.012 | < 0.014 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.012 |
| PCB 1221 | 0.2 | 0.2 | < 0.023 | < 0.023 | < 0.023 | < 0.026 | < 0.022 | < 0.023 | < 0.022 | < 0.022 | < 0.022 | < 0.021 | < 0.024 | < 0.024 | < 0.023 |
| PCB 1232 | 0.2 | 0.2 | < 0.011 | < 0.011 | < 0.011 | < 0.013 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.012 | < 0.012 | < 0.011 |
| PCB 1242 | 0.2 | 0.2 | < 0.013 | < 0.012 | < 0.012 | < 0.014 | < 0.012 | < 0.013 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.013 |
| PCB 1248 | 0.2 | 0.2 | < 0.0069 | < 0.0068 | < 0.0068 | < 0.0079 | < 0.0067 | < 0.007 | < 0.0067 | < 0.0066 | < 0.0067 | < 0.0064 | < 0.0071 | < 0.0073 | < 0.0069 |
| PCB 1254 | 0.2 | 0.2 | < 0.0088 | 0.044 | < 0.0086 | < 0.01 | < 0.0084 | < 0.0089 | < 0.0086 | < 0.0084 | < 0.0085 | < 0.0082 | < 0.0091 | < 0.0093 | < 0.0088 |
| PCB 1260 | 0.2 | 0.2 | < 0.014 | < 0.013 | < 0.013 | < 0.016 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 |
| Total PCBs | 0.2 | 0.2 | 0 | 0.044 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Metals** | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | 14200 | 5770 | 13100 | 15500 | 4880 | 9790 | 11000 | 10000 | 31300 | 11100 | 16900 | 8220 | 7800 |
| Antimony | 31 | 6 | < 0.47 J | < 4.9 J | < 0.46 | < 0.54 | < 1.4 | < 0.46 | < 0.47 | < 0.47 | < 0.47 | < 0.45 | < 0.47 | < 4.1 | 1.1 B |
| Arsenic | 19 | 19 | 3.9 | **80.7** | 1.9 B | 9.9 | **39.7** | 1.3 B | 5.1 | 4 | 3.2 | 1.9 B | 2.7 | **36.3** | 8.9 |
| Barium | 16000 | 1300 | 45.3 J | 39.4 J | 57.6 | 97 | 42.8 B | 40.5 | 38.7 | 36.6 | 144 | 42.1 | 59.4 | 82.7 B | 109 |
| Beryllium | 16 | 0.5 | 0.32 | 0.36 B | 0.33 | 0.31 | 0.31 B | 0.17 B | 0.54 | 0.47 | 0.26 | 0.45 | 0.54 | < 2.1 | 0.36 |
| Cadmium | 78 | 1 | < 0.035 | < 0.37 | < 0.034 | 0.26 B | < 0.11 | < 0.035 | 0.058 B | < 0.035 | < 0.035 | 0.11 B | < 0.035 | < 0.31 | 0.073 B |
| Calcium | NS | NS | 2130 J | 56100 J | 2790 | 7890 | 27600 | 938 | 1680 | 1610 | 8340 | 2310 | 927 | 31200 | 6150 |
| Chromium | NS | NS | 15.2 | 10.8 B | 22.8 | 32.4 | 9.4 | 12.8 | 16.4 | 15.4 | 184 | 17.3 | 21.6 | 20 | 23.9 |
| Cobalt | 1600 | 59 | 5.5 B | 9.5 B | 9.2 | 13.6 | 11.8 B | 4.1 B | 9.3 | 8.2 | 45.4 | 10.6 | 4.8 B | 19.2 B | 8.7 |
| Copper | 3100 | 7300 | 10.9 J | 35.6 J | 11.9 | 34 | 38.6 | 5.7 | 15 | 15.1 | 14.1 | 28 | 15.3 | 34.5 | 15.9 |
| Iron | NS | NS | 16000 J | 25100 J | 27100 | 38700 | 23800 | 11400 | 15900 | 14300 | 51500 | 25100 | 19500 | 70700 | 26800 |
| Lead | 400 | 59 | 6 | 31.8 | 1.8 B | 145 | 5.9 | 6.3 | 8.6 | 7.5 | 3.6 | 8.8 | 10.2 | 17.1 | 122 |
| Magnesium | NS | NS | 2930 J | 7110 J | 3840 | 4810 | 6770 | 1860 | 4650 | 3890 | 26300 | 4980 | 2630 | 11000 | 3050 |
| Manganese | 11000 | 42 | 124 J | 457 J | 364 | 478 | 226 | 67.5 | 146 | 140 | 1040 | 270 | 169 | 327 | 351 |
| Mercury | 23 | 0.1 | 0.032 J | 0.027 J | 0.013 B | 0.15 | 0.026 B | 0.019 B | 0.015 B | < 0.013 | 0.02 B | 0.027 B | 0.015 B | 0.16 | 0.013 B |
| Nickel | 1600 | 31 | 15.7 | 16.2 B | 19.9 | 31.6 | 15.8 | 9 | 22.2 | 20.6 | 157 | 25.7 | 15.6 | 27.5 | 15.8 |
| Potassium | NS | NS | 730 B | 1940 B | 1110 | 1050 B | 2310 B | 613 B | 1280 | 1300 | 4440 | 1360 | 1280 | 4000 B | 878 B |
| Selenium | 390 | 7 | 0.78 B | < 4.5 | < 0.42 | < 0.5 | < 1.3 | < 0.43 | 0.83 B | 0.43 B | < 0.43 | < 0.42 | < 0.43 | < 3.8 | < 0.45 |
| Silver | 390 | 1 | < 0.13 J | < 1.3 J | 0.18 B | 0.24 B | < 0.39 J | < 0.13 | < 0.13 | < 0.13 | 0.52 B | 0.14 B | < 0.13 | < 1.1 | < 0.13 |
| Sodium | NS | NS | 75.6 B | 387 B | 117 B | 191 B | 198 B | 83.2 B | 58.4 B | 57.4 B | 309 B | 100 B | 98.7 B | < 10000 | 116 B |
| Thallium | 5 | 3 | < 0.23 | < 2.4 | 0.39 B | < 0.27 | < 0.69 | < 0.23 | 0.33 B | < 0.23 | < 0.23 | < 0.22 | < 0.23 | < 2 | < 0.24 |
| Vanadium | 78 | NS | 22.8 J | 74 J | 45 | **83.6** | 60.9 | 21.9 | 19.4 | 19.2 | **124** | 33 | 34.2 | **143** | 39.6 |
| Zinc | 23000 | 600 | 39.5 | 118 | 21.6 | 166 | 17.4 | 34.9 | 45.9 | 44.7 | 43.6 | 59 | 54 | 27.3 | 38.7 |
| **Other** | | | | | | | | | | | | | | | |
| Solids, Percent | NS | NS | 84.1 | 85.9 | 86.3 | 73.6 | 86.7 | 82.2 | 85.1 | 87.7 | 85.4 | 90 | 81.7 | 78.2 | 83.2 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T2-2+00(5.5-6.5) | T3-2+00(6.5-7.5) | F-T4-1+30 | F-T5-2+50 | T2-3+00(3.5-4.5) | T4-2+00(6.0-7.0) | T4-2+50(5.0-6.0) | T5-2+00(19.0-20.0) | T5-3+00(9.0+10.0) | F-T2-3+45 | F-T2-3+45 Dup | F-T5-1+37 | T2-4+00(4.0-5.0) |
| Sample Date | Soil Remediation | Soil Screening | 2/4/2010 | 2/4/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/9/2010 | 2/9/2010 | 2/9/2010 | 2/9/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.00013 | < 0.0001 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00013 | < 0.00012 | < 0.0001 | < 0.00012 | < 0.00012 | < 0.00014 | < 0.00014 | < 0.00013 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00031 | < 0.00023 | < 0.00027 | < 0.00026 | < 0.00027 | < 0.0003 | < 0.00028 | < 0.00024 | < 0.00028 | < 0.00029 | < 0.00032 | < 0.00032 | < 0.0003 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00019 | < 0.00015 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00019 | < 0.00018 | < 0.00015 | < 0.00018 | < 0.00018 | < 0.0002 | < 0.0002 | < 0.00019 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.00014 | < 0.00011 | < 0.00013 | < 0.00012 | < 0.00013 | < 0.00014 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00013 | < 0.00015 | < 0.00015 | < 0.00014 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00069 | < 0.00052 | < 0.00062 | < 0.0006 | < 0.00062 | < 0.00067 | < 0.00064 | < 0.00053 | < 0.00064 | < 0.00065 | < 0.00072 | < 0.00073 | < 0.00067 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.00036 | < 0.00027 | < 0.00032 | < 0.00031 | < 0.00032 | < 0.00035 | < 0.00033 | < 0.00028 | < 0.00034 | < 0.00034 | < 0.00038 | < 0.00038 | < 0.00035 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.00057 | < 0.00043 | < 0.00051 | < 0.00049 | < 0.0005 | < 0.00055 | < 0.00052 | < 0.00044 | < 0.00053 | < 0.00053 | < 0.00059 | < 0.0006 | < 0.00055 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00014 | < 0.00011 | < 0.00013 | < 0.00012 | < 0.00013 | < 0.00014 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00013 | < 0.00015 | < 0.00015 | < 0.00014 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00028 | < 0.00021 | < 0.00025 | < 0.00024 | < 0.00025 | < 0.00027 | < 0.00026 | < 0.00022 | < 0.00026 | < 0.00026 | < 0.0003 | < 0.0003 | < 0.00027 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.00036 | < 0.00027 | < 0.00032 | < 0.00031 | < 0.00032 | < 0.00035 | < 0.00033 | < 0.00028 | < 0.00034 | < 0.00034 | < 0.00038 | < 0.00038 | < 0.00035 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.00014 | < 0.0001 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00013 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00013 | < 0.00014 | < 0.00014 | < 0.00013 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00029 | < 0.00022 | < 0.00026 | < 0.00025 | < 0.00026 | < 0.00028 | < 0.00027 | < 0.00022 | < 0.00027 | < 0.00027 | < 0.0003 | < 0.0003 | < 0.00028 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.00035 | < 0.00027 | < 0.00032 | < 0.0003 | < 0.00031 | < 0.00034 | < 0.00033 | < 0.00027 | < 0.00033 | < 0.00033 | < 0.00037 | < 0.00037 | < 0.00034 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.0021 | < 0.0016 | < 0.0018 | < 0.0018 | < 0.0018 | < 0.002 | < 0.0019 | < 0.0016 | < 0.0019 | < 0.0019 | < 0.0022 | < 0.0022 | < 0.002 |
| 2-Hexanone | NS | NS | < 0.001 | < 0.00076 | < 0.0009 | < 0.00087 | < 0.0009 | < 0.00097 | < 0.00093 | < 0.00078 | < 0.00094 | < 0.00094 | < 0.0011 | < 0.0011 | < 0.00098 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.00085 | < 0.00064 | < 0.00076 | < 0.00073 | < 0.00076 | < 0.00082 | < 0.00078 | < 0.00066 | < 0.00079 | < 0.00079 | < 0.00089 | < 0.0009 | < 0.00082 |
| Acetone | 70000 | 12 | 0.0057 J | < 0.0018 | 0.0162 | 0.0165 | < 0.0021 | < 0.0023 | < 0.0022 | 0.0205 | < 0.0022 | < 0.0022 | < 0.0024 | 0.0294 | 0.0327 |
| Benzene | 2 | 0.005 | < 0.00036 | < 0.00027 | < 0.00032 | < 0.00031 | < 0.00032 | < 0.00034 | < 0.00033 | < 0.00028 | < 0.00033 | < 0.00033 | < 0.00037 | < 0.00038 | < 0.00035 |
| Bromodichloromethane | 1 | 0.005 | < 0.00027 | < 0.0002 | < 0.00024 | < 0.00023 | < 0.00024 | < 0.00026 | < 0.00025 | < 0.00021 | < 0.00025 | < 0.00025 | < 0.00028 | < 0.00028 | < 0.00026 |
| Bromoform | 81 | 0.02 | < 0.00016 | < 0.00012 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00015 | < 0.00015 | < 0.00012 | < 0.00015 | < 0.00015 | < 0.00016 | < 0.00017 | < 0.00015 |
| Bromomethane | 25 | 0.03 | < 0.00042 | < 0.00032 | < 0.00038 | < 0.00036 | < 0.00038 | < 0.00041 | < 0.00039 | < 0.00033 | < 0.00039 | < 0.00039 | < 0.00044 | < 0.00045 | < 0.00041 |
| Carbon disulfide | 7800 | 4 | < 0.00032 | < 0.00024 | 0.00084 J | < 0.00027 | < 0.00028 | < 0.00031 | < 0.00029 | < 0.00025 | < 0.0003 | < 0.0003 | < 0.00033 | 0.00087 J | 0.00047 J |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.00058 | < 0.00044 | < 0.00052 | < 0.0005 | < 0.00052 | < 0.00056 | < 0.00054 | < 0.00045 | < 0.00054 | < 0.00054 | < 0.00061 | < 0.00061 | < 0.00056 |
| Chlorobenzene | 510 | 0.4 | < 0.00035 | < 0.00027 | < 0.00032 | < 0.0003 | < 0.00032 | < 0.00034 | < 0.00033 | < 0.00027 | < 0.00033 | < 0.00033 | < 0.00037 | < 0.00037 | < 0.00034 |
| Chloroethane | 220 | NS | < 0.001 | < 0.00079 | < 0.00094 | < 0.0009 | < 0.00093 | < 0.001 | < 0.00097 | < 0.00081 | < 0.00097 | < 0.00098 | < 0.0011 | < 0.0011 | < 0.001 |
| Chloroform | 0.6 | 0.2 | < 0.00033 | < 0.00025 | < 0.0003 | < 0.00029 | < 0.0003 | < 0.00032 | < 0.00031 | < 0.00026 | < 0.00031 | < 0.00031 | < 0.00035 | < 0.00035 | < 0.00032 |
| Chloromethane | 4 | NS | < 0.00017 | < 0.00013 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00017 | < 0.00016 | < 0.00013 | < 0.00016 | < 0.00016 | < 0.00018 | < 0.00018 | < 0.00017 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00025 | < 0.00019 | < 0.00022 | < 0.00022 | < 0.00022 | < 0.00024 | < 0.00023 | < 0.00019 | < 0.00023 | < 0.00023 | < 0.00026 | < 0.00026 | < 0.00024 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00014 | < 0.00011 | < 0.00012 | < 0.00012 | < 0.00012 | < 0.00013 | < 0.00013 | < 0.00011 | < 0.00013 | < 0.00013 | < 0.00015 | < 0.00015 | < 0.00013 |
| Cyclohexane | NS | NS | < 0.00016 | < 0.00012 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00015 | < 0.00015 | < 0.00012 | < 0.00015 | < 0.00015 | < 0.00016 | < 0.00017 | < 0.00015 |
| Dibromochloromethane | 3 | 0.005 | < 0.00012 | < 0.000087 | < 0.0001 | < 0.000099 | < 0.0001 | < 0.00011 | < 0.00011 | < 0.000089 | < 0.00011 | < 0.00011 | < 0.00012 | < 0.00012 | < 0.00011 |
| Dichlorodifluoromethane | 490 | 25 | < 0.00099 | < 0.00075 | < 0.00088 | < 0.00085 | < 0.00088 | < 0.00096 | < 0.00091 | < 0.00076 | < 0.00092 | < 0.00092 | < 0.001 | < 0.001 | < 0.00096 |
| Ethylbenzene | 7800 | 8 | < 0.00039 | < 0.00029 | < 0.00035 | < 0.00033 | < 0.00035 | < 0.00037 | < 0.00036 | < 0.0003 | < 0.00036 | < 0.00036 | < 0.00041 | < 0.00041 | < 0.00038 |
| Freon 113 | NS | NS | < 0.00059 | < 0.00044 | < 0.00053 | < 0.00051 | < 0.00052 | < 0.00057 | < 0.00054 | < 0.00045 | < 0.00055 | < 0.00055 | < 0.00061 | < 0.00062 | < 0.00057 |
| Isopropylbenzene | NS | NS | < 0.00054 | < 0.00041 | < 0.00048 | 0.0027 J | < 0.00048 | < 0.00052 | < 0.0005 | < 0.00042 | < 0.0005 | < 0.00051 | < 0.00057 | < 0.00057 | < 0.00052 |
| Methyl acetate | 78000 | 14 | < 0.00086 | < 0.00065 | < 0.00077 | < 0.00074 | < 0.00077 | < 0.00083 | < 0.00079 | < 0.00066 | < 0.0008 | < 0.0008 | < 0.0009 | < 0.00091 | < 0.00083 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.0003 | < 0.00022 | < 0.00026 | < 0.00025 | < 0.00026 | < 0.00028 | < 0.00027 | < 0.00023 | < 0.00027 | < 0.00028 | < 0.00031 | < 0.00031 | < 0.00029 |
| Methylcyclohexane | NS | NS | < 0.00068 | < 0.00052 | < 0.00061 | < 0.00059 | < 0.00061 | < 0.00066 | < 0.00063 | < 0.00053 | < 0.00064 | < 0.00064 | < 0.00071 | < 0.00072 | < 0.00066 |
| Methylene chloride | 34 | 0.007 | < 0.00023 | < 0.00018 | < 0.00021 | < 0.0002 | < 0.00021 | < 0.00023 | < 0.00022 | < 0.00018 | < 0.00022 | < 0.00022 | < 0.00024 | < 0.00025 | < 0.00023 |
| o-Xylene | NS | NS | < 0.00049 | < 0.00037 | < 0.00044 | < 0.00042 | < 0.00044 | < 0.00047 | < 0.00045 | < 0.00038 | < 0.00046 | < 0.00046 | < 0.00051 | < 0.00052 | < 0.00048 |
| Styrene | 90 | 2 | < 0.00011 | < 0.000085 | < 0.0001 | < 0.000096 | < 0.0001 | < 0.00011 | < 0.0001 | < 0.000086 | < 0.0001 | < 0.0001 | < 0.00012 | < 0.00012 | < 0.00011 |
| Tetrachloroethene | 2 | 0.005 | < 0.00015 | < 0.00011 | < 0.00014 | < 0.00013 | < 0.00014 | < 0.00015 | < 0.00014 | < 0.00012 | < 0.00014 | < 0.00014 | < 0.00016 | < 0.00016 | < 0.00015 |
| Toluene | 6300 | 4 | < 0.00031 | < 0.00023 | < 0.00027 | < 0.00026 | < 0.00027 | < 0.0003 | < 0.00028 | 0.0003 J | < 0.00028 | < 0.00028 | < 0.00032 | < 0.00032 | < 0.0003 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.00047 | < 0.00035 | < 0.00042 | < 0.0004 | < 0.00042 | < 0.00045 | < 0.00043 | < 0.00036 | < 0.00044 | < 0.00044 | < 0.00049 | < 0.0005 | < 0.00045 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.0001 | < 0.000076 | < 0.00009 | < 0.000086 | < 0.000089 | < 0.000097 | < 0.000093 | < 0.000078 | < 0.000093 | < 0.000094 | < 0.0001 | < 0.00011 | < 0.000097 |
| Trichloroethene | 7 | 0.007 | < 0.00055 | < 0.00042 | < 0.00049 | < 0.00047 | < 0.00049 | < 0.00053 | < 0.00051 | < 0.00043 | < 0.00051 | < 0.00051 | < 0.00057 | < 0.00058 | < 0.00053 |
| Trichlorofluoromethane | 23000 | 22 | < 0.00024 | < 0.00018 | < 0.00021 | < 0.00021 | < 0.00021 | < 0.00023 | < 0.00022 | < 0.00019 | < 0.00022 | < 0.00022 | < 0.00025 | < 0.00025 | < 0.00023 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.00019 | < 0.00014 | < 0.00017 | < 0.00016 | < 0.00017 | < 0.00018 | < 0.00017 | < 0.00014 | < 0.00017 | < 0.00017 | < 0.00019 | < 0.0002 | < 0.00018 |
| Xylene, -m,p | NS | NS | < 0.00049 | < 0.00037 | < 0.00044 | 0.0029 | < 0.00044 | < 0.00047 | < 0.00045 | < 0.00038 | < 0.00046 | < 0.00046 | < 0.00051 | < 0.00052 | < 0.00048 |
| Xylenes | 12000 | 12 | < 0.00049 | < 0.00037 | < 0.00044 | 0.0029 | < 0.00044 | < 0.00047 | < 0.00045 | < 0.00038 | < 0.00046 | < 0.00046 | < 0.00051 | < 0.00052 | < 0.00048 |
| Total TIC, Volatile | NS | NS | 0 | 0 | 0 | 0.1247 J | 0.005 J | 0.0073 J | 0.0073 J | 0 | 0 | 0 | 0.0062 J | 0 | 0 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T2-2+00(5.5-6.5) | T3-2+00(6.5-7.5) | F-T4-1+30 | F-T5-2+50 | T2-3+00(3.5-4.5) | T4-2+00(6.0-7.0) | T4-2+50(5.0-6.0) | T5-2+00(19.0-20.0) | T5-3+00(9.0+10.0) | F-T2-3+45 | F-T2-3+45 Dup | F-T5-1+37 | T2-4+00(4.0-5.0) |
| Sample Date | Soil Remediation | Soil Screening | 2/4/2010 | 2/4/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/9/2010 | 2/9/2010 | 2/9/2010 | 2/9/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | < 0.0041 | < 0.0035 | < 0.004 | 0.063 J | < 0.0039 | < 0.0038 | < 0.0035 | < 0.0036 | < 0.0038 | < 0.0039 | < 0.0039 | < 0.0039 | < 0.0038 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.041 | < 0.035 | < 0.04 | < 0.039 | < 0.039 | < 0.038 | < 0.035 | < 0.036 | < 0.038 | < 0.039 | < 0.039 | < 0.039 | < 0.038 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.034 | < 0.029 | < 0.032 | < 0.031 | < 0.032 | < 0.031 | < 0.028 | < 0.029 | < 0.031 | < 0.032 | < 0.032 | < 0.032 | < 0.03 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.057 | < 0.049 | < 0.055 | < 0.054 | < 0.055 | < 0.053 | < 0.048 | < 0.05 | < 0.053 | < 0.054 | < 0.055 | < 0.055 | < 0.052 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.06 | < 0.051 | < 0.057 | < 0.056 | < 0.057 | < 0.055 | < 0.05 | < 0.052 | < 0.055 | < 0.057 | < 0.057 | < 0.057 | < 0.054 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.044 | < 0.037 | < 0.042 | < 0.041 | < 0.041 | < 0.04 | < 0.036 | < 0.038 | < 0.04 | < 0.041 | < 0.041 | < 0.041 | < 0.04 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.016 | < 0.013 | < 0.015 | < 0.015 | < 0.015 | < 0.014 | < 0.013 | < 0.014 | < 0.014 | < 0.015 | < 0.015 | < 0.015 | < 0.014 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.014 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.011 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.012 |
| 2-Chloronaphthalene | NS | NS | < 0.011 | < 0.0095 | < 0.011 | < 0.01 | < 0.01 | < 0.01 | < 0.0092 | < 0.0097 | < 0.01 | < 0.01 | < 0.01 | < 0.011 | < 0.01 |
| 2-Chlorophenol | 310 | 0.5 | < 0.036 | < 0.031 | < 0.035 | < 0.034 | < 0.034 | < 0.033 | < 0.03 | < 0.032 | < 0.033 | < 0.034 | < 0.034 | < 0.034 | < 0.033 |
| 2-Methylnaphthalene | 230 | 5 | < 0.02 | < 0.017 | < 0.019 | 0.313 | < 0.019 | < 0.018 | < 0.017 | < 0.017 | < 0.018 | < 0.019 | < 0.019 | < 0.019 | < 0.018 |
| 2-Methylphenol | 310 | NS | < 0.041 | < 0.035 | < 0.039 | < 0.038 | < 0.039 | < 0.038 | < 0.034 | < 0.036 | < 0.038 | < 0.038 | < 0.039 | < 0.039 | < 0.037 |
| 2-Nitroaniline | 39 | NS | < 0.016 | < 0.013 | < 0.015 | < 0.015 | < 0.015 | < 0.014 | < 0.013 | < 0.014 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.014 |
| 2-Nitrophenol | NS | NS | < 0.038 | < 0.032 | < 0.036 | < 0.035 | < 0.036 | < 0.035 | < 0.032 | < 0.033 | < 0.035 | < 0.036 | < 0.036 | < 0.036 | < 0.034 |
| 3&4-Methylphenol | NS | NS | < 0.045 | < 0.039 | < 0.043 | < 0.042 | < 0.043 | < 0.042 | < 0.038 | < 0.04 | < 0.042 | < 0.043 | < 0.043 | < 0.043 | < 0.041 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.0091 | < 0.0078 | < 0.0087 | < 0.0085 | < 0.0086 | < 0.0084 | < 0.0076 | < 0.0079 | < 0.0084 | < 0.0086 | < 0.0086 | < 0.0086 | < 0.0082 |
| 3-Nitroaniline | NS | NS | < 0.014 | < 0.012 | < 0.014 | < 0.013 | < 0.014 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.013 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.044 | < 0.037 | < 0.042 | < 0.041 | < 0.041 | < 0.04 | < 0.036 | < 0.038 | < 0.04 | < 0.041 | < 0.041 | < 0.041 | < 0.04 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.013 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.012 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.036 | < 0.031 | < 0.034 | < 0.033 | < 0.034 | < 0.033 | < 0.03 | < 0.031 | < 0.033 | < 0.034 | < 0.034 | < 0.034 | < 0.032 |
| 4-Chloroaniline | NS | NS | < 0.011 | < 0.0098 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.0095 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.01 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.011 | < 0.0092 | < 0.01 | < 0.01 | < 0.01 | < 0.0099 | < 0.009 | < 0.0094 | < 0.0099 | < 0.01 | < 0.01 | < 0.01 | < 0.0098 |
| 4-Nitroaniline | NS | NS | < 0.014 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 |
| 4-Nitrophenol | NS | NS | < 0.06 | < 0.052 | < 0.058 | < 0.056 | < 0.057 | < 0.056 | < 0.05 | < 0.053 | < 0.056 | < 0.057 | < 0.057 | < 0.057 | < 0.055 |
| Acenaphthene | 3400 | 74 | < 0.01 | < 0.0089 | < 0.0099 | 0.0453 | < 0.0098 | < 0.0095 | < 0.0086 | < 0.0091 | < 0.0096 | < 0.0098 | < 0.0098 | < 0.0098 | < 0.0094 |
| Acenaphthylene | NS | NS | < 0.011 | < 0.0098 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.0095 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.01 |
| Acetophenone | 2 | 2 | < 0.0063 | < 0.0054 | < 0.006 | < 0.0059 | < 0.006 | < 0.0058 | < 0.0052 | < 0.0055 | < 0.0058 | < 0.0059 | < 0.006 | < 0.006 | < 0.0057 |
| Anthracene | 17000 | 1500 | < 0.012 | < 0.011 | < 0.012 | 0.0279 J | < 0.012 | < 0.012 | < 0.01 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.011 |
| Atrazine | 210 | 0.2 | < 0.007 | < 0.006 | < 0.0067 | < 0.0066 | < 0.0067 | < 0.0065 | < 0.0059 | < 0.0062 | < 0.0065 | < 0.0066 | < 0.0067 | < 0.0067 | < 0.0064 |
| Benzaldehyde | 6100 | NS | < 0.0082 | < 0.007 | < 0.0079 | < 0.0077 | < 0.0078 | < 0.0076 | < 0.0069 | < 0.0072 | < 0.0076 | < 0.0078 | < 0.0078 | < 0.0078 | < 0.0075 |
| Benzo(a)anthracene | 0.6 | 0.5 | < 0.012 | < 0.01 | < 0.011 | 0.0609 | < 0.011 | < 0.011 | < 0.0097 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | 0.0254 J | < 0.011 |
| Benzo(a)pyrene | 0.2 | 0.2 | < 0.011 | < 0.0093 | < 0.01 | 0.046 | < 0.01 | < 0.01 | < 0.0091 | < 0.0095 | < 0.01 | < 0.01 | < 0.01 | 0.031 J | < 0.0099 |
| Benzo(b)fluoranthene | 0.6 | 2 | < 0.012 | < 0.01 | < 0.011 | 0.137 | < 0.011 | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | 0.045 | < 0.011 |
| Benzo(g,h,i)perylene | 380000 | NS | < 0.013 | < 0.011 | < 0.013 | 0.0379 | < 0.013 | < 0.012 | < 0.011 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | 0.031 J | < 0.012 |
| Benzo(k)fluoranthene | 6 | 16 | < 0.013 | < 0.011 | < 0.013 | < 0.013 | < 0.013 | < 0.012 | < 0.011 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | 0.0198 J | < 0.012 |
| Benzyl butyl phthalate | 1200 | 150 | < 0.021 | < 0.018 | < 0.02 | < 0.019 | < 0.02 | < 0.019 | < 0.017 | < 0.018 | < 0.019 | < 0.02 | < 0.02 | < 0.02 | < 0.019 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.014 | < 0.012 | < 0.014 | < 0.014 | < 0.014 | < 0.013 | < 0.012 | < 0.013 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.013 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.011 | < 0.0092 | < 0.01 | < 0.01 | < 0.01 | < 0.0099 | < 0.009 | < 0.0094 | < 0.0099 | < 0.01 | < 0.01 | < 0.01 | < 0.0098 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.011 | < 0.0091 | < 0.01 | < 0.0099 | < 0.01 | < 0.0098 | < 0.0088 | < 0.0093 | < 0.0098 | < 0.01 | < 0.01 | < 0.01 | < 0.0096 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | < 0.032 | 0.0831 | < 0.03 | 4.14 D | < 0.03 | < 0.029 | < 0.026 | 0.1 | < 0.029 | < 0.03 | < 0.03 | 0.471 | < 0.029 |
| Caprolactam | 31000 | 8 | < 0.011 | < 0.0096 | < 0.011 | < 0.011 | < 0.011 | < 0.01 | < 0.0094 | < 0.0098 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.01 |
| Carbazole | 24 | NS | < 0.017 | < 0.014 | < 0.016 | < 0.015 | < 0.016 | < 0.015 | < 0.014 | < 0.014 | < 0.015 | < 0.016 | < 0.016 | < 0.016 | < 0.015 |
| Chrysene | 62 | 52 | < 0.012 | < 0.01 | < 0.012 | 0.1 | < 0.011 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | 0.0316 J | < 0.011 |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | < 0.012 | < 0.01 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.011 |
| Dibenzofuran | NS | NS | < 0.011 | < 0.0091 | < 0.01 | 0.0211 J | < 0.01 | < 0.0098 | < 0.0088 | < 0.0093 | < 0.0098 | < 0.01 | < 0.01 | < 0.01 | < 0.0096 |
| Diethyl phthalate | 49000 | 57 | < 0.012 | < 0.01 | < 0.012 | < 0.011 | < 0.012 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.011 |
| Dimethyl phthalate | NS | NS | < 0.013 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.01 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.012 | < 0.011 |
| di-n-butyl phthalate | 6100 | 620 | < 0.0079 | 0.0449 J | < 0.0076 | < 0.0074 | < 0.0075 | < 0.0073 | < 0.0066 | < 0.0069 | < 0.0073 | < 0.0075 | < 0.0075 | < 0.0075 | < 0.0072 |
| di-n-octylphthalate | 2400 | 3300 | < 0.017 | < 0.015 | < 0.017 | 1.07 | < 0.016 | < 0.016 | < 0.015 | < 0.015 | < 0.016 | < 0.016 | < 0.016 | < 0.017 | < 0.016 |
| Fluoranthene | 2300 | 840 | < 0.016 | < 0.013 | < 0.015 | 0.119 | < 0.015 | < 0.015 | < 0.013 | < 0.014 | < 0.015 | < 0.015 | < 0.015 | 0.0322 J | < 0.014 |
| Fluorene | 2300 | 110 | < 0.012 | < 0.01 | < 0.011 | 0.036 | < 0.011 | < 0.011 | < 0.0098 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | T2-2+00(5.5-6.5) | T3-2+00(6.5-7.5) | F-T4-1+30 | F-T5-2+50 | T2-3+00(3.5-4.5) | T4-2+00(6.0-7.0) | T4-2+50(5.0-6.0) | T5-2+00(19.0-20.0) | T5-3+00(9.0+10.0) | F-T2-3+45 | F-T2-3+45 Dup | F-T5-1+37 | T2-4+00(4.0-5.0) |
| Sample Date | Soil Remediation | Soil Screening | 2/4/2010 | 2/4/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/8/2010 | 2/9/2010 | 2/9/2010 | 2/9/2010 | 2/9/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.012 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.0097 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.011 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.0099 | < 0.0085 | < 0.0095 | < 0.0093 | < 0.0094 | < 0.0092 | < 0.0083 | < 0.0087 | < 0.0092 | < 0.0094 | < 0.0094 | < 0.0094 | < 0.009 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.036 | < 0.031 | < 0.035 | < 0.034 | < 0.035 | < 0.034 | < 0.03 | < 0.032 | < 0.034 | < 0.034 | < 0.034 | < 0.035 | < 0.033 |
| Hexachloroethane | 35 | 0.2 | < 0.0099 | < 0.0085 | < 0.0095 | < 0.0093 | < 0.0094 | < 0.0092 | < 0.0083 | < 0.0087 | < 0.0092 | < 0.0094 | < 0.0094 | < 0.0094 | < 0.009 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | < 0.012 | < 0.011 | < 0.012 | 0.0275 J | < 0.012 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | 0.0218 J | < 0.011 |
| Isophrone | 510 | 0.2 | < 0.0096 | < 0.0082 | < 0.0092 | < 0.009 | < 0.0091 | < 0.0089 | < 0.008 | < 0.0084 | < 0.0089 | < 0.0091 | < 0.0091 | < 0.0091 | < 0.0087 |
| Naphthalene | 6 | 16 | < 0.0097 | < 0.0083 | < 0.0093 | 0.117 | < 0.0092 | < 0.009 | < 0.0081 | < 0.0085 | < 0.009 | < 0.0092 | < 0.0092 | < 0.0093 | < 0.0089 |
| Nitrobenzene | 31 | 0.2 | < 0.01 | < 0.0088 | < 0.0099 | < 0.0097 | < 0.0098 | < 0.0095 | < 0.0086 | < 0.009 | < 0.0095 | < 0.0097 | < 0.0098 | < 0.0098 | < 0.0094 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.0087 | < 0.0075 | < 0.0083 | < 0.0082 | < 0.0083 | < 0.008 | < 0.0073 | < 0.0076 | < 0.0081 | < 0.0082 | < 0.0083 | < 0.0083 | < 0.0079 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.021 | < 0.018 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.018 | < 0.019 | < 0.02 | < 0.02 | < 0.02 | < 0.02 | < 0.019 |
| Pentachlorophenol | 3 | 0.3 | < 0.061 | < 0.052 | < 0.059 | < 0.057 | < 0.058 | < 0.056 | < 0.051 | < 0.053 | < 0.056 | < 0.058 | < 0.058 | < 0.058 | < 0.055 |
| Phenanthrene | NS | NS | < 0.016 | < 0.014 | < 0.016 | 0.113 | < 0.015 | < 0.015 | < 0.014 | < 0.014 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.015 |
| Phenol | 18000 | 5 | < 0.037 | < 0.032 | < 0.036 | < 0.035 | < 0.036 | < 0.035 | < 0.031 | < 0.033 | < 0.035 | < 0.035 | < 0.036 | < 0.036 | < 0.034 |
| Pyrene | 1700 | 550 | < 0.014 | < 0.012 | < 0.013 | 0.139 | < 0.013 | < 0.013 | < 0.011 | < 0.012 | < 0.013 | < 0.013 | < 0.013 | 0.0571 | < 0.012 |
| Total TIC, Semi-Volatile | NS | NS | 0.23 J | 0.14 J | 4.29 J | 12.8 J | 0.58 J | 0.47 J | 0.3 J | 0.32 J | 0.19 J | 0 | 0 | 0.88 J | 0 |
| **PCBs** | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.013 | < 0.011 | < 0.012 | < 0.012 | < 0.013 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.012 J |
| PCB 1221 | 0.2 | 0.2 | < 0.024 | < 0.021 | < 0.023 | < 0.023 | < 0.023 | < 0.022 | < 0.02 | < 0.021 | < 0.023 | < 0.023 | < 0.023 | < 0.024 | < 0.022 J |
| PCB 1232 | 0.2 | 0.2 | < 0.012 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.0099 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.011 J |
| PCB 1242 | 0.2 | 0.2 | < 0.013 | < 0.011 | < 0.012 | < 0.012 | < 0.013 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.013 | < 0.013 | < 0.012 J |
| PCB 1248 | 0.2 | 0.2 | < 0.0072 | < 0.0062 | < 0.0069 | < 0.0068 | < 0.007 | < 0.0067 | < 0.0061 | < 0.0063 | < 0.0068 | < 0.0069 | < 0.0069 | < 0.0071 | < 0.0067 J |
| PCB 1254 | 0.2 | 0.2 | < 0.0092 | < 0.0079 | < 0.0088 | **0.218** | < 0.0088 | < 0.0085 | < 0.0077 | < 0.0081 | < 0.0086 | < 0.0088 | < 0.0088 | < 0.009 | < 0.0086 J |
| PCB 1260 | 0.2 | 0.2 | < 0.014 | < 0.012 | < 0.014 | 0.0497 | < 0.014 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.014 | < 0.014 | < 0.014 | < 0.013 J |
| Total PCBs | 0.2 | 0.2 | 0 | 0 | 0 | **0.2677** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Metals** | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | 16200 | 7130 | 16200 | 8260 | 13000 | 11600 | 4920 | 5810 | 15800 | 5360 | 6290 | 9760 | 16100 |
| Antimony | 31 | 6 | < 0.41 | < 4.2 | < 4.7 | < 4.6 | < 0.49 | < 0.45 | < 0.4 | < 4.2 | < 0.47 | 3.6 J | < 2.3 J | < 2.4 J | < 0.48 J |
| Arsenic | 19 | 19 | 4.4 | **24.3** | **71.7** | **63.2** | 3.1 | 6.9 | 10.8 | **51.7** | 7.7 | **61.8 J** | **69.1 J** | **59.3 J** | 3.3 J |
| Barium | 16000 | 1300 | 71.5 | 77.5 B | 47.5 B | 75.3 B | 36 | 53.2 | 30.8 | 36.5 B | 35.4 | 23.8 B | 30.3 B | 56.2 B | 31.5 |
| Beryllium | 16 | 0.5 | 0.41 | < 2.1 | 0.83 B | 0.29 B | 0.41 | 0.59 | 0.26 | 0.23 B | 0.67 | 0.37 B | 0.28 B | 0.42 B | 0.42 |
| Cadmium | 78 | 1 | < 0.031 | < 0.32 | < 0.35 | 1.7 B | < 0.036 | 0.18 B | < 0.03 | < 0.32 | < 0.035 | 4 | 3.3 | 0.23 B | < 0.036 |
| Calcium | NS | NS | 1810 | 19500 | 56700 | 46900 | 934 | 3390 | 9920 | 35000 | 2810 | 48000 | 52900 | 45100 | 801 |
| Chromium | NS | NS | 18.7 | 14.3 | 23.1 | 17 | 14.2 | 13.1 | 11.1 | 11.6 | 14.5 | 15.2 | 17 | 22 | 14.9 |
| Cobalt | 1600 | 59 | 6.1 | 11.2 B | 41.3 B | 16.6 B | 3.5 B | 8.3 | 6.9 | 12.6 B | 9.6 | 26.9 B | 23.3 B | 19.6 B | 3.6 B |
| Copper | 3100 | 7300 | 14.9 | 23.6 B | 132 | 59.9 | 9.1 | 26.6 | 19.7 | 20.8 B | 22.9 | 20.1 | 29.1 | 54.1 | 9 |
| Iron | NS | NS | 20100 | 25300 | 142000 | 38400 | 15900 | 20700 | 16000 | 37800 | 29000 | 125000 J | 97300 J | 62900 J | 18300 J |
| Lead | 400 | 59 | 12.3 | 22.8 | 46.3 | 238 | 6.8 | 11.2 | 12 | 13.2 | 8.8 | 12.2 | 12.5 | 143 | 7 |
| Magnesium | NS | NS | 2430 | 6390 | 18100 | 8120 | 2000 | 4110 | 5440 | 5860 | 3730 | 6690 | 7780 | 9140 | 1860 |
| Manganese | 11000 | 42 | 94.3 | 359 | 824 | 539 | 89.9 | 972 | 182 | 289 | 475 | 332 | 319 | 470 | 77.1 |
| Mercury | 23 | 0.1 | < 0.015 | 0.061 | 0.3 | 0.18 | 0.019 B | 0.025 B | 0.041 | 0.091 | 0.022 B | 0.071 | 0.11 | 0.21 | < 0.012 |
| Nickel | 1600 | 31 | 11.5 | 20 | 39.4 | 25 | 12.2 | 17.9 | 16.7 | 16.2 | 18.6 | 30.9 | 30 | 26.9 | 10.1 |
| Potassium | NS | NS | 1110 | 1890 B | 1970 B | 2140 B | 974 B | 1600 | 1100 | 1700 B | 1330 | 1060 B | 1270 B | 2010 B | 728 B |
| Selenium | 390 | 7 | < 2 | < 3.9 | < 4.3 | < 4.2 | < 0.45 | < 0.42 | < 0.37 | < 3.9 | < 0.44 | < 4.4 | < 4.3 | < 2.2 | < 0.44 |
| Silver | 390 | 1 | < 0.11 | < 1.2 | < 1.3 | < 1.3 | < 0.13 | < 0.12 | < 0.11 | < 1.2 | < 0.13 | < 1.3 | < 1.3 | < 0.66 | < 0.13 |
| Sodium | NS | NS | 146 B | < 11000 | 483 B | 221 B | 98.6 B | 113 B | 170 B | 261 B | 132 B | 465 B | 518 B | 330 B | 85.9 B |
| Thallium | 5 | 3 | < 0.2 | < 2.1 | < 2.3 | < 2.2 | < 0.24 | < 0.22 | < 0.19 | < 2.1 | < 0.23 | < 2.4 | < 2.3 | < 1.2 | < 0.23 |
| Vanadium | 78 | NS | 35.8 | 55.2 | **350** | **93.7** | 24.3 | 29.9 | 36.8 | **87.2** | 30.1 | **258** | **209** | **132** | 29.9 |
| Zinc | 23000 | 600 | 32 | 54.1 | 74.1 | 183 | 29.3 | 45.3 | 19.4 | 31.7 | 42 | 17.2 | 19.6 | 120 | 35.7 |
| **Other** | | | | | | | | | | | | | | | |
| Solids, Percent | NS | NS | 79.6 | 93 | 83.5 | 85.5 | 83.9 | 86.8 | 95.9 | 91 | 85.8 | 84 | 83.2 | 82.2 | 86.6 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | F-T2-5+06 | T2-5+00(9.0-10.0) | F-T1-0+50 | F-T1-1+50 | F-T2-2+50 | F-T4-0+50 | F-T4-2+25 | F-T6-2+50 | F-T7-2+50 | F-T8-0+50 | F-T8-1+50 | F-T8-2+79 | F-T8-3+50 |
| Sample Date | Soil Remediation | Soil Screening | 2/10/2010 | 2/10/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.00013 | < 0.00015 | < 0.00016 | 0.0041 J | < 0.00011 | < 0.00014 | < 0.00015 | < 0.00017 | < 0.00016 | < 0.00017 | < 0.00019 | < 0.00018 | < 0.00015 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00029 | < 0.00035 | < 0.00038 | < 0.00026 | < 0.00026 | < 0.00032 | < 0.00034 | < 0.00039 | < 0.00037 | < 0.00038 | < 0.00044 | < 0.00042 | < 0.00035 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00019 | < 0.00022 | < 0.00024 | < 0.00017 | < 0.00016 | < 0.00021 | < 0.00022 | < 0.00025 | < 0.00023 | < 0.00024 | < 0.00028 | < 0.00027 | < 0.00022 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.00014 | < 0.00017 | < 0.00018 | 0.00078 J | < 0.00012 | < 0.00015 | < 0.00016 | < 0.00018 | < 0.00017 | < 0.00018 | 0.00089 J | < 0.0002 | < 0.00016 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00067 | < 0.00079 | < 0.00085 | < 0.00059 | < 0.00058 | < 0.00073 | < 0.00078 | < 0.00089 | < 0.00082 | < 0.00087 | < 0.001 | < 0.00095 | < 0.00079 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.00035 | < 0.00041 | < 0.00044 | < 0.00031 | < 0.0003 | < 0.00038 | < 0.00041 | < 0.00046 | < 0.00043 | < 0.00045 | < 0.00052 | < 0.00049 | < 0.00041 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.00054 | < 0.00065 | < 0.00069 | < 0.00048 | < 0.00047 | < 0.0006 | < 0.00064 | < 0.00072 | < 0.00067 | < 0.00071 | < 0.00082 | < 0.00078 | < 0.00065 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00014 | < 0.00016 | < 0.00018 | < 0.00012 | < 0.00012 | < 0.00015 | < 0.00016 | < 0.00018 | < 0.00017 | < 0.00018 | < 0.00021 | < 0.0002 | < 0.00016 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00027 | < 0.00032 | < 0.00035 | < 0.00024 | < 0.00024 | < 0.0003 | < 0.00032 | < 0.00036 | < 0.00034 | < 0.00035 | < 0.00041 | < 0.00039 | < 0.00032 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.00035 | < 0.00041 | < 0.00044 | < 0.00031 | < 0.0003 | < 0.00038 | < 0.00041 | < 0.00046 | < 0.00043 | < 0.00045 | < 0.00052 | < 0.00049 | < 0.00041 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.00013 | < 0.00016 | < 0.00017 | < 0.00012 | < 0.00011 | < 0.00014 | < 0.00015 | < 0.00017 | < 0.00016 | < 0.00017 | < 0.0002 | < 0.00019 | < 0.00016 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00028 | < 0.00033 | < 0.00035 | < 0.00025 | < 0.00024 | < 0.0003 | < 0.00032 | < 0.00037 | < 0.00034 | < 0.00036 | < 0.00041 | < 0.00039 | < 0.00033 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.00034 | < 0.0004 | < 0.00043 | < 0.0003 | < 0.00029 | < 0.00037 | < 0.0004 | < 0.00045 | < 0.00042 | < 0.00044 | < 0.00051 | < 0.00048 | < 0.0004 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.002 | < 0.0024 | < 0.0025 | < 0.0018 | < 0.0017 | < 0.0022 | < 0.0023 | < 0.0026 | < 0.0025 | < 0.0026 | < 0.003 | 0.0237 | < 0.0024 |
| 2-Hexanone | NS | NS | < 0.00097 | < 0.0012 | < 0.0012 | < 0.00086 | < 0.00084 | < 0.0011 | < 0.0011 | < 0.0013 | < 0.0012 | < 0.0013 | < 0.0015 | < 0.0014 | < 0.0012 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.00082 | < 0.00097 | < 0.001 | < 0.00073 | < 0.00071 | < 0.0009 | < 0.00095 | < 0.0011 | < 0.001 | < 0.0011 | < 0.0012 | < 0.0012 | < 0.00097 |
| Acetone | 70000 | 12 | < 0.0022 | 0.0213 | 0.0628 | 0.0142 | < 0.0019 | 0.0094 J | < 0.0026 | < 0.003 | < 0.0028 | 0.0572 | < 0.0034 | 0.193 | < 0.0027 |
| Benzene | 2 | 0.005 | < 0.00034 | < 0.00041 | < 0.00044 | < 0.00031 | < 0.0003 | < 0.00038 | < 0.0004 | < 0.00046 | < 0.00042 | < 0.00045 | < 0.00051 | < 0.00049 | < 0.00041 |
| Bromodichloromethane | 1 | 0.005 | < 0.00026 | < 0.00031 | < 0.00033 | < 0.00023 | < 0.00022 | < 0.00029 | < 0.0003 | < 0.00034 | < 0.00032 | < 0.00034 | < 0.00039 | < 0.00037 | < 0.00031 |
| Bromoform | 81 | 0.02 | < 0.00015 | < 0.00018 | < 0.00019 | < 0.00014 | < 0.00013 | < 0.00017 | < 0.00018 | < 0.0002 | < 0.00019 | < 0.0002 | < 0.00023 | < 0.00022 | < 0.00018 |
| Bromomethane | 25 | 0.03 | < 0.00041 | < 0.00048 | < 0.00052 | < 0.00036 | < 0.00035 | < 0.00045 | < 0.00048 | < 0.00054 | < 0.0005 | < 0.00053 | < 0.00061 | < 0.00058 | < 0.00048 |
| Carbon disulfide | 7800 | 4 | 0.00055 J | 0.0018 J | < 0.00039 | < 0.00027 | < 0.00027 | < 0.00034 | < 0.00036 | < 0.00041 | < 0.00038 | < 0.0004 | < 0.00046 | < 0.00044 | < 0.00036 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.00056 | < 0.00067 | < 0.00071 | < 0.0005 | < 0.00048 | < 0.00062 | < 0.00065 | < 0.00074 | < 0.00069 | < 0.00073 | < 0.00084 | < 0.0008 | < 0.00066 |
| Chlorobenzene | 510 | 0.4 | < 0.00034 | < 0.00041 | < 0.00043 | < 0.0003 | < 0.0003 | < 0.00038 | < 0.0004 | < 0.00045 | < 0.00042 | < 0.00044 | < 0.00051 | < 0.00049 | < 0.00041 |
| Chloroethane | 220 | NS | < 0.001 | < 0.0012 | < 0.0013 | < 0.0009 | < 0.00087 | < 0.0011 | < 0.0012 | < 0.0013 | < 0.0012 | < 0.0013 | < 0.0015 | < 0.0014 | < 0.0012 |
| Chloroform | 0.6 | 0.2 | < 0.00032 | < 0.00038 | < 0.00041 | < 0.00028 | < 0.00028 | < 0.00035 | < 0.00037 | < 0.00043 | < 0.0004 | < 0.00042 | < 0.00048 | < 0.00046 | < 0.00038 |
| Chloromethane | 4 | NS | < 0.00017 | < 0.0002 | < 0.00021 | < 0.00015 | < 0.00014 | < 0.00018 | < 0.00019 | < 0.00022 | < 0.00021 | < 0.00022 | < 0.00025 | < 0.00024 | < 0.0002 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00024 | < 0.00029 | < 0.00031 | < 0.00021 | < 0.00021 | < 0.00027 | < 0.00028 | < 0.00032 | < 0.0003 | < 0.00031 | < 0.00036 | < 0.00034 | < 0.00029 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00013 | < 0.00016 | < 0.00017 | < 0.00012 | < 0.00012 | < 0.00015 | < 0.00016 | < 0.00018 | < 0.00017 | < 0.00017 | < 0.0002 | < 0.00019 | < 0.00016 |
| Cyclohexane | NS | NS | < 0.00015 | < 0.00018 | < 0.00019 | < 0.00014 | < 0.00013 | < 0.00017 | < 0.00018 | < 0.0002 | < 0.00019 | < 0.0002 | < 0.00023 | < 0.00022 | < 0.00018 |
| Dibromochloromethane | 3 | 0.005 | < 0.00011 | < 0.00013 | < 0.00014 | < 0.000099 | < 0.000096 | < 0.00012 | < 0.00013 | < 0.00015 | < 0.00014 | < 0.00014 | < 0.00017 | < 0.00016 | < 0.00013 |
| Dichlorodifluoromethane | 490 | 25 | < 0.00095 | < 0.0011 | < 0.0012 | < 0.00085 | < 0.00083 | < 0.001 | < 0.0011 | < 0.0013 | < 0.0012 | < 0.0012 | < 0.0014 | < 0.0014 | < 0.0011 |
| Ethylbenzene | 7800 | 8 | < 0.00037 | < 0.00044 | < 0.00048 | 0.0529 | < 0.00032 | < 0.00041 | < 0.00044 | < 0.0005 | < 0.00046 | < 0.00049 | 0.0102 | < 0.00053 | < 0.00044 |
| Freon 113 | NS | NS | < 0.00057 | < 0.00067 | < 0.00072 | < 0.0005 | < 0.00049 | < 0.00062 | < 0.00066 | < 0.00075 | < 0.0007 | < 0.00074 | < 0.00085 | < 0.00081 | < 0.00067 |
| Isopropylbenzene | NS | NS | < 0.00052 | < 0.00062 | < 0.00066 | 0.0017 J | < 0.00045 | < 0.00057 | < 0.00061 | < 0.00069 | < 0.00065 | < 0.00068 | 0.0013 J | < 0.00074 | < 0.00062 |
| Methyl acetate | 78000 | 14 | < 0.00083 | < 0.00099 | < 0.0011 | < 0.00074 | < 0.00072 | < 0.00091 | < 0.00097 | < 0.0011 | < 0.001 | < 0.0011 | < 0.0012 | < 0.0012 | < 0.00098 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.00028 | < 0.00034 | < 0.00036 | < 0.00025 | < 0.00025 | < 0.00031 | < 0.00033 | < 0.00038 | < 0.00035 | < 0.00037 | < 0.00043 | < 0.0004 | < 0.00034 |
| Methylcyclohexane | NS | NS | < 0.00066 | < 0.00078 | < 0.00084 | < 0.00059 | < 0.00057 | < 0.00073 | < 0.00077 | < 0.00088 | < 0.00082 | < 0.00086 | < 0.00099 | < 0.00094 | < 0.00078 |
| Methylene chloride | 34 | 0.007 | < 0.00022 | < 0.00027 | < 0.00029 | < 0.0002 | < 0.00019 | < 0.00025 | < 0.00026 | < 0.0003 | < 0.00028 | < 0.00029 | < 0.00034 | < 0.00032 | < 0.00027 |
| o-Xylene | NS | NS | < 0.00047 | < 0.00056 | < 0.0006 | 0.14 | < 0.00041 | < 0.00052 | < 0.00055 | 0.0011 J | < 0.00058 | 0.00086 J | 0.062 | 0.0011 J | < 0.00056 |
| Styrene | 90 | 2 | < 0.00011 | < 0.00013 | < 0.00014 | < 0.000096 | < 0.000093 | < 0.00012 | < 0.00013 | < 0.00014 | < 0.00013 | < 0.00014 | < 0.00016 | < 0.00015 | < 0.00013 |
| Tetrachloroethene | 2 | 0.005 | < 0.00015 | < 0.00017 | < 0.00019 | < 0.00013 | < 0.00013 | < 0.00016 | < 0.00017 | < 0.00019 | < 0.00018 | < 0.00019 | < 0.00022 | < 0.00021 | < 0.00017 |
| Toluene | 6300 | 4 | < 0.00029 | < 0.00035 | < 0.00037 | 0.0569 | < 0.00025 | < 0.00032 | < 0.00034 | 0.00048 J | < 0.00036 | 0.00045 J | 0.0045 | < 0.00042 | < 0.00035 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.00045 | < 0.00054 | < 0.00057 | < 0.0004 | < 0.00039 | < 0.0005 | < 0.00053 | < 0.0006 | < 0.00056 | < 0.00059 | < 0.00068 | < 0.00064 | < 0.00054 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.000097 | < 0.00012 | < 0.00012 | < 0.000086 | < 0.000084 | < 0.00011 | < 0.00011 | < 0.00013 | < 0.00012 | < 0.00013 | < 0.00014 | < 0.00014 | < 0.00011 |
| Trichloroethene | 7 | 0.007 | < 0.00053 | < 0.00063 | < 0.00067 | < 0.00047 | < 0.00046 | < 0.00058 | < 0.00062 | < 0.0007 | < 0.00066 | < 0.00069 | < 0.00079 | < 0.00075 | < 0.00063 |
| Trichlorofluoromethane | 23000 | 22 | < 0.00023 | < 0.00027 | < 0.00029 | < 0.00021 | < 0.0002 | < 0.00025 | < 0.00027 | < 0.00031 | < 0.00029 | < 0.0003 | < 0.00035 | < 0.00033 | < 0.00027 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.00018 | < 0.00021 | < 0.00023 | < 0.00016 | < 0.00016 | < 0.0002 | < 0.00021 | < 0.00024 | < 0.00022 | < 0.00023 | < 0.00027 | < 0.00025 | < 0.00021 |
| Xylene, -m,p | NS | NS | < 0.00047 | < 0.00056 | < 0.0006 | 0.0992 | < 0.00041 | < 0.00052 | < 0.00055 | < 0.00063 | < 0.00058 | < 0.00061 | 0.0806 | 0.0036 | < 0.00056 |
| Xylenes | 12000 | 12 | < 0.00047 | < 0.00056 | < 0.0006 | 0.239 | < 0.00041 | < 0.00052 | < 0.00055 | 0.0011 J | < 0.00058 | 0.00086 J | 0.143 | 0.0047 | < 0.00056 |
| Total TIC, Volatile | NS | NS | 0.0262 J | 0 | 0.0093 J | 0.1101 J | 0 | 0.0088 J | 0 | 0 | 0 | 0 | 0.1788 J | 0.0268 J | 0.0063 J |



R2-0004517

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | F-T2-5+06 | T2-5+00(9.0-10.0) | F-T1-0+50 | F-T1-1+50 | F-T2-2+50 | F-T4-0+50 | F-T4-2+25 | F-T6-2+50 | F-T7-2+50 | F-T8-0+50 | F-T8-1+50 | F-T8-2+79 | F-T8-3+50 |
| Sample Date | Soil Remediation | Soil Screening | 2/10/2010 | 2/10/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | 0.0214 J | < 0.0049 | < 0.0046 | < 0.0041 | < 0.0043 | < 0.0046 | < 0.0039 | < 0.0042 | < 0.0048 | < 0.0049 | < 0.0043 | < 0.0043 | < 0.0042 |
| 2,4,5-Trichlorophenol | 6100 | 44 | < 0.041 | < 0.049 | < 0.046 | < 0.041 | < 0.043 | < 0.046 | < 0.039 | < 0.042 | < 0.048 | < 0.049 | < 0.043 | < 0.043 | < 0.042 |
| 2,4,6-Trichlorophenol | 19 | 0.2 | < 0.033 | < 0.039 | < 0.037 | < 0.033 | < 0.035 | < 0.037 | < 0.032 | < 0.034 | < 0.039 | < 0.04 | < 0.035 | < 0.035 | < 0.034 |
| 2,4-Dichlorophenol | 180 | 0.2 | < 0.057 | < 0.067 | < 0.064 | < 0.057 | < 0.06 | < 0.063 | < 0.054 | < 0.058 | < 0.067 | < 0.068 | < 0.06 | < 0.06 | < 0.059 |
| 2,4-Dimethylphenol | 1200 | 0.7 | < 0.06 | < 0.07 | < 0.067 | < 0.059 | < 0.063 | < 0.066 | < 0.057 | < 0.06 | < 0.07 | < 0.071 | < 0.062 | < 0.063 | < 0.061 |
| 2,4-Dinitrophenol | 120 | 0.3 | < 0.043 | < 0.051 | < 0.049 | < 0.043 | < 0.046 | < 0.048 | < 0.041 | < 0.044 | < 0.051 | < 0.052 | < 0.045 | < 0.046 | < 0.044 |
| 2,4-Dinitrotoluene | 0.7 | NS | < 0.016 | < 0.018 | < 0.017 | < 0.015 | < 0.016 | < 0.017 | < 0.015 | < 0.016 | < 0.018 | < 0.019 | < 0.016 | < 0.016 | < 0.016 |
| 2,6-Dinitrotoluene | 0.7 | NS | < 0.014 | < 0.016 | < 0.015 | < 0.013 | < 0.014 | < 0.015 | < 0.013 | < 0.014 | < 0.016 | < 0.016 | < 0.014 | < 0.014 | < 0.014 |
| 2-Chloronaphthalene | NS | NS | < 0.011 | < 0.013 | < 0.012 | < 0.011 | < 0.012 | < 0.012 | < 0.01 | < 0.011 | < 0.013 | < 0.013 | < 0.011 | < 0.012 | < 0.011 |
| 2-Chlorophenol | 310 | 0.5 | < 0.036 | < 0.042 | < 0.04 | < 0.036 | < 0.038 | < 0.04 | < 0.034 | < 0.036 | < 0.042 | < 0.043 | < 0.037 | < 0.038 | < 0.037 |
| 2-Methylnaphthalene | 230 | 5 | 0.0537 J | < 0.023 | < 0.022 | 0.204 | < 0.021 | < 0.022 | < 0.019 | < 0.02 | < 0.023 | < 0.024 | 0.0331 J | < 0.021 | < 0.02 |
| 2-Methylphenol | 310 | NS | < 0.041 | < 0.048 | < 0.045 | < 0.04 | < 0.043 | < 0.045 | < 0.039 | < 0.041 | < 0.048 | < 0.049 | < 0.042 | < 0.043 | < 0.042 |
| 2-Nitroaniline | 39 | NS | < 0.016 | < 0.018 | < 0.017 | < 0.016 | < 0.016 | < 0.017 | < 0.015 | < 0.016 | < 0.018 | < 0.019 | < 0.016 | < 0.016 | < 0.016 |
| 2-Nitrophenol | NS | NS | < 0.038 | < 0.044 | < 0.042 | < 0.037 | < 0.04 | < 0.042 | < 0.036 | < 0.038 | < 0.044 | < 0.045 | < 0.039 | < 0.04 | < 0.039 |
| 3&4-Methylphenol | NS | NS | < 0.045 | < 0.053 | < 0.051 | < 0.045 | < 0.048 | < 0.05 | < 0.043 | < 0.046 | < 0.053 | < 0.054 | < 0.047 | < 0.047 | < 0.046 |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | < 0.009 | < 0.011 | < 0.01 | < 0.009 | < 0.0095 | < 0.01 | < 0.0086 | < 0.0091 | < 0.011 | < 0.011 | < 0.0094 | < 0.0095 | < 0.0093 |
| 3-Nitroaniline | NS | NS | < 0.014 | < 0.017 | < 0.016 | < 0.014 | < 0.015 | < 0.016 | < 0.014 | < 0.014 | < 0.017 | < 0.017 | < 0.015 | < 0.015 | < 0.015 |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | < 0.043 | < 0.051 | < 0.049 | < 0.043 | < 0.046 | < 0.048 | < 0.041 | < 0.044 | < 0.051 | < 0.052 | < 0.045 | < 0.046 | < 0.044 |
| 4-Bromophenyl phenyl ether | NS | NS | < 0.013 | < 0.015 | < 0.014 | < 0.013 | < 0.014 | < 0.014 | < 0.012 | < 0.013 | < 0.015 | < 0.015 | < 0.013 | < 0.014 | < 0.013 |
| 4-Chloro-3-Methylphenol | NS | NS | < 0.036 | < 0.042 | < 0.04 | < 0.035 | < 0.037 | < 0.039 | < 0.034 | < 0.036 | < 0.042 | < 0.043 | < 0.037 | < 0.037 | < 0.036 |
| 4-Chloroaniline | NS | NS | < 0.011 | < 0.013 | < 0.013 | < 0.011 | < 0.012 | < 0.013 | < 0.011 | < 0.012 | < 0.013 | < 0.014 | < 0.012 | < 0.012 | < 0.012 |
| 4-Chlorophenyl phenyl ether | NS | NS | < 0.011 | < 0.013 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.01 | < 0.011 | < 0.013 | < 0.013 | < 0.011 | < 0.011 | < 0.011 |
| 4-Nitroaniline | NS | NS | < 0.014 | < 0.016 | < 0.016 | < 0.014 | < 0.015 | < 0.015 | < 0.013 | < 0.014 | < 0.016 | < 0.017 | < 0.014 | < 0.015 | < 0.014 |
| 4-Nitrophenol | NS | NS | < 0.06 | < 0.071 | < 0.067 | < 0.06 | < 0.063 | < 0.066 | < 0.057 | < 0.061 | < 0.071 | < 0.072 | < 0.063 | < 0.063 | < 0.062 |
| Acenaphthene | 3400 | 74 | 0.267 | < 0.012 | < 0.012 | < 0.01 | < 0.011 | < 0.011 | < 0.0098 | 0.016 J | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.011 |
| Acenaphthylene | NS | NS | < 0.011 | < 0.013 | < 0.013 | < 0.011 | < 0.012 | < 0.013 | < 0.011 | < 0.012 | < 0.013 | < 0.014 | < 0.012 | < 0.012 | < 0.012 |
| Acetophenone | 2 | 2 | < 0.0063 | < 0.0074 | < 0.007 | < 0.0062 | < 0.0066 | < 0.0069 | < 0.006 | < 0.0063 | < 0.0074 | < 0.0075 | < 0.0065 | < 0.0066 | < 0.0064 |
| Anthracene | 17000 | 1500 | 0.504 | < 0.015 | < 0.014 | < 0.012 | < 0.013 | < 0.014 | < 0.012 | 0.0392 | < 0.015 | < 0.015 | < 0.013 | < 0.013 | 0.0201 J |
| Atrazine | 210 | 0.2 | < 0.007 | < 0.0083 | < 0.0078 | < 0.0069 | < 0.0074 | < 0.0077 | < 0.0067 | < 0.0071 | < 0.0082 | < 0.0084 | < 0.0073 | < 0.0074 | < 0.0072 |
| Benzaldehyde | 6100 | NS | < 0.0082 | < 0.0096 | < 0.0091 | < 0.0081 | < 0.0086 | < 0.009 | < 0.0078 | < 0.0083 | < 0.0096 | < 0.0098 | < 0.0085 | < 0.0086 | < 0.0084 |
| Benzo(a)anthracene | 0.6 | 0.5 | **0.742** | < 0.014 | < 0.013 | 0.0269 J | < 0.012 | < 0.013 | < 0.011 | 0.136 | 0.0338 J | < 0.014 | 0.0219 J | 0.0225 J | 0.0594 |
| Benzo(a)pyrene | 0.2 | 0.2 | **0.712** | < 0.013 | < 0.012 | 0.025 J | < 0.011 | < 0.012 | < 0.01 | 0.149 | 0.0326 J | < 0.013 | 0.0197 J | 0.0201 J | 0.0472 |
| Benzo(b)fluoranthene | 0.6 | 2 | 0.57 | < 0.014 | < 0.013 | 0.026 J | < 0.012 | < 0.013 | < 0.011 | 0.152 | 0.0447 | < 0.014 | 0.024 J | 0.019 J | 0.045 |
| Benzo(g,h,i)perylene | 380000 | NS | 0.452 | < 0.016 | < 0.015 | 0.0304 J | < 0.014 | < 0.015 | < 0.013 | 0.118 | 0.0342 J | < 0.016 | 0.0239 J | < 0.014 | 0.0345 J |
| Benzo(k)fluoranthene | 6 | 16 | 0.546 | < 0.016 | < 0.015 | 0.0235 J | < 0.014 | < 0.015 | < 0.013 | 0.0982 | 0.0226 J | < 0.016 | < 0.014 | 0.0159 J | 0.0436 |
| Benzyl butyl phthalate | 1200 | 150 | < 0.021 | < 0.024 | < 0.023 | < 0.02 | < 0.022 | < 0.023 | < 0.02 | 0.0722 | 0.159 | < 0.025 | < 0.021 | < 0.022 | < 0.021 |
| bis(2-Chloroethoxy)methane | NS | NS | < 0.014 | < 0.017 | < 0.016 | < 0.014 | < 0.015 | < 0.016 | < 0.014 | < 0.015 | < 0.017 | < 0.017 | < 0.015 | < 0.015 | < 0.015 |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | < 0.011 | < 0.013 | < 0.012 | < 0.011 | < 0.011 | < 0.012 | < 0.01 | < 0.011 | < 0.013 | < 0.013 | < 0.011 | < 0.011 | < 0.011 |
| bis(2-Chloroisopropyl)ether | 23 | 3 | < 0.011 | < 0.012 | < 0.012 | < 0.01 | < 0.011 | < 0.012 | < 0.01 | < 0.011 | < 0.012 | < 0.013 | < 0.011 | < 0.011 | < 0.011 |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | 0.104 | < 0.037 | 0.187 | 1.15 | < 0.033 | < 0.035 | < 0.03 | 0.724 | 0.269 | 0.0489 J | 0.575 | 0.0374 J | < 0.032 |
| Caprolactam | 31000 | 8 | < 0.011 | < 0.013 | < 0.013 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.013 | < 0.013 | < 0.012 | < 0.012 | < 0.011 |
| Carbazole | 24 | NS | 0.239 | < 0.019 | < 0.018 | < 0.016 | < 0.017 | < 0.018 | < 0.016 | < 0.017 | < 0.019 | < 0.02 | < 0.017 | < 0.017 | < 0.017 |
| Chrysene | 62 | 52 | 0.721 | < 0.014 | < 0.013 | 0.0246 J | < 0.013 | < 0.013 | < 0.011 | 0.138 | 0.0364 J | < 0.014 | 0.0201 J | 0.0216 J | 0.0573 |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | 0.139 | < 0.014 | < 0.014 | < 0.012 | < 0.013 | < 0.013 | < 0.012 | 0.0234 J | < 0.014 | < 0.015 | < 0.013 | < 0.013 | < 0.012 |
| Dibenzofuran | NS | NS | 0.157 | < 0.012 | < 0.012 | < 0.01 | < 0.011 | < 0.012 | < 0.01 | < 0.011 | < 0.012 | < 0.013 | < 0.011 | < 0.011 | < 0.011 |
| Diethyl phthalate | 49000 | 57 | < 0.012 | < 0.014 | < 0.014 | < 0.012 | < 0.013 | < 0.013 | < 0.012 | < 0.012 | < 0.014 | < 0.015 | < 0.013 | < 0.013 | < 0.012 |
| Dimethyl phthalate | NS | NS | < 0.013 | < 0.015 | < 0.014 | < 0.012 | < 0.013 | < 0.014 | < 0.012 | < 0.013 | < 0.015 | < 0.015 | < 0.013 | < 0.013 | < 0.013 |
| di-n-butyl phthalate | 6100 | 620 | < 0.0079 | < 0.0093 | < 0.0088 | < 0.0078 | < 0.0083 | < 0.0087 | < 0.0075 | < 0.008 | < 0.0093 | < 0.0094 | < 0.0082 | < 0.0083 | < 0.0081 |
| di-n-octylphthalate | 2400 | 3300 | < 0.017 | < 0.02 | < 0.019 | < 0.017 | < 0.018 | < 0.019 | < 0.016 | < 0.018 | < 0.02 | < 0.021 | < 0.018 | < 0.018 | < 0.018 |
| Fluoranthene | 2300 | 840 | 1.8 | < 0.018 | < 0.018 | 0.036 | < 0.017 | < 0.017 | < 0.015 | 0.252 | 0.0577 | 0.0245 J | 0.0304 J | 0.0435 | 0.124 |
| Fluorene | 2300 | 110 | 0.27 | < 0.014 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.011 | 0.0157 J | < 0.014 | < 0.014 | < 0.012 | < 0.012 | < 0.012 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal | O'Connor Disposal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | F-T2-5+06 | T2-5+00(9.0-10.0) | F-T1-0+50 | F-T1-1+50 | F-T2-2+50 | F-T4-0+50 | F-T4-2+25 | F-T6-2+50 | F-T7-2+50 | F-T8-0+50 | F-T8-1+50 | F-T8-2+79 | F-T8-3+50 |
| Sample Date | Soil Remediation | Soil Screening | 2/10/2010 | 2/10/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 | 2/11/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | < 0.012 | < 0.014 | < 0.013 | < 0.011 | < 0.012 | < 0.013 | < 0.011 | < 0.012 | < 0.014 | < 0.014 | < 0.012 | < 0.012 | < 0.012 |
| Hexachlorobutadiene | 6 | 0.6 | < 0.0099 | < 0.012 | < 0.011 | < 0.0098 | < 0.01 | < 0.011 | < 0.0094 | < 0.01 | < 0.012 | < 0.012 | < 0.01 | < 0.01 | < 0.01 |
| Hexachlorocyclopentadiene | 45 | 210 | < 0.036 | < 0.043 | < 0.041 | < 0.036 | < 0.038 | < 0.04 | < 0.034 | < 0.037 | < 0.043 | < 0.043 | < 0.038 | < 0.038 | < 0.037 |
| Hexachloroethane | 35 | 0.2 | < 0.0099 | < 0.012 | < 0.011 | < 0.0098 | < 0.01 | < 0.011 | < 0.0094 | < 0.01 | < 0.012 | < 0.012 | < 0.01 | < 0.01 | < 0.01 |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | 0.391 | < 0.015 | < 0.014 | 0.0217 J | < 0.013 | < 0.014 | < 0.012 | 0.0981 | 0.0295 J | < 0.015 | 0.0163 J | < 0.013 | 0.0319 J |
| Isophrone | 510 | 0.2 | < 0.0096 | < 0.011 | < 0.011 | < 0.0095 | < 0.01 | < 0.011 | < 0.0091 | < 0.0097 | < 0.011 | < 0.011 | < 0.01 | < 0.01 | < 0.0098 |
| Naphthalene | 6 | 16 | 0.0985 | < 0.011 | < 0.011 | 0.404 | < 0.01 | < 0.011 | < 0.0092 | < 0.0098 | < 0.011 | 0.0314 J | 0.0489 | < 0.01 | < 0.0099 |
| Nitrobenzene | 31 | 0.2 | < 0.01 | < 0.012 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.0098 | < 0.01 | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.011 |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | < 0.0087 | < 0.01 | < 0.0097 | < 0.0086 | < 0.0091 | < 0.0096 | < 0.0083 | < 0.0088 | < 0.01 | < 0.01 | < 0.009 | < 0.0091 | < 0.0089 |
| N-Nitrosodiphenylamine | 99 | 0.2 | < 0.021 | < 0.025 | < 0.024 | < 0.021 | < 0.022 | < 0.023 | < 0.02 | < 0.021 | < 0.025 | < 0.025 | < 0.022 | < 0.022 | < 0.022 |
| Pentachlorophenol | 3 | 0.3 | < 0.061 | < 0.072 | < 0.068 | < 0.06 | < 0.064 | < 0.067 | < 0.058 | < 0.061 | < 0.071 | < 0.073 | < 0.063 | < 0.064 | < 0.062 |
| Phenanthrene | NS | NS | 1.73 | < 0.019 | < 0.018 | 0.0261 J | < 0.017 | < 0.018 | < 0.015 | 0.139 | 0.0191 J | < 0.019 | < 0.017 | 0.0204 J | 0.0747 |
| Phenol | 18000 | 5 | < 0.037 | < 0.044 | < 0.042 | < 0.037 | < 0.039 | < 0.041 | < 0.036 | < 0.038 | < 0.044 | < 0.045 | < 0.039 | < 0.039 | < 0.038 |
| Pyrene | 1700 | 550 | 1.41 | < 0.016 | < 0.015 | 0.0419 | < 0.014 | < 0.015 | < 0.013 | 0.21 | 0.0496 | 0.0237 J | 0.0327 J | 0.0361 J | 0.0998 |
| Total TIC, Semi-Volatile | NS | NS | 2.46 J | 0.2 J | 5.24 J | 11.72 J | 0 | 0.89 J | 0.93 J | 2.38 J | 1.54 J | 3.48 J | 3.59 J | 1.31 J | 0.36 J |
| **PCBs** | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | < 0.012 | < 0.014 | < 0.013 | < 0.012 | < 0.012 | < 0.013 | < 0.011 | < 0.012 | < 0.014 | < 0.014 | < 0.013 | < 0.013 | < 0.012 |
| PCB 1221 | 0.2 | 0.2 | < 0.022 | < 0.026 | < 0.025 | < 0.021 | < 0.023 | < 0.024 | < 0.021 | < 0.022 | < 0.026 | < 0.026 | < 0.023 | < 0.023 | < 0.023 |
| PCB 1232 | 0.2 | 0.2 | < 0.011 | < 0.013 | < 0.012 | < 0.01 | < 0.011 | < 0.012 | < 0.01 | < 0.011 | < 0.013 | < 0.013 | < 0.011 | < 0.011 | < 0.011 |
| PCB 1242 | 0.2 | 0.2 | < 0.012 | < 0.014 | < 0.014 | 0.0645 | < 0.012 | < 0.013 | < 0.011 | < 0.012 | < 0.014 | < 0.014 | < 0.013 | < 0.013 | < 0.012 |
| PCB 1248 | 0.2 | 0.2 | < 0.0066 | < 0.0079 | < 0.0075 | < 0.0064 | < 0.0069 | < 0.0073 | < 0.0062 | 0.12 | < 0.0078 | < 0.0079 | < 0.007 | < 0.007 | < 0.0068 |
| PCB 1254 | 0.2 | 0.2 | < 0.0084 | < 0.01 | 0.0869 J | < 0.0082 | < 0.0087 | < 0.0093 | < 0.0079 | 0.0915 | 0.162 | < 0.01 | < 0.0089 | < 0.0089 | < 0.0087 |
| PCB 1260 | 0.2 | 0.2 | < 0.013 | < 0.015 | < 0.015 | < 0.013 | < 0.013 | < 0.014 | < 0.012 | < 0.013 | 0.0722 | < 0.015 | < 0.014 | < 0.014 | < 0.013 |
| Total PCBs | 0.2 | 0.2 | 0 | 0 | 0.0869 J | 0.0645 | 0 | 0 | 0 | **0.2115** | **0.2342** | 0 | 0 | 0 | 0 |
| **Metals** | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | 8430 | 7540 | 15600 | 8860 | 4400 | 11900 | 4560 | 14900 | 11200 | 14200 | 10600 | 12000 | 8680 |
| Antimony | 31 | 6 | < 4.4 | < 8.9 | 0.5 B | 5.1 | < 4.6 | < 4.2 | < 4.3 | < 4.6 | 3.6 B | < 0.42 | 4.3 | < 0.49 | < 0.48 |
| Arsenic | 19 | 19 | **66.3** | **126** | 11.2 | 7 | **49.9** | **68.2** | **30.1** | **23.7** | **30.5** | 6.8 | 7.1 | 4.9 | 6.3 |
| Barium | 16000 | 1300 | 63.1 B | 39.6 B | 50.3 | 1810 | 23.5 B | 63.3 B | 36.3 B | 119 B | 97.5 B | 64.7 | 195 | 89 | 44.5 |
| Beryllium | 16 | 0.5 | 0.36 B | < 0.44 | 0.65 | 0.51 | 0.3 B | 1.1 B | 0.29 B | 0.81 B | 0.63 B | 0.7 | 0.6 | 0.56 | 0.47 |
| Cadmium | 78 | 1 | < 0.33 | < 0.67 | 0.094 B | 0.31 B | < 0.35 | < 0.32 | < 0.32 | 2.4 B | 6 | 0.21 B | 0.12 B | 0.086 B | 0.12 B |
| Calcium | NS | NS | 55400 | 99900 | 1050 | 8190 | 35300 | 58000 | 22800 | 18600 | 18300 | 2310 | 2590 | 2630 | 4630 |
| Chromium | NS | NS | 17.1 | 15.1 B | 17.1 | 54 | 13.2 | 28.8 | 8.8 B | 29.5 | 63.5 | 17.6 | 26.6 | 27.4 | 16.5 |
| Cobalt | 1600 | 59 | 13.6 B | 10.4 B | 5.2 | 11.8 | 11.3 B | 28 B | 8.4 B | 12.4 B | 12.7 B | 8.2 | 9.9 | 10.5 | 8.1 |
| Copper | 3100 | 7300 | 49.6 | 57.7 | 14 | 24.9 | 27.7 B | 85 | 16.7 B | 83.7 | 98.7 | 17 | 35 | 45 | 34.5 |
| Iron | NS | NS | 35900 | 40200 | 18300 | 26900 | 82000 | 141000 | 27000 | 39700 | 92900 | 19000 | 25400 | 24000 | 22700 |
| Lead | 400 | 59 | 21.5 | 7.9 | 42.3 | 343 | 14 | 24.8 | 19.5 | 159 | 295 | 69.9 | 260 | 53.5 | 22.3 |
| Magnesium | NS | NS | 10000 | 8580 B | 2040 | 4860 | 4600 B | 15200 | 4970 B | 6470 | 5290 | 2600 | 3570 | 3850 | 3100 |
| Manganese | 11000 | 42 | 411 | 492 | 260 | 394 | 271 | 736 | 256 | 585 | 771 | 854 | 440 | 478 | 318 |
| Mercury | 23 | 0.1 | 0.069 | 0.038 B | 0.075 | 0.092 | 0.063 | 1.2 | 0.02 B | 0.099 | 0.21 | 0.12 | 0.045 | 0.053 | 0.042 |
| Nickel | 1600 | 31 | 21.3 | 16 | 13.9 | 33 | 18.6 | 38.7 | 14.1 | 28.5 | 35 | 17.2 | 26.3 | 21.5 | 17.4 |
| Potassium | NS | NS | 3120 B | 1630 B | 770 B | 1250 | 944 B | 3190 B | 1460 B | 2370 B | 1400 B | 987 B | 1210 | 1210 | 984 B |
| Selenium | 390 | 7 | < 4.1 | < 8.2 | 1.3 B | 0.67 B | < 4.3 | < 3.9 | < 4 | < 4.3 | < 1.8 | 1 B | < 0.44 | 0.45 B | 0.45 B |
| Silver | 390 | 1 | < 1.2 | < 2.4 | < 0.12 | < 0.13 | < 1.3 | < 1.2 | < 1.2 | < 1.3 | < 0.55 | < 0.12 | < 0.13 | < 0.14 | < 0.13 |
| Sodium | NS | NS | 459 B | 572 B | 59.9 B | 88 B | 239 B | 874 B | 200 B | 194 B | 149 B | 58.8 B | 91.4 B | 115 B | 132 B |
| Thallium | 5 | 3 | < 2.2 | < 2.2 | < 0.21 | < 0.23 | < 2.3 | < 2.1 | < 2.1 | < 2.3 | < 0.98 | < 0.21 | < 0.23 | < 0.24 | < 0.23 |
| Vanadium | 78 | NS | **89** | **107 B** | 27.8 | 42.8 | **159** | **308** | 53.8 B | 73.1 | **82.9** | 31.7 | 38.4 | 42.5 | 41.1 |
| Zinc | 23000 | 600 | 44.6 | 21.9 B | 57.3 | 105 | 48.6 | 40.6 | 77.9 | 217 | 421 | 76.4 | 89.3 | 46.1 | 74.9 |
| **Other** | | | | | | | | | | | | | | | |
| Solids, Percent | NS | NS | 87.2 | 73.2 | 78.1 | 88.6 | 83 | 79.1 | 92.4 | 86.9 | 74.3 | 72.1 | 82.9 | 83.1 | 83.7 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Trip Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | FB(011810) | FB(011910) | FB(012010) | FB(012110) | FB(012110) (JA38315) | FB(012510) | FB(012610) | FB(012710) | FB(012810) | FB(020110) | FB(020210) | FB(020310) | FB(020410) | FB(020810) | FB(020910) | FB(021010) | FB(021110) | TB(011910) | TB(012110) |
| Sample Date | Soil Remediation | Soil Screening | 1/18/2010 | 1/19/2010 | 1/20/2010 | 1/21/2010 | 1/21/2010 | 1/25/2010 | 1/26/2010 | 1/27/2010 | 1/28/2010 | 2/1/2010 | 2/2/2010 | 2/3/2010 | 2/4/2010 | 2/8/2010 | 2/9/2010 | 2/10/2010 | 2/11/2010 | 1/19/2010 | 1/21/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | NA | < 0.26 | < 0.26 | NA | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.00013 | < 0.00013 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | NA | < 0.24 | < 0.24 | NA | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.00029 | < 0.00029 |
| 1,1,2-Trichloroethane | 2 | 0.01 | NA | < 0.23 | < 0.23 | NA | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.00019 | < 0.00019 |
| 1,1-Dichloroethane | 8 | 0.2 | NA | < 0.29 | < 0.29 | NA | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.00014 | < 0.00014 |
| 1,1-Dichloroethene | 11 | 0.005 | NA | < 0.4 | < 0.4 | NA | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.00066 | < 0.00066 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | NA | < 0.56 | < 0.56 | NA | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.00035 | < 0.00035 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | NA | < 1.1 | < 1.1 | NA | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 0.00054 | < 0.00054 |
| 1,2-Dibromoethane | 0.008 | 0.005 | NA | < 0.39 | < 0.39 | NA | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.00014 | < 0.00014 |
| 1,2-Dichlorobenzene | 5300 | 11 | NA | < 0.26 | < 0.26 | NA | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.00027 | < 0.00027 |
| 1,2-Dichloroethane | 0.9 | 0.005 | NA | < 0.33 | < 0.33 | NA | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.00035 | < 0.00035 |
| 1,2-Dichloropropane | 2 | 0.005 | NA | < 0.27 | < 0.27 | NA | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.00013 | < 0.00013 |
| 1,3-Dichlorobenzene | 5300 | 12 | NA | < 0.25 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.00028 | < 0.00028 |
| 1,4-Dichlorobenzene | 5 | 1 | NA | < 0.28 | < 0.28 | NA | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.00034 | < 0.00034 |
| 2-Butanone (MEK) | 3100 | 0.6 | NA | < 1.6 | < 1.6 | NA | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 0.002 | < 0.002 |
| 2-Hexanone | NS | NS | NA | < 1.4 | < 1.4 | NA | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 0.00096 | < 0.00096 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | NA | < 0.86 | < 0.86 | NA | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.00081 | < 0.00081 |
| Acetone | 70000 | 12 | NA | < 2.9 | < 2.9 | NA | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 0.0022 | < 0.0022 |
| Benzene | 2 | 0.005 | NA | < 0.23 | < 0.23 | NA | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.00034 | < 0.00034 |
| Bromodichloromethane | 1 | 0.005 | NA | < 0.22 | < 0.22 | NA | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.00026 | < 0.00026 |
| Bromoform | 81 | 0.02 | NA | < 0.23 | < 0.23 | NA | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.00015 | < 0.00015 |
| Bromomethane | 25 | 0.03 | NA | < 0.3 | < 0.3 | NA | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.0004 | < 0.0004 |
| Carbon disulfide | 7800 | 4 | NA | < 0.74 | < 0.74 | NA | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.00031 | < 0.00031 |
| Carbon tetrachloride | 0.6 | 0.005 | NA | < 0.26 | < 0.26 | NA | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.00056 | < 0.00056 |
| Chlorobenzene | 510 | 0.4 | NA | < 0.39 | < 0.39 | NA | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.00034 | < 0.00034 |
| Chloroethane | 220 | NS | NA | < 0.37 | < 0.37 | NA | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.001 | < 0.001 |
| Chloroform | 0.6 | 0.2 | NA | < 0.23 | < 0.23 | NA | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.00032 | < 0.00032 |
| Chloromethane | 4 | NS | NA | < 0.29 | < 0.29 | NA | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.00017 | < 0.00017 |
| cis-1,2-Dichloroethene | 230 | 0.2 | NA | < 0.22 | < 0.22 | NA | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.00024 | < 0.00024 |
| cis-1,3-Dichloropropene | 2 | 0.005 | NA | < 0.25 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.00013 | < 0.00013 |
| Cyclohexane | NS | NS | NA | < 1.9 | < 1.9 | NA | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 0.00015 | < 0.00015 |
| Dibromochloromethane | 3 | 0.005 | NA | < 0.22 | < 0.22 | NA | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.00011 | < 0.00011 |
| Dichlorodifluoromethane | 490 | 25 | NA | < 0.92 | < 0.92 | NA | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.00095 | < 0.00095 |
| Ethylbenzene | 7800 | 8 | NA | < 0.27 | < 0.27 | NA | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.00037 | < 0.00037 |
| Freon 113 | NS | NS | NA | < 0.38 | < 0.38 | NA | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.00056 | < 0.00056 |
| Isopropylbenzene | NS | NS | NA | < 0.57 | < 0.57 | NA | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.00052 | < 0.00052 |
| Methyl acetate | 78000 | 14 | NA | < 1.5 | < 1.5 | NA | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 0.00082 | < 0.00082 |
| Methyl tert butyl ether | 110 | 0.2 | NA | < 0.23 | < 0.23 | NA | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.00028 | < 0.00028 |
| Methylcyclohexane | NS | NS | NA | < 0.35 | < 0.35 | NA | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.00065 | < 0.00065 |
| Methylene chloride | 34 | 0.007 | NA | < 0.3 | < 0.3 | NA | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.00022 | < 0.00022 |
| o-Xylene | NS | NS | NA | < 0.25 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.00047 | < 0.00047 |
| Styrene | 90 | 2 | NA | < 0.58 | < 0.58 | NA | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.00011 | < 0.00011 |
| Tetrachloroethene | 2 | 0.005 | NA | < 0.27 | < 0.27 | NA | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.00015 | < 0.00015 |
| Toluene | 6300 | 4 | NA | < 0.3 | < 0.3 | NA | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.00029 | < 0.00029 |
| Trans-1,2-dichloroethene | 300 | 0.4 | NA | < 0.25 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.00045 | < 0.00045 |
| trans-1,3-Dichloropropene | 2 | 0.005 | NA | < 0.21 | < 0.21 | NA | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.000096 | < 0.000096 |
| Trichloroethene | 7 | 0.007 | NA | < 0.24 | < 0.24 | NA | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.00053 | < 0.00053 |
| Trichlorofluoromethane | 23000 | 22 | NA | < 0.54 | < 0.54 | NA | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.00023 | < 0.00023 |
| Vinyl Chloride | 0.7 | 0.005 | NA | < 0.44 | < 0.44 | NA | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.00018 | < 0.00018 |
| Xylene, -m,p | NS | NS | NA | < 0.25 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.00047 | < 0.00047 |
| Xylenes | 12000 | 12 | NA | < 0.25 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.00047 | < 0.00047 |
| Total TIC, Volatile | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 0 | 0 |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Trip Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | FB(011810) | FB(011910) | FB(012010) | FB(012110) | FB(012110) (JA38315) | FB(012510) | FB(012610) | FB(012710) | FB(012810) | FB(020110) | FB(020210) | FB(020310) | FB(020410) | FB(020810) | FB(020910) | FB(021010) | FB(021110) | TB(011910) | TB(012110) |
| Sample Date | Soil Remediation | Soil Screening | 1/18/2010 | 1/19/2010 | 1/20/2010 | 1/21/2010 | 1/21/2010 | 1/25/2010 | 1/26/2010 | 1/27/2010 | 1/28/2010 | 2/1/2010 | 2/2/2010 | 2/3/2010 | 2/4/2010 | 2/8/2010 | 2/9/2010 | 2/10/2010 | 2/11/2010 | 1/19/2010 | 1/21/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | NA | < 0.45 | < 0.42 | NA | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | NA | NA |
| 2,4,5-Trichlorophenol | 6100 | 44 | NA | < 1.4 | < 1.3 | NA | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | NA | NA |
| 2,4,6-Trichlorophenol | 19 | 0.2 | NA | < 1.3 | < 1.2 | NA | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | NA | NA |
| 2,4-Dichlorophenol | 180 | 0.2 | NA | < 1.3 | < 1.2 | NA | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | NA | NA |
| 2,4-Dimethylphenol | 1200 | 0.7 | NA | < 1.8 | < 1.7 | NA | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | NA | NA |
| 2,4-Dinitrophenol | 120 | 0.3 | NA | < 0.79 | < 0.74 | NA | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | NA | NA |
| 2,4-Dinitrotoluene | 0.7 | NS | NA | < 0.24 | < 0.22 | NA | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | NA | NA |
| 2,6-Dinitrotoluene | 0.7 | NS | NA | < 0.35 | < 0.33 | NA | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | NA | NA |
| 2-Chloronaphthalene | NS | NS | NA | < 0.45 | < 0.42 | NA | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | < 0.42 | NA | NA |
| 2-Chlorophenol | 310 | 0.5 | NA | < 1.2 | < 1.1 | NA | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | NA | NA |
| 2-Methylnaphthalene | 230 | 5 | NA | < 0.71 | < 0.66 | NA | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | < 0.66 | NA | NA |
| 2-Methylphenol | 310 | NS | NA | < 1.2 | < 1.1 | NA | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | NA | NA |
| 2-Nitroaniline | 39 | NS | NA | < 0.25 | < 0.24 | NA | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | NA | NA |
| 2-Nitrophenol | NS | NS | NA | < 1.3 | < 1.2 | NA | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | NA | NA |
| 3&4-Methylphenol | NS | NS | NA | < 1.1 | < 1 | NA | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | NA | NA |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | NA | < 0.32 | < 0.3 | NA | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 J | < 0.3 J | < 0.3 | < 0.3 | NA | NA |
| 3-Nitroaniline | NS | NS | NA | < 0.31 | < 0.29 | NA | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | NA | NA |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | NA | < 0.55 | < 0.51 | NA | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | < 0.51 | NA | NA |
| 4-Bromophenyl phenyl ether | NS | NS | NA | < 0.38 | < 0.35 | NA | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | NA | NA |
| 4-Chloro-3-Methylphenol | NS | NS | NA | < 1.1 | < 1.1 | NA | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | NA | NA |
| 4-Chloroaniline | NS | NS | NA | < 0.27 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | NA | NA |
| 4-Chlorophenyl phenyl ether | NS | NS | NA | < 0.38 | < 0.35 | NA | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | NA | NA |
| 4-Nitroaniline | NS | NS | NA | < 0.19 | < 0.18 | NA | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | NA | NA |
| 4-Nitrophenol | NS | NS | NA | < 0.89 | < 0.83 | NA | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | < 0.83 | NA | NA |
| Acenaphthene | 3400 | 74 | NA | < 0.39 | < 0.37 | NA | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | NA | < 0.37 | < 0.37 | NA | NA |
| Acenaphthylene | NS | NS | NA | < 0.29 | < 0.27 | NA | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | NA | < 0.27 | < 0.27 | NA | NA |
| Acetophenone | 2 | 2 | NA | < 0.43 | < 0.4 | NA | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | NA | NA |
| Anthracene | 17000 | 1500 | NA | < 0.17 | < 0.16 | NA | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | NA | < 0.16 | < 0.16 | NA | NA |
| Atrazine | 210 | 0.2 | NA | < 0.42 | < 0.39 | NA | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | NA | NA |
| Benzaldehyde | 6100 | NS | NA | < 0.43 | < 0.4 | NA | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | NA | NA |
| Benzo(a)anthracene | 0.6 | 0.5 | NA | < 0.13 | < 0.12 | NA | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | NA | < 0.12 | < 0.12 | NA | NA |
| Benzo(a)pyrene | 0.2 | 0.2 | NA | < 0.1 | < 0.095 | NA | < 0.095 | < 0.095 | < 0.095 | < 0.095 | < 0.095 | < 0.095 | < 0.095 | < 0.095 | < 0.095 | < 0.095 | NA | < 0.095 | < 0.095 | NA | NA |
| Benzo(b)fluoranthene | 0.6 | 2 | NA | < 0.26 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | NA | < 0.25 | < 0.25 | NA | NA |
| Benzo(g,h,i)perylene | 380000 | NS | NA | < 0.13 | < 0.12 | NA | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | < 0.12 | NA | < 0.12 | < 0.12 | NA | NA |
| Benzo(k)fluoranthene | 6 | 16 | NA | < 0.41 | < 0.38 | NA | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | NA | < 0.38 | < 0.38 | NA | NA |
| Benzyl butyl phthalate | 1200 | 150 | NA | < 0.27 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | NA | NA |
| bis(2-Chloroethoxy)methane | NS | NS | NA | < 0.27 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | NA | NA |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | NA | < 0.33 | < 0.31 | NA | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | NA | NA |
| bis(2-Chloroisopropyl)ether | 23 | 3 | NA | < 0.42 | < 0.39 | NA | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | NA | NA |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | NA | < 0.35 | < 0.33 | NA | 2.4 B | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | NA | NA |
| Caprolactam | 31000 | 8 | NA | < 0.21 | < 0.2 | NA | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | NA | NA |
| Carbazole | 24 | NS | NA | < 0.18 | < 0.17 | NA | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | NA | NA |
| Chrysene | 62 | 52 | NA | < 0.12 | < 0.11 | NA | < 0.11 | < 0.11 | < 0.11 | < 0.11 | < 0.11 | < 0.11 | < 0.11 | < 0.11 | < 0.11 | < 0.11 | NA | < 0.11 | < 0.11 | NA | NA |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | NA | < 0.16 | < 0.15 | NA | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | NA | < 0.15 | < 0.15 | NA | NA |
| Dibenzofuran | NS | NS | NA | < 0.33 | < 0.3 | NA | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | NA | NA |
| Diethyl phthalate | 49000 | 57 | NA | < 0.18 | < 0.17 | NA | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | NA | NA |
| Dimethyl phthalate | NS | NS | NA | < 0.24 | < 0.23 | NA | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | NA | NA |
| di-n-butyl phthalate | 6100 | 620 | NA | < 0.21 | < 0.19 | NA | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | NA | NA |
| di-n-octylphthalate | 2400 | 3300 | NA | < 0.42 | < 0.4 | NA | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | NA | NA |
| Fluoranthene | 2300 | 840 | NA | < 0.18 | < 0.17 | NA | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | NA | < 0.17 | < 0.17 | NA | NA |
| Fluorene | 2300 | 110 | NA | < 0.29 | < 0.27 | NA | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | NA | < 0.27 | < 0.27 | NA | NA |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Field Blank | Trip Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | FB(011810) | FB(011910) | FB(012010) | FB(012110) | FB(012110) (JA38315) | FB(012510) | FB(012610) | FB(012710) | FB(012810) | FB(020110) | FB(020210) | FB(020310) | FB(020410) | FB(020810) | FB(020910) | FB(021010) | FB(021110) | TB(011910) | TB(012110) |
| Sample Date | Soil Remediation | Soil Screening | 1/18/2010 | 1/19/2010 | 1/20/2010 | 1/21/2010 | 1/21/2010 | 1/25/2010 | 1/26/2010 | 1/27/2010 | 1/28/2010 | 2/1/2010 | 2/2/2010 | 2/3/2010 | 2/4/2010 | 2/8/2010 | 2/9/2010 | 2/10/2010 | 2/11/2010 | 1/19/2010 | 1/21/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | NA | < 0.4 | < 0.37 | NA | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | NA | < 0.37 | < 0.37 | NA | NA |
| Hexachlorobutadiene | 6 | 0.6 | NA | < 0.4 | < 0.37 | NA | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | NA | NA |
| Hexachlorocyclopentadiene | 45 | 210 | NA | < 0.72 | < 0.67 | NA | < 0.67 | < 0.67 J | < 0.67 | < 0.67 | < 0.67 | < 0.67 | < 0.67 | < 0.67 | < 0.67 | < 0.67 J | < 0.67 | < 0.67 | < 0.67 | NA | NA |
| Hexachloroethane | 35 | 0.2 | NA | < 0.28 | < 0.26 | NA | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | NA | NA |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | NA | < 0.14 | < 0.13 | NA | < 0.13 | < 0.13 | < 0.13 | < 0.13 | < 0.13 | < 0.13 | < 0.13 | < 0.13 | < 0.13 | < 0.13 | NA | < 0.13 | < 0.13 | NA | NA |
| Isophrone | 510 | 0.2 | NA | < 0.27 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | NA | NA |
| Naphthalene | 6 | 16 | NA | < 0.46 | < 0.43 | NA | < 0.43 | < 0.43 | < 0.43 | < 0.43 | < 0.43 | < 0.43 | < 0.43 | < 0.43 | < 0.43 | < 0.43 | NA | < 0.43 | < 0.43 | NA | NA |
| Nitrobenzene | 31 | 0.2 | NA | < 0.27 | < 0.25 | NA | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | NA | NA |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | NA | < 0.47 | < 0.44 | NA | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | NA | NA |
| N-Nitrosodiphenylamine | 99 | 0.2 | NA | < 0.23 | < 0.22 | NA | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | NA | NA |
| Pentachlorophenol | 3 | 0.3 | NA | < 0.86 | < 0.8 | NA | < 0.8 | < 0.8 | < 0.8 | < 0.8 | < 0.8 | < 0.8 | < 0.8 | < 0.8 | < 0.8 | < 0.8 | NA | < 0.8 | < 0.8 | NA | NA |
| Phenanthrene | NS | NS | NA | < 0.23 | < 0.21 | NA | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | NA | < 0.21 | < 0.21 | NA | NA |
| Phenol | 18000 | 5 | NA | < 0.62 | < 0.58 | NA | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | NA | NA |
| Pyrene | 1700 | 550 | NA | < 0.17 | < 0.16 | NA | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | < 0.16 | NA | < 0.16 | < 0.16 | NA | NA |
| Total TIC, Semi-Volatile | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 6.6 J | NA | NA | NA | NA | NA | NA |
| **PCBs** | | | | | | | | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | NA | < 0.32 | < 0.3 | NA | < 0.31 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | NA | NA |
| PCB 1221 | 0.2 | 0.2 | NA | < 0.44 | < 0.41 | NA | < 0.42 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | < 0.41 | NA | NA |
| PCB 1232 | 0.2 | 0.2 | NA | < 0.33 | < 0.31 | NA | < 0.32 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | NA | NA |
| PCB 1242 | 0.2 | 0.2 | NA | < 0.29 | < 0.27 | NA | < 0.28 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | NA | NA |
| PCB 1248 | 0.2 | 0.2 | NA | < 0.3 | < 0.28 | NA | < 0.29 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | NA | NA |
| PCB 1254 | 0.2 | 0.2 | NA | < 0.19 | < 0.18 | NA | < 0.19 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | NA | NA |
| PCB 1260 | 0.2 | 0.2 | NA | < 0.15 | < 0.14 | NA | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | < 0.14 | NA | NA |
| Total PCBs | 0.2 | 0.2 | NA | 0 | 0 | NA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA |
| **Metals** | | | | | | | | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | NA | < 26 | < 26 | NA | < 26 | 49.9 B | < 26 | < 26 | < 26 | < 26 | < 26 | < 26 | < 26 | < 26 | < 26 | < 26 | < 26 | NA | NA |
| Antimony | 31 | 6 | NA | < 2.9 | < 2.9 | NA | < 2.9 | < 2.9 | < 2.9 J | < 2.9 | < 2.9 J | < 2.9 | < 2.9 J | < 2.9 J | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | NA | NA |
| Arsenic | 19 | 19 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | NA | NA |
| Barium | 16000 | 1300 | NA | < 1.3 | < 1.3 | NA | < 1.3 | < 1.3 | < 1.3 | < 1.3 | 1.3 B | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | NA | NA |
| Beryllium | 16 | 0.5 | NA | < 0.4 | < 0.4 | NA | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | NA | NA |
| Cadmium | 78 | 1 | NA | < 0.4 | < 0.4 | NA | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | NA | NA |
| Calcium | NS | NS | NA | < 22 | < 22 | NA | 34.1 B | 134 B | 23.4 B | < 22 | 70.7 B | 25.7 B | < 22 | < 22 | < 22 | < 22 | < 22 | < 22 | 25 B | NA | NA |
| Chromium | NS | NS | NA | < 0.9 | < 0.9 | NA | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | NA | NA |
| Cobalt | 1600 | 59 | NA | < 1.6 | < 1.6 | NA | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | NA | NA |
| Copper | 3100 | 7300 | NA | < 1.6 | < 1.6 | NA | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | NA | NA |
| Iron | NS | NS | NA | < 12 | < 12 | NA | < 12 | 45.8 B | < 12 J | < 12 | 21.9 B | < 12 | < 12 | < 12 | 42.2 B | < 12 | < 12 | 37.9 B | < 12 | NA | NA |
| Lead | 400 | 59 | NA | < 1.7 | < 1.7 | NA | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | NA | NA |
| Magnesium | NS | NS | NA | < 37 | < 37 | NA | < 37 | < 37 | < 37 | < 37 | < 37 | < 37 | < 37 | < 37 | < 37 | < 37 | < 37 | < 37 | < 37 | NA | NA |
| Manganese | 11000 | 42 | NA | < 0.5 | < 0.5 | NA | < 0.5 | 1 B | < 0.5 J | < 0.5 | < 0.5 J | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | NA | NA |
| Mercury | 23 | 0.1 | NA | < 0.082 | < 0.082 | NA | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | < 0.082 | NA | NA |
| Nickel | 1600 | 31 | NA | < 0.6 | < 0.6 | NA | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | < 0.6 | NA | NA |
| Potassium | NS | NS | NA | < 170 | < 170 | NA | < 170 | < 170 | < 170 | < 170 | < 170 | < 170 | < 170 | < 170 | < 170 | < 170 | < 170 | < 170 | < 170 | NA | NA |
| Selenium | 390 | 7 | NA | < 3.7 | < 3.7 | NA | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | < 3.7 | NA | NA |
| Silver | 390 | 1 | NA | < 1 | < 1 | NA | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | NA | NA |
| Sodium | NS | NS | NA | < 19 | 52.8 | NA | 38.9 B | 53.7 B | 27 B | < 19 | < 19 | 660 B | 404 B | 333 B | 24.4 B | < 19 | < 19 | < 19 | < 19 | NA | NA |
| Thallium | 5 | 3 | NA | < 1.5 | < 1.5 | NA | < 1.5 | < 1.5 | 1.5 B | < 1.5 | < 1.5 | < 1.5 | < 1.5 J | < 1.5 J | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | NA | NA |
| Vanadium | 78 | NS | NA | < 0.9 | < 0.9 | NA | < 0.9 | < 0.9 | < 0.9 J | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | < 0.9 | NA | NA |
| Zinc | 23000 | 600 | NA | < 2.9 | < 2.9 | NA | < 2.9 | < 2.9 | < 2.9 | < 2.9 | 5.5 B | < 2.9 | < 2.9 | < 2.9 | 3.5 B | < 2.9 | < 2.9 | < 2.9 | < 2.9 | NA | NA |
| **Other** | | | | | | | | | | | | | | | | | | | | | |
| Solids, Percent | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | TB(012110) (JA38315) | TB(012510) | TB(012610) | TB(012710) | TB(012810) | TB(020110) | TB(020210) | TB(020310) | TB(020410) JA39497 | TB(020810) | TB(020910) | TB(021110) |
| Sample Date | Soil Remediation | Soil Screening | 1/21/2010 | 1/25/2010 | 1/26/2010 | 1/28/2010 | 1/28/2010 | 2/1/2010 | 2/2/2010 | 2/3/2010 | 2/4/2010 | 2/8/2010 | 2/9/2010 | 2/11/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | 290 | 0.2 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 |
| 1,1,2,2-Tetrachloroethane | 1 | 0.005 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 |
| 1,1,2-Trichloroethane | 2 | 0.01 | < 0.00019 | < 0.00019 | < 0.00019 | < 0.00019 | < 0.00019 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| 1,1-Dichloroethane | 8 | 0.2 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| 1,1-Dichloroethene | 11 | 0.005 | < 0.00066 | < 0.00066 | < 0.00066 | < 0.00066 | < 0.00066 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 |
| 1,2,4-Trichlorobenzene | 73 | 0.4 | < 0.00035 | < 0.00035 | < 0.00035 | < 0.00035 | < 0.00035 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 | < 0.56 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | 0.08 | 0.005 | < 0.00054 | < 0.00054 | < 0.00054 | < 0.00054 | < 0.00054 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 |
| 1,2-Dibromoethane | 0.008 | 0.005 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.00014 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 |
| 1,2-Dichlorobenzene | 5300 | 11 | < 0.00027 | < 0.00027 | < 0.00027 | < 0.00027 | < 0.00027 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 |
| 1,2-Dichloroethane | 0.9 | 0.005 | < 0.00035 | < 0.00035 | < 0.00035 | < 0.00035 | < 0.00035 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 | < 0.33 |
| 1,2-Dichloropropane | 2 | 0.005 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| 1,3-Dichlorobenzene | 5300 | 12 | < 0.00028 | < 0.00028 | < 0.00028 | < 0.00028 | < 0.00028 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| 1,4-Dichlorobenzene | 5 | 1 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| 2-Butanone (MEK) | 3100 | 0.6 | < 0.002 | < 0.002 | < 0.002 | < 0.002 | < 0.002 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.6 |
| 2-Hexanone | NS | NS | < 0.00096 | < 0.00096 | < 0.00096 | < 0.00096 | < 0.00096 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 | < 1.4 |
| 4-methyl-2-pentanone (MIBK) | NS | NS | < 0.00081 | < 0.00081 | < 0.00081 | < 0.00081 | < 0.00081 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 | < 0.86 |
| Acetone | 70000 | 12 | < 0.0022 | < 0.0022 | < 0.0022 | < 0.0022 | < 0.0022 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 |
| Benzene | 2 | 0.005 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| Bromodichloromethane | 1 | 0.005 | < 0.00026 | < 0.00026 | < 0.00026 | < 0.00026 | < 0.00026 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Bromoform | 81 | 0.02 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| Bromomethane | 25 | 0.03 | < 0.0004 | < 0.0004 | < 0.0004 | < 0.0004 | < 0.0004 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 |
| Carbon disulfide | 7800 | 4 | < 0.00031 | < 0.00031 | < 0.00031 | < 0.00031 | < 0.00031 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 | < 0.74 |
| Carbon tetrachloride | 0.6 | 0.005 | < 0.00056 | < 0.00056 | < 0.00056 | < 0.00056 | < 0.00056 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 |
| Chlorobenzene | 510 | 0.4 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.00034 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 | < 0.39 |
| Chloroethane | 220 | NS | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.001 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 |
| Chloroform | 0.6 | 0.2 | < 0.00032 | < 0.00032 | < 0.00032 | < 0.00032 | < 0.00032 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| Chloromethane | 4 | NS | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.00017 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| cis-1,2-Dichloroethene | 230 | 0.2 | < 0.00024 | < 0.00024 | < 0.00024 | < 0.00024 | < 0.00024 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| cis-1,3-Dichloropropene | 2 | 0.005 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.00013 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Cyclohexane | NS | NS | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 | < 1.9 |
| Dibromochloromethane | 3 | 0.005 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Dichlorodifluoromethane | 490 | 25 | < 0.00095 | < 0.00095 | < 0.00095 | < 0.00095 | < 0.00095 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 | < 0.92 |
| Ethylbenzene | 7800 | 8 | < 0.00037 | < 0.00037 | < 0.00037 | < 0.00037 | < 0.00037 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| Freon 113 | NS | NS | < 0.00056 | < 0.00056 | < 0.00056 | < 0.00056 | < 0.00056 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 | < 0.38 |
| Isopropylbenzene | NS | NS | < 0.00052 | < 0.00052 | < 0.00052 | < 0.00052 | < 0.00052 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 | < 0.57 |
| Methyl acetate | 78000 | 14 | < 0.00082 | < 0.00082 | < 0.00082 | < 0.00082 | < 0.00082 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 | < 1.5 |
| Methyl tert butyl ether | 110 | 0.2 | < 0.00028 | < 0.00028 | < 0.00028 | < 0.00028 | < 0.00028 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| Methylcyclohexane | NS | NS | < 0.00065 | < 0.00065 | < 0.00065 | < 0.00065 | < 0.00065 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 |
| Methylene chloride | 34 | 0.007 | < 0.00022 | < 0.00022 | < 0.00022 | < 0.00022 | < 0.00022 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 |
| o-Xylene | NS | NS | < 0.00047 | < 0.00047 | < 0.00047 | < 0.00047 | < 0.00047 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Styrene | 90 | 2 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.00011 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 | < 0.58 |
| Tetrachloroethene | 2 | 0.005 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.00015 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| Toluene | 6300 | 4 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.00029 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 |
| Trans-1,2-dichloroethene | 300 | 0.4 | < 0.00045 | < 0.00045 | < 0.00045 | < 0.00045 | < 0.00045 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| trans-1,3-Dichloropropene | 2 | 0.005 | < 0.000096 | < 0.000096 | < 0.000096 | < 0.000096 | < 0.000096 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Trichloroethene | 7 | 0.007 | < 0.00053 | < 0.00053 | < 0.00053 | < 0.00053 | < 0.00053 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 |
| Trichlorofluoromethane | 23000 | 22 | < 0.00023 | < 0.00023 | < 0.00023 | < 0.00023 | < 0.00023 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 | < 0.54 |
| Vinyl Chloride | 0.7 | 0.005 | < 0.00018 | < 0.00018 | < 0.00018 | < 0.00018 | < 0.00018 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 |
| Xylene, -m,p | NS | NS | < 0.00047 | < 0.00047 | < 0.00047 | < 0.00047 | < 0.00047 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Xylenes | 12000 | 12 | < 0.00047 | < 0.00047 | < 0.00047 | < 0.00047 | < 0.00047 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Total TIC, Volatile | NS | NS | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA | NA | NA | NA |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | TB(012110) (JA38315) | TB(012510) | TB(012610) | TB(012710) | TB(012810) | TB(020110) | TB(020210) | TB(020310) | TB(020410) JA39497 | TB(020810) | TB(020910) | TB(021110) |
| Sample Date | Soil Remediation | Soil Screening | 1/21/2010 | 1/25/2010 | 1/26/2010 | 1/28/2010 | 1/28/2010 | 2/1/2010 | 2/2/2010 | 2/3/2010 | 2/4/2010 | 2/8/2010 | 2/9/2010 | 2/11/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | | | | | | |
| 1,1'-Biphenyl | 3100 | 90 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4,5-Trichlorophenol | 6100 | 44 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4,6-Trichlorophenol | 19 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dichlorophenol | 180 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dimethylphenol | 1200 | 0.7 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dinitrophenol | 120 | 0.3 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dinitrotoluene | 0.7 | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2,6-Dinitrotoluene | 0.7 | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Chloronaphthalene | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Chlorophenol | 310 | 0.5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylnaphthalene | 230 | 5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | 310 | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Nitroaniline | 39 | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 2-Nitrophenol | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 3&4-Methylphenol | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 3,3'-Dichlorobenzidine | 1 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 3-Nitroaniline | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4,6-Dinitro-2-methylphenol | 6 | 0.3 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Bromophenyl phenyl ether | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Chloro-3-Methylphenol | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Chloroaniline | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Chlorophenyl phenyl ether | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Nitroaniline | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| 4-Nitrophenol | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthene | 3400 | 74 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acenaphthylene | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Acetophenone | 2 | 2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Anthracene | 17000 | 1500 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Atrazine | 210 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzaldehyde | 6100 | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo(a)anthracene | 0.6 | 0.5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo(a)pyrene | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo(b)fluoranthene | 0.6 | 2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo(g,h,i)perylene | 380000 | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzo(k)fluoranthene | 6 | 16 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Benzyl butyl phthalate | 1200 | 150 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| bis(2-Chloroethoxy)methane | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| bis(2-Chloroethyl)ether | 0.4 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| bis(2-Chloroisopropyl)ether | 23 | 3 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| bis(2-Ethylhexyl)phthalate | 35 | 790 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Caprolactam | 31000 | 8 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Carbazole | 24 | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chrysene | 62 | 52 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzo(a,h)anthracene | 0.2 | 0.5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dibenzofuran | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Diethyl phthalate | 49000 | 57 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Dimethyl phthalate | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| di-n-butyl phthalate | 6100 | 620 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| di-n-octylphthalate | 2400 | 3300 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluoranthene | 2300 | 840 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fluorene | 2300 | 110 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Location ID | Residential | Default Impact to | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Direct Contact | Groundwater | TB(012110) (JA38315) | TB(012510) | TB(012610) | TB(012710) | TB(012810) | TB(020110) | TB(020210) | TB(020310) | TB(020410) JA39497 | TB(020810) | TB(020910) | TB(021110) |
| Sample Date | Soil Remediation | Soil Screening | 1/21/2010 | 1/25/2010 | 1/26/2010 | 1/28/2010 | 1/28/2010 | 2/1/2010 | 2/2/2010 | 2/3/2010 | 2/4/2010 | 2/8/2010 | 2/9/2010 | 2/11/2010 |
| Validation Status | Standard | Level | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| Hexachlorobenzene | 0.3 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Hexachlorobutadiene | 6 | 0.6 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Hexachlorocyclopentadiene | 45 | 210 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Hexachloroethane | 35 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Indeno(1,2,3-cd)pyrene | 0.6 | 5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Isophrone | 510 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Naphthalene | 6 | 16 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Nitrobenzene | 31 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| N-Nitroso-di-n-Propylamine | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| N-Nitrosodiphenylamine | 99 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pentachlorophenol | 3 | 0.3 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenanthrene | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Phenol | 18000 | 5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pyrene | 1700 | 550 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total TIC, Semi-Volatile | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **PCBs** | | | | | | | | | | | | | | |
| PCB 1016 | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PCB 1221 | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PCB 1232 | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PCB 1242 | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PCB 1248 | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PCB 1254 | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| PCB 1260 | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Total PCBs | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Metals** | | | | | | | | | | | | | | |
| Aluminum | 78000 | 3900 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Antimony | 31 | 6 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Arsenic | 19 | 19 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Barium | 16000 | 1300 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Beryllium | 16 | 0.5 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cadmium | 78 | 1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Calcium | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Chromium | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Cobalt | 1600 | 59 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Copper | 3100 | 7300 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Iron | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Lead | 400 | 59 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Magnesium | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Manganese | 11000 | 42 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Mercury | 23 | 0.1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Nickel | 1600 | 31 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Potassium | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Selenium | 390 | 7 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Silver | 390 | 1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Sodium | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Thallium | 5 | 3 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Vanadium | 78 | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Zinc | 23000 | 600 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| **Other** | | | | | | | | | | | | | | |
| Solids, Percent | NS | NS | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

**Table 5. Summary of Soil Analytical Results, Supplemental O'Connor Test Pit and Test Trench Results, Ringwood Mines/Landfill Site, Ringwood, New Jersey**

Results are reported in milligrams per kilogram (mg/kg).
Field Blanks and Trip Blanks reported in micrograms per liter (ug/l).

| | |
|---|---|
| < | Not detected. |
| NA | Not analyzed. |
| NS | No standard. |
| B | Inorganic B: Result is between the detection limit and quantification limit. |
| J | Estimated result. |
| PCB | Polychlorinated biphenyls. |
| SVOC | Semi-volatile organic compound. |
| VOC | Volatile organic compound. |
| **Bold** | Value is above the Residential Direct Contact Soil Cleanup Criteria threshold value. |
| | Value is above the Impact to Groundwater Soil Cleanup Criteria threshold value. |

Table 6. Summary of Drum Inventory, O'Connor Disposal Area

| Drum No. | Date Sampled | Time Sampled | Description of Contents | Anaylical Exceedances ** |
|---|---|---|---|---|
| DR-1 | 3/23/2010 | 14:20 | Drum carcus with blue and white band, traces of soil and hard tan material, strong odor. | Benzo(a)anthracene 0.0434/0.043, Benzo(b)fluoranthene 0.0468/0.043, Total PHC 1590/1.3,Aroclor 1254 0.154/0.032 |
| DR-2 | 3/18/2010 | 15:23 | Tan- white greasey material consistancy of butter, stong odor, breaks easy. | 3&4-Methylphenol 0.0226/0.020, Total PHC 22400/130,Aroclor 1254 398/ 9.8, Tetrachloro-m-xylene 95%/ 80% |
| DR-3 | 3/18/2010 | 15:38 | Silver beads, solid, looks like beads of solder. | Total PHC 1710/13, Aroclor 1254 0.616/ 0.033 |
| DR-4 | 3/18/2010 | 15:07 | White and light blue mottle soild, powder, crumbles. | Total PHC 5240/32 |
| DR-5 | 3/18/2010 | 15:03 | Paint sludge, solid, rust color material. | Total PHC 1280/19, Aroclor 1248 0.501/0.048, Aroclor 1254 0.797/0.048, Aroclor 1260 0.258/0.048, Barium 9.2/1.0, Chromium |
| DR-6 | 3/18/2010 | 15:30 | Silver powder mixed with soil. | Total PHC 12200/28 |

** All units in mg/l

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.28 | < 0.28 | < 0.3 | < 0.3 | < 0.24 | < 0.24 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.28 | < 0.28 | < 0.8 | < 0.8 | < 0.13 | < 0.13 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.32 | < 0.32 | < 0.49 | < 0.49 | < 0.17 | < 0.17 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.23 | < 0.23 | < 0.2 | < 0.2 | < 0.16 | < 0.24 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.33 | < 0.33 | < 0.28 | < 0.28 | < 0.29 | < 0.29 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.16 | < 0.16 | < 0.41 | < 0.41 | < 1.3 | < 1.3 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.1 * | < 1.1* | < 0.8* | < 0.8* | < 2.4* | < 1.3* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.52 * | < 0.52* | < 0.45* | < 0.45* | < 0.17* | < 0.18* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.18 | < 0.18 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.35 | < 0.35 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.2 | < 0.2 | < 0.24 | < 0.24 | < 0.18 | < 0.18 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.32 | < 0.32 | < 0.21 | < 0.21 | < 0.26 | < 0.26 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.24 | < 0.24 | < 0.17 | < 0.17 | < 0.32 | < 0.22 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 2.6 | < 2.6 | < 2.7 | < 2.7 | < 2.3 | < 2.3 |
| 2-Hexanone | ug/l | NS | NS | < 1.3 | < 1.3 | < 0.94 | < 0.94 | < 1.7 | < 1.7 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 1.1 | < 1.1 | < 1.4 | < 1.4 | < 1.9 | < 1.3 |
| Acetone | ug/l | 6000 | NS | < 2.4 | 2.7 J | < 2.9 | < 2.9 | < 2.1 | < 2.1 |
| Benzene | ug/l | 1 | 5 | < 0.21 | < 0.21 | < 0.19 | < 0.19 | < 0.26 | < 0.26 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.17 | < 0.17 | < 0.15 | < 0.15 | < 0.14 | < 0.14 |
| Bromoform | ug/l | 4 | 80 | < 0.54 | < 0.54 | < 0.34 | < 0.34 | < 0.18 | < 0.18 |
| Bromomethane | ug/l | 10 | NS | < 0.22 | < 0.22 | < 0.38 | < 0.38 | < 0.32 | < 0.32 |
| Carbon disulfide | ug/l | 700 | NS | < 0.21 | < 0.21 | < 0.14 | < 0.14 | < 0.15 | < 0.16 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.29 J | < 0.29 | < 0.19 | < 0.19 | < 0.18 | < 0.18 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.22 | < 0.22 | < 0.19 | < 0.19 | < 0.14 | < 0.19 |
| Chloroethane | ug/l | NS | NS | < 0.56 | < 0.56 | < 0.67 | < 0.67 | < 0.22 | < 0.22 |
| Chloroform | ug/l | 70 | 80 | < 0.22 | < 0.22 | < 0.25 | < 0.25 | < 0.16 | < 0.16 |
| Chloromethane | ug/l | NS | NS | < 0.35 | < 0.35 | < 0.3 | < 0.3 | < 0.29 | < 0.29 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.18 | < 0.18 | < 0.27 | < 0.27 | < 0.19 | < 0.25 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.15 | < 0.15 | < 0.13 | < 0.13 | < 0.15 | < 0.18 |
| Cyclohexane | ug/l | NS | NS | < 0.5 | < 0.5 | < 0.85 | < 0.85 | < 0.85 | < 0.85 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.19 | < 0.19 | < 0.28 | < 0.28 | < 0.12 | < 0.16 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.75 | < 0.75 | < 1 | < 1 | < 0.88 | < 0.88 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.2 | < 0.2 | < 0.21 | < 0.21 | < 0.27 | < 0.27 |
| Freon 113 | ug/l | NS | NS | < 0.69 | < 0.69 | < 1.2 | < 1.2 | < 0.8 | < 0.8 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.2 | < 0.2 | < 0.54 | < 0.54 | < 0.15 | < 0.19 |
| Methyl acetate | ug/l | 7000 | NS | < 2.1 | < 2.1 | < 1.6 | < 1.6 | < 2.5 | < 1.7 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.31 | 0.46 J | 0.56 J | 0.62 J | 0.41 J | < 0.16 |
| Methylcyclohexane | ug/l | NS | NS | < 0.18 | < 0.18 | < 0.5 | < 0.5 | < 0.11 | < 0.11 |
| Methylene chloride | ug/l | 3 | 5 | < 0.27 | < 0.27 | < 0.21 | < 0.21 | < 0.16 | < 0.16 |
| o-Xylene | ug/l | NS | NS | < 0.31 | < 0.31 | < 0.2 | < 0.2 | < 0.45 | < 0.45 |
| Styrene | ug/l | 100 | 100 | < 0.16 | < 0.16 | < 0.2 | < 0.2 | < 0.11 | < 0.17 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.28 | < 0.28 | < 0.28 J | < 0.28 J | < 0.29 | < 0.29 |
| Toluene | ug/l | 600 | 1000 | < 0.2 | < 0.2 | < 0.21 | < 0.21 | < 0.15 | < 1 J |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.42 | < 0.42 | < 0.32 | < 0.32 | < 0.16 | < 0.16 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.2 | < 0.2 | < 0.17 | < 0.17 | < 0.11 | < 0.15 |
| Trichloroethene | ug/l | 1 | 5 | < 0.29 | < 0.29 | < 0.26 | < 0.26 | < 0.18 | < 0.18 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.25 | < 0.25 | < 0.26 | < 0.26 | < 0.25 | < 0.25 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.29 | < 0.29 | < 0.22 | < 0.22 | < 0.21 | < 0.21 |
| Xylene, -m,p | ug/l | NS | NS | < 0.42 | < 0.42 | < 0.35 | < 0.35 | < 0.39 | < 0.39 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.31 | < 0.31 | < 0.2 | < 0.2 | < 0.39 | < 0.39 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.36 | < 0.35 | < 0.33 | < 0.33 | < 0.23 | < 0.57 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 2.1 | < 2.1 | < 1.9 | < 1.9 | < 1.1 | < 2.1 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.4 | < 1.3 | < 1.3 | < 1.3 | < 1 | < 1.6 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.7 | < 1.7 | < 1.6 | < 1.6 | < 1.4 | < 2 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 | < 1.7 | < 1.6 | < 1.6 | < 1.7 | < 2.1 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.97 | < 0.95 | < 0.89 | < 0.89 | < 1.1 | < 4.3 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.93 | < 0.91 | < 0.86 | < 0.86 | < 0.56 | < 0.47 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.61 | < 0.59 | < 0.56 | < 0.56 | < 0.51 | < 0.63 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 1.1 | < 1 | < 0.98 | < 0.98 | < 0.2 | < 0.5 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1 | < 1 | < 0.95 | < 0.95 | < 0.89 | < 1.5 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.44 | < 0.43 | < 0.41 | < 0.41 | < 0.78 | < 0.45 |
| 2-Methylphenol | ug/l | NS | NS | < 1.5 | < 1.4 | < 1.4 | < 1.4 | < 1.1 | < 1.4 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.72 | < 0.7 | < 0.66 | < 0.66 | < 0.51 | < 0.46 |
| 2-Nitrophenol | ug/l | NS | NS | < 2 | < 1.9 | < 1.8 | < 1.8 | < 1.5 | < 2 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.4 | < 1.4 | < 1.3 | < 1.3 | < 1.1 | < 1.5 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 1.3 | < 1.3 | < 1.2 | < 1.2 | < 0.99 | < 4.7 |
| 3-Nitroaniline | ug/l | NS | NS | < 1.4 | < 1.3 | < 1.3 | < 1.3 | < 0.33 | < 0.47 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.78 | < 0.77 | < 0.72 | < 0.72 | < 2.3 | < 1.2 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.33 | < 0.32 | < 0.3 | < 0.3 | < 0.38 | < 0.43 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.3 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | < 2.4 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.43 | < 0.42 | < 0.4 | < 0.4 | < 0.36 | < 0.35 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.47 | < 0.46 | < 0.43 | < 0.43 | < 0.3 | < 0.47 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.78 | < 0.77 | < 0.72 | < 0.72 | < 0.6 | < 0.47 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.92 | < 0.9 | < 0.84 | < 0.84 | < 1.6 | < 2.3 |
| Acetophenone | ug/l | 700 | NS | < 0.41 | < 0.4 | < 0.37 | < 0.37 | < 0.37 | < 0.49 |
| Atrazine | ug/l | 3 | 3 | < 0.18 | < 0.17 | < 0.16 | < 0.16 | < 0.29 | < 0.64 |
| Benzaldehyde | ug/l | NS | NS | < 0.29 | < 0.28 | < 0.27 | < 0.27 | < 0.78 | < 1.7 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.64 | < 0.63 | < 0.59 | < 0.59 | < 0.65 | < 0.44 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.71 | < 0.7 | < 0.65 | < 0.65 | < 0.32 | < 0.54 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.58 | < 0.56 | < 0.53 | < 0.53 | < 0.69 | < 0.51 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.8 | < 0.79 | < 0.74 | < 0.74 | < 0.59 | < 0.57 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.72 | < 0.7 | < 0.66 | 1.4 J | < 0.9 | < 0.78 |
| Caprolactam | ug/l | NS | NS | < 0.34 | < 0.34 | < 0.32 | < 0.32 | < 0.5 | < 0.65 |
| Carbazole | ug/l | NS | NS | 0.73 J | < 0.39 | < 0.36 | 0.78 J | 0.54 J | < 0.47 |
| Dibenzofuran | ug/l | NS | NS | < 0.37 | < 0.37 | < 0.34 | < 0.34 | < 0.23 | < 0.51 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.42 | < 0.41 | < 0.39 | < 0.39 | < 0.35 | < 0.38 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.36 | < 0.35 | < 0.33 | < 0.33 | < 0.34 | < 0.38 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.64 | < 0.63 | < 0.59 | < 0.59 | < 0.41 | < 0.52 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.62 | < 0.61 J | < 0.57 | < 0.57 | < 0.49 | < 0.52 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.19 | < 0.19 | < 0.18 | < 0.18 | < 0.13 | < 0.39 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.44 | < 0.43 | < 0.41 | < 0.41 | < 0.11 | < 4.7 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.31 | < 0.3 | < 0.28 | < 0.28 | < 0.16 | < 0.31 |
| Isophrone | ug/l | 40 | NS | < 0.64 | < 0.63 | < 0.59 | < 0.59 | < 0.5 | < 0.72 |
| Nitrobenzene | ug/l | 6 | NS | < 0.46 | < 0.45 | < 0.42 | < 0.42 | < 0.72 | < 0.69 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.51 | < 0.5 | < 0.47 | < 0.47 | < 0.39 | < 0.41 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.56 | < 0.55 | < 0.52 | < 0.52 | 0.42 J | < 0.63 |
| Phenol | ug/l | 2000 | NS | < 0.54 | < 0.53 | < 0.5 | < 0.5 | < 0.7 | < 1.4 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 127 J | 247.6 J | 136.3 J | 138.2 J | 95.2 J | 208.8 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.019 | < 0.018 | < 0.017 | < 0.017 | < 0.016 | < 0.017 |
| Acenaphthylene | ug/l | NS | NS | < 0.01 | < 0.01 | < 0.0095 | < 0.0095 | < 0.0071 | < 0.0073 |
| Anthracene | ug/l | 2000 | NS | < 0.023 | < 0.022 | < 0.021 | < 0.021 | < 0.021 | < 0.022 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.0074 | < 0.0072 | < 0.0068 | < 0.0068 | < 0.034 | < 0.035 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.018 | < 0.018 | < 0.017 | < 0.017 | < 0.036 | < 0.037 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.039 | < 0.039 | < 0.036 | < 0.036 | < 0.017 | < 0.018 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.019 | < 0.019 | < 0.018 | < 0.018 | < 0.012 | < 0.012 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.017 | < 0.017 | < 0.016 | < 0.016 | < 0.019 | < 0.02 |
| Chrysene | ug/l | 5 | NS | < 0.018 | < 0.018 | < 0.017 | < 0.017 | < 0.018 | < 0.018 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.018 | < 0.017 | < 0.016 | < 0.016 | < 0.021 | < 0.021 |
| Fluoranthene | ug/l | 300 | NS | < 0.0098 | < 0.0096 | < 0.009 | < 0.009 | < 0.0098 | < 0.01 |
| Fluorene | ug/l | 300 | NS | < 0.022 | < 0.021 | < 0.02 | < 0.02 | < 0.02 | < 0.02 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.066* | < 0.021* | < 0.02 | < 0.02 | < 0.01 J | < 0.01 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.012 | < 0.012 | < 0.011 | < 0.011 | < 0.015 | < 0.015 |
| Naphthalene | ug/l | 300 | NS | < 0.028 | < 0.027 | < 0.026 | < 0.026 | < 0.014 | < 0.014 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.43 * | R | R | R | < 0.23 J | < 0.23 |
| Phenanthrene | ug/l | NS | NS | < 0.023 | < 0.022 | < 0.021 | < 0.021 | < 0.017 | < 0.018 |
| Pyrene | ug/l | 200 | NS | < 0.015 | < 0.015 | < 0.014 | < 0.014 | < 0.012 | < 0.013 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.1 | < 0.1 | < 0.094 | < 0.099 | < 0.1 | < 0.098 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.51* | < 0.51* | < 0.47 | < 0.49 | < 0.51* | < 0.49 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.42 | < 0.42 | < 0.39 | < 0.41 | < 0.42 | < 0.41 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.18 | < 0.18 | < 0.16 | < 0.17 | < 0.18 | < 0.17 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.17 | < 0.17 | < 0.15 | < 0.16 | < 0.17 | < 0.16 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.12 | < 0.12 | < 0.11 | < 0.11 | < 0.12 | < 0.11 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.13 | < 0.13 | < 0.12 | < 0.12 | < 0.13 | < 0.12 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | < 0.0026 | NA | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | < 0.0018 | NA | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | < 0.0053 | NA | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | < 0.0036 | NA | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | < 0.0028 | NA | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | < 0.0047 | NA | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | < 0.0067 | NA | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | < 0.0034 | NA | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | < 0.0019 | NA | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | < 0.0023 | NA | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | < 0.0035 | NA | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | < 0.005 | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | < 0.0033 | NA | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | < 0.007 | NA | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | < 0.0038 | NA | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | < 0.0019 | NA | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | < 0.0028 | NA | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | < 0.0016 | NA | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | < 0.0019 | NA | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | < 0.0073 | NA | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | < 0.1 | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | **215** | 78.4 B | < 26 | < 26 | < 24 | < 24 |
| Antimony | ug/l | 6 | 6 | < 4.4 | < 5 | < 0.9 | < 0.9 | < 1.8 | < 1.8 |
| Arsenic | ug/l | 3 [8] | 10 | **4.5 J** | 2.4 | **21.6** | **23.1** | **14.4** | 2.3 BJ |
| Barium | ug/l | 6000 | 2000 | 587 | 524 | 474 | 482 | 488 | 513 J |
| Beryllium | ug/l | 1 | 4 | < 0.5 | < 0.4 | < 0.15 | < 0.15 | < 0.15 | < 0.15 |
| Cadmium | ug/l | 4 | 5 | 1 B | < 1.3 | < 0.24 | < 0.24 | < 0.28 | < 0.28 |
| Calcium | ug/l | NS | NS | 137000 | 135000 | 137000 | 141000 | 134000 J | 121000 J |
| Chromium | ug/l | 70 | 100 | < 1.6 | 0.96 B | < 0.53 | 0.6 B | 1.1 B | < 1.7 |
| Cobalt | ug/l | NS | NS | < 1.7 | < 1.8 | 5.9 B | 5.9 B | 1.7 B | 0.7 BJ |
| Copper | ug/l | 1,300 | 1300 | < 2.3 | < 2.7 | < 3.3 | < 3.3 | < 2.5 | < 2.5 |
| Iron | ug/l | 300 | NS | **42300** | **45500** | **59600** | **61400** | **52500** | **34700 J** |
| Lead | ug/l | 5 | 15 | < 2.6 | 3.3 | 1 B | 1.4 B | 4 | < 1.4 |
| Magnesium | ug/l | NS | NS | 13800 | 13600 | 15900 | 16300 | 14000 J | 11800 |
| Manganese | ug/l | 50 | NS | **1050 J** | **1040 J** | **2640** | **2770** | **1870 J** | **773** |
| Mercury | ug/l | 2 | 2 | < 0.08 | 0.081 B | < 0.15 | < 0.15 | < 0.15 | < 0.049 |
| Nickel | ug/l | 100 | NS | < 1.6 | < 2.8 | 2.8 B | 2.8 B | < 1.2 | < 1.2 |
| Potassium | ug/l | NS | NS | 7960 | 7340 | 8230 B | 8630 B | 8020 B | 6670 B |
| Selenium | ug/l | 40 | 50 | < 3 | < 6.2 | < 0.73 | < 0.73 | < 1.6 | < 1.6 |
| Silver | ug/l | 40 | NS | < 1.9 | < 1 | < 0.83 | < 0.83 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 21100 J | 18100 | 24000 | 24800 | 21500 | 15000 |
| Thallium | ug/l | 2 [10] | 2 | < 0.09 | < 0.09 | < 1.4 | < 1.4 | < 1.3 | < 1.3 |
| Vanadium | ug/l | NS | NS | 2.1 BJ | 3.6 B | 1.2 B | 0.9 B | 2.5 B | < 1.8 |
| Zinc | ug/l | 2000 | NS | < 3.3 | < 3.4 | < 2.7 | < 2.7 | < 4 | < 5 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 110 | < 23 | < 26 | < 26 | < 24 | < 24 |
| Antimony | ug/l | 6 | 6 | < 4.4 | < 5 | < 0.9 | < 0.9 | < 1.8 | < 1.8 |
| Arsenic | ug/l | 3 [8] | 10 | **5.5 J** | < 1.5 | **5** | **5.6** | **3.8** | < 1.7 |
| Barium | ug/l | 6000 | 2000 | 588 | 543 | 331 | 368 | 362 | 429 J |
| Beryllium | ug/l | 1 | 4 | < 0.5 | < 0.4 | < 0.15 | < 0.15 | < 0.15 | < 0.15 |
| Cadmium | ug/l | 4 | 5 | 0.61 B | < 1.3 | < 0.24 | < 0.24 | < 0.28 | < 0.28 |
| Calcium | ug/l | NS | NS | 145000 | 140000 | 141000 | 136000 | 132000 J | 117000 J |
| Chromium | ug/l | 70 | 100 | < 1.6 | < 0.8 | < 0.53 | 0.9 B | 1.8 B | < 0.9 |
| Cobalt | ug/l | NS | NS | < 1.7 | < 1.8 | 4.6 B | 5.1 B | 0.9 B | < 0.51 |
| Copper | ug/l | 1,300 | 1300 | < 2.3 | < 2.7 | < 3.3 | < 3.3 | < 2.5 | < 2.5 |
| Iron | ug/l | 300 | NS | **46100** | **46200** | **32400** | **39900** | **18800** | **15100 J** |
| Lead | ug/l | 5 | 15 | < 2.6 | 2.9 B | 1.2 B | < 0.94 | 2.7 B | < 1.4 |
| Magnesium | ug/l | NS | NS | 14300 | 14000 | 16700 | 16000 | 13900 J | 11400 |
| Manganese | ug/l | 50 | NS | **1230 J** | **1070 J** | **2860** | **2710** | **1810 J** | **722** |
| Mercury | ug/l | 2 | 2 | < 0.08 | 0.057 B | < 0.15 | < 0.15 | < 0.15 | < 0.049 |
| Nickel | ug/l | 100 | NS | < 1.6 | < 2.8 | 1.6 B | 2.2 B | 1.5 B | < 1.2 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 7780 | 7510 | 8560 B | 8280 B | 7990 B | 6360 B |
| Selenium | ug/l | 40 | 50 | < 3 | < 6.2 | < 0.73 | < 0.73 | < 1.6 | < 1.6 |
| Silver | ug/l | 40 | NS | < 1.9 | 1.5 B | < 0.83 | < 0.83 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 21600 J | 19000 | 25500 | 24100 | 21400 | 14500 |
| Thallium | ug/l | 2 [10] | 2 | < 0.09 | < 0.09 | < 1.4 | 1.9 B | < 1.3 | < 1.3 |
| Vanadium | ug/l | NS | NS | 2.8 BJ | 3.3 B | < 0.49 | < 0.49 | 0.8 B | < 0.43 |
| Zinc | ug/l | 2000 | NS | < 3.3 | < 3.4 | < 2.7 | < 2.7 | < 4 | < 4 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A | OB-14A(040907) | DUP (071011) | OB-14A (071011) | OB-14A(080430) | OB-14A(080911) |
| Sample Date | | | MCLs | 9/27/2006 | 4/9/2007 | 10/11/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | 419000 | 415000 | 478000 | 520000 | 456000 | 391000 |
| Alkalinity, Carbonate | ug/l | NS | NS | < 5000 | < 5000 | < 5000 | < 5000 | < 5000 | < 5000 |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | NA | 415000 | 478000 | 520000 | 456000 | 391000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 19600 | 16600 | 25100 | 25300 | 20200 | 17000 |
| Cyanide | ug/l | 100 | 200 | < 10 | < 10 | < 10 | < 10 | < 10 J | 15 |
| Nitrate | ug/l | 10000 | 10000 | < 110 | 130 | < 110 | < 110 | < 150 | < 110 |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | < 10 | < 10 | < 10 | < 10 | < 50 | < 10 |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | < 100 | 130 | < 100 | < 100 | < 100 | < 100 |
| Phosphorus, Total | ug/l | NS | NS | < 50 | 280 | 260 J | 98 J | 260 | 220 |
| Sulfate | ug/l | 250000 | NS | < 2000 | < 10000 | < 10000 | < 10000 | < 10000 | < 10000 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.26 | < 0.26 | < 0.26 | < 0.2 | < 0.24 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.24 | < 0.24 | < 0.24 | < 0.12 | < 0.2 | < 0.28 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.23 | < 0.23 | < 0.23 | < 0.13 | < 0.23 | < 0.32 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.29 | < 0.29 | < 0.29 | < 0.16 | < 0.19 | < 0.23 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.4 | < 0.4 | < 0.4 | < 0.24 | < 0.28 | < 0.33 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.56 | < 0.56 | < 0.56 | < 0.16 | < 0.15 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.1* | < 1.1* | < 1.1* | < 1.2* | < 1.3* | < 1.1 * |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.39* | < 0.39* | < 0.39* | < 0.39* | < 0.21* | < 0.52 * |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.26 | < 0.26 | < 0.26 | < 0.15 | < 0.18 | < 0.2 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.33 | < 0.33 | < 0.33 | < 0.31 | < 0.18 | < 0.29 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.27 | < 0.27 | < 0.27 | < 0.23 | < 0.22 | < 0.2 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.25 | < 0.25 | < 0.25 | < 0.19 | < 0.29 | < 0.32 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.28 | < 0.28 | < 0.28 | < 0.22 | < 0.26 | < 0.24 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 1.6 | < 1.6 | < 1.6 | < 1.7 | < 2.9 J | < 2.6 |
| 2-Hexanone | ug/l | NS | NS | < 1.4 | < 1.4 | < 1.4 | < 1.9 | < 3 J | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 0.86 | < 0.86 | < 0.86 | < 0.74 | < 1.2 J | < 1.1 |
| Acetone | ug/l | 6000 | NS | < 2.9 | < 2.9 | < 2.9 | < 4.4 | < 7.6 J | < 2.4 |
| Benzene | ug/l | 1 | 5 | < 0.23 | < 0.23 | < 0.23 | < 0.26 | < 0.22 | < 0.21 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.22 | < 0.22 | < 0.22 | < 0.18 | < 0.23 | < 0.17 |
| Bromoform | ug/l | 4 | 80 | < 0.23 | < 0.23 | < 0.23 | < 0.42 | < 0.24 | < 0.54 |
| Bromomethane | ug/l | 10 | NS | < 0.3 | < 0.3 | < 0.3 | < 0.24 | < 0.31 | < 0.22 |
| Carbon disulfide | ug/l | 700 | NS | < 0.74 | < 0.74 | < 0.74 | < 0.13 | < 0.18 | < 0.21 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.26 | < 0.26 | < 0.26 | < 0.35 | < 0.19 | < 0.29 J |
| Chlorobenzene | ug/l | 50 | 100 | < 0.39 | < 0.39 | < 0.39 | < 0.15 | < 0.22 | < 0.22 |
| Chloroethane | ug/l | NS | NS | < 0.37 | < 0.37 | < 0.37 | < 0.25 | < 0.37 | < 0.56 |
| Chloroform | ug/l | 70 | 80 | < 0.23 | < 0.23 | < 0.23 | < 0.14 | < 0.21 | < 0.22 |
| Chloromethane | ug/l | NS | NS | < 0.29 | < 0.29 | < 0.29 | < 0.34 | < 0.22 | < 0.35 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.22 | < 0.22 | < 0.22 | < 0.24 | < 0.22 | < 0.18 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.25 | < 0.25 | < 0.25 | < 0.16 | < 0.22 | < 0.15 |
| Cyclohexane | ug/l | NS | NS | < 1.9 | < 1.9 | < 1.9 | < 0.43 | < 0.29 | < 0.5 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.22 | < 0.22 | < 0.22 | < 0.16 | < 0.2 | < 0.19 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.92 | < 0.92 | < 0.92 | < 0.39 | < 0.31 | < 0.75 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.27 | < 0.27 | < 0.27 | < 0.31 | < 0.21 | < 0.2 |
| Freon 113 | ug/l | NS | NS | < 0.38 | < 0.38 | < 0.38 | < 0.66 | < 0.49 | < 0.69 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.57 | < 0.57 | < 0.57 | < 0.31 | < 0.19 | < 0.2 |
| Methyl acetate | ug/l | 7000 | NS | < 1.5 | < 1.5 | < 1.5 | < 1.3 | < 2.9 J | < 2.1 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.23 | < 0.23 | < 0.23 | < 0.2 | < 0.18 | 0.4 J |
| Methylcyclohexane | ug/l | NS | NS | < 0.35 | < 0.35 | < 0.35 | < 0.16 | < 0.18 | < 0.18 |
| Methylene chloride | ug/l | 3 | 5 | < 0.3 | < 0.3 | < 0.3 | < 0.2 | < 0.2 | < 0.27 |
| o-Xylene | ug/l | NS | NS | < 0.25 | < 0.25 | NA | NA | NA | < 0.31 |
| Styrene | ug/l | 100 | 100 | < 0.58 | < 0.58 | < 0.58 | < 0.48 | < 0.23 | < 0.16 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.27 | < 0.27 | < 0.27 | < 0.24 | < 0.32 | < 0.28 |
| Toluene | ug/l | 600 | 1000 | < 0.3 | < 0.3 | < 0.3 | < 0.27 | < 0.15 | < 0.2 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.25 | < 0.25 | < 0.25 | < 0.3 | < 0.31 | < 0.42 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.21 | < 0.21 | < 0.21 | < 0.22 | < 0.19 | < 0.2 |
| Trichloroethene | ug/l | 1 | 5 | < 0.24 | < 0.24 | < 0.24 | < 0.22 | < 0.21 | < 0.29 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.54 | < 0.54 | < 0.54 | < 0.23 | < 0.35 | < 0.25 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.44 | < 0.44 | < 0.44 | < 0.22 | < 0.27 | < 0.29 |
| Xylene, -m,p | ug/l | NS | NS | < 0.25 | < 0.25 | NA | NA | NA | < 0.42 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.25 | < 0.25 | < 0.25 | < 0.28 | < 0.17 | < 0.31 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.44 | < 0.47 | < 0.42 | < 0.44 | < 0.34 | < 0.36 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.4 | < 1.5 | < 1.3 | < 1.4 | < 1.7 | < 2.1 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.3 | < 1.4 | < 1.2 | < 1.3 | < 1.4 | < 1.4 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.3 | < 1.4 | < 1.2 | < 1.3 | < 1.3 | < 1.7 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.7 | < 1.8 | < 1.7 | < 1.7 | < 1.7 | < 1.8 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.77 | < 0.82 J | < 0.74 | < 0.78 | < 18 | < 0.98 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.23 | < 0.24 | < 0.22 | < 0.23 | < 0.47 | < 0.95 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.34 | < 0.36 | < 0.33 | < 0.34 | < 0.51 | < 0.61 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.43 | < 0.46 | < 0.42 | < 0.44 | < 0.33 | < 1.1 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.1 | < 1.2 | < 1.1 | < 1.1 | < 1.1 | < 1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.69 | < 0.73 | < 0.66 | < 0.69 | < 0.43 | < 0.45 |
| 2-Methylphenol | ug/l | NS | NS | < 1.2 | < 1.2 | < 1.1 | < 1.2 | < 1.2 | < 1.5 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.24 | < 0.26 | < 0.24 | < 0.25 | < 1.2 | < 0.73 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.3 | < 1.4 | < 1.2 | < 1.3 | < 1.7 | < 2 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.1 | < 1.2 | < 1 | < 1.1 | < 1 | < 1.4 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 0.31 | < 0.33 | < 0.3 | < 0.31 | < 0.4 | < 1.3 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.3 | < 0.32 | < 0.29 | < 0.3 | < 1.4 | < 1.4 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.53 | < 0.57 | < 0.51 | < 0.54 | < 1.1 | < 0.79 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.36 | < 0.39 | < 0.35 | < 0.37 | < 0.4 | < 0.33 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.1 | < 1.2 | < 1.1 | < 1.1 | < 2 | < 1.3 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.26 | < 0.28 | < 0.25 | < 0.27 | < 0.59 | < 0.44 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.37 | < 0.39 | < 0.35 | < 0.37 | < 0.35 | < 0.47 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.19 | < 0.2 | < 0.18 | < 0.19 | < 1.8 | < 0.79 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.86 | < 0.92 | < 0.83 | < 0.87 | < 5.8 | < 0.93 |
| Acetophenone | ug/l | 700 | NS | < 0.42 | < 0.44 | < 0.4 | < 0.42 | < 0.32 | < 0.41 |
| Atrazine | ug/l | 3 | 3 | < 0.41 | < 0.43 | < 0.39 | < 0.41 | < 0.54 | < 0.18 |
| Benzaldehyde | ug/l | NS | NS | < 0.42 | < 0.45 | < 0.4 | < 0.43 | < 3.6 | < 0.29 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.26 | < 0.28 | < 0.25 | < 0.26 | < 0.32 | < 0.65 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.26 | < 0.28 | < 0.25 | < 0.26 | < 0.34 | < 0.72 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.32 | < 0.34 | < 0.31 | < 0.33 | < 0.34 | < 0.58 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.41 | < 0.43 | < 0.39 | < 0.41 | < 0.5 | < 0.81 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.34 | < 0.36 | < 0.33 | < 0.34 | < 0.65 | < 0.73 |
| Caprolactam | ug/l | NS | NS | < 0.2 | < 0.22 | < 0.2 | < 0.21 | < 0.77 | < 0.35 |
| Carbazole | ug/l | NS | NS | < 0.17 | < 0.18 | < 0.17 | < 0.17 | < 0.4 | < 0.4 |
| Dibenzofuran | ug/l | NS | NS | < 0.32 | < 0.34 | < 0.3 | < 0.32 | < 0.29 | < 0.38 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.17 | < 0.18 | < 0.17 | < 0.17 | < 0.36 | < 0.43 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.23 | < 0.25 | < 0.23 | < 0.24 | < 0.31 | < 0.36 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.2 | < 0.21 | < 0.19 | < 0.2 | < 0.62 | < 0.65 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.41 | < 0.44 | < 0.4 | < 0.42 | < 0.34 | < 0.63 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.39 | < 0.41 | < 0.13 | < 0.13 | < 0.57 | < 0.19 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.7 | < 0.75 | < 0.24 | < 0.26 | < 7.9 | < 0.45 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.27 | < 0.29 | < 0.21 | < 0.22 | < 0.61 | < 0.31 |
| Isophrone | ug/l | 40 | NS | < 0.26 | < 0.28 | < 0.25 | < 0.26 | < 0.3 | < 0.65 |
| Nitrobenzene | ug/l | 6 | NS | < 0.26 | < 0.28 | < 0.25 | < 0.27 | < 0.47 | < 0.46 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.46 | < 0.49 | < 0.44 | < 0.46 | < 0.34 | < 0.51 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.22 | < 0.24 | < 0.22 | < 0.23 | < 0.34 | < 0.57 |
| Phenol | ug/l | 2000 | NS | < 0.6 | < 0.66 J | < 0.58 | < 0.61 | < 1.4 | < 0.55 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 73.6 J | 24.1 J | 142.4 J | 40.5 J | 73.4 J | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.017 | < 0.032 | < 0.029 | < 0.014 | < 0.015 | < 0.019 |
| Acenaphthylene | ug/l | NS | NS | < 0.0073 | < 0.044 | < 0.039 | < 0.017 | < 0.018 | < 0.01 |
| Anthracene | ug/l | 2000 | NS | < 0.022 | < 0.028 | < 0.026 | < 0.011 | < 0.011 | < 0.023 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.035 | < 0.026 | < 0.024 | < 0.016 | < 0.017 | < 0.0075 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.037 | < 0.034 | < 0.031 | < 0.0052 | < 0.0054 | < 0.019 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.018 | < 0.04 | < 0.036 | < 0.017 | < 0.018 | < 0.04 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.012 | < 0.032 | < 0.029 | < 0.011 | < 0.011 | < 0.02 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.02 | < 0.031 | < 0.028 | < 0.013 | < 0.014 | < 0.017 |
| Chrysene | ug/l | 5 | NS | < 0.018 | < 0.024 | < 0.022 | < 0.024 | < 0.026 | < 0.018 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.021 | < 0.025 | < 0.023 | < 0.024 | < 0.025 | < 0.018 |
| Fluoranthene | ug/l | 300 | NS | < 0.01 | < 0.027 | < 0.024 | < 0.01 | < 0.011 | < 0.0099 |
| Fluorene | ug/l | 300 | NS | < 0.02 | < 0.03 | < 0.027 | < 0.016 | < 0.017 | < 0.022 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.01 | < 0.011 | < 0.0099 | < 0.0084 | < 0.0089 | < 0.067* |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.015 | < 0.032 | < 0.029 | < 0.011 | < 0.012 | < 0.012 |
| Naphthalene | ug/l | 300 | NS | < 0.014 | < 0.021 | < 0.019 | < 0.017 | < 0.018 | < 0.028 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.23 | < 0.25 | < 0.068 | < 0.3 | < 0.11 J | < 0.44 * |
| Phenanthrene | ug/l | NS | NS | < 0.018 | < 0.04 | < 0.036 | < 0.017 | < 0.017 | < 0.023 |
| Pyrene | ug/l | 200 | NS | < 0.013 | < 0.025 | < 0.022 | < 0.0085 | < 0.009 | < 0.015 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.2 | < 0.33 | < 0.32 | < 0.13 | < 0.13 | < 0.1 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.33 | < 0.46 | < 0.44 | < 0.27 | < 0.27 | < 0.51* |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.22 | < 0.34 | < 0.33 | < 0.39 | < 0.39 | < 0.42 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.096 | < 0.3 | < 0.29 | < 0.086 | < 0.086 | < 0.18 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.27 | < 0.31 | < 0.3 | < 0.15 | < 0.15 | < 0.17 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.12 | < 0.2 | < 0.19 | < 0.14 | < 0.14 | < 0.12 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.15 | < 0.16 | < 0.15 | < 0.21 | < 0.21 | < 0.13 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | < 0.0026 |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | < 0.0018 |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | < 0.0053 |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | < 0.0036 |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | NA | < 0.0028 |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | < 0.0047 |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | < 0.0067 |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | NA | < 0.0034 |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | NA | < 0.0019 |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | NA | < 0.0023 |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | NA | < 0.0035 |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | NA | < 0.005 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | NA | < 0.0033 |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | NA | < 0.007 |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | NA | < 0.0038 |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | < 0.0019 |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | NA | < 0.0028 |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | NA | < 0.0016 |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | NA | < 0.0019 |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | NA | < 0.0073 |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | NA | < 0.1 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 26 | < 26 | < 7.8 | 69.1 J | 67.7 B | < 110 |
| Antimony | ug/l | 6 | 6 | < 4 | < 2.9 | < 2.2 | < 1.3 | < 1.4 | 4.7 B |
| Arsenic | ug/l | 3 [8] | 10 | < 3 | < 2.4 | 1.8 B | < 0.92 | < 0.97 | < 1.5 |
| Barium | ug/l | 6000 | 2000 | 439 | 537 | 463 | 435 | 445 | 45 B |
| Beryllium | ug/l | 1 | 4 | < 1 | < 0.4 | < 1 | < 0.24 | < 0.44 | < 0.5 |
| Cadmium | ug/l | 4 | 5 | < 0.4 | < 0.4 | 0.4 B | < 0.17 | < 0.24 | < 0.6 |
| Calcium | ug/l | NS | NS | 112000 | 132000 | 112000 | 119000 | 122000 | 110000 |
| Chromium | ug/l | 70 | 100 | < 10 | 1.5 B | 1.8 B | < 10 | < 0.91 | < 1.6 |
| Cobalt | ug/l | NS | NS | 1.4 BJ | < 1.6 | < 0.65 | < 50 | < 0.59 | < 1.7 |
| Copper | ug/l | 1,300 | 1300 | < 10 | < 1.6 | < 2.5 | < 0.85 | < 1.3 | < 2.3 |
| Iron | ug/l | 300 | NS | **50500** | **38600** | **51300** | **50900** | **46600** | **959** |
| Lead | ug/l | 5 | 15 | < 1.7 | < 1.7 | < 1.9 | 3.8 J | < 1.7 | < 2.6 |
| Magnesium | ug/l | NS | NS | 10800 | 11600 | 10500 | 11600 | 10600 | 31600 |
| Manganese | ug/l | 50 | NS | **1360** | **969** | **1320** | **1480** | **1120** | **1900** |
| Mercury | ug/l | 2 | 2 | < 0.049 | < 0.082 | < 0.082 | < 0.088 | < 0.075 | < 0.08 |
| Nickel | ug/l | 100 | NS | 3 BJ | < 10 | 3 B | 3.1 J | < 0.94 | < 1.6 |
| Potassium | ug/l | NS | NS | 5810 BJ | 6820 B | 5860 J | 6200 B | 5570 B | 3120 B |
| Selenium | ug/l | 40 | 50 | < 3.7 | < 3.7 | 3 B | < 1.5 | < 10 | < 3 |
| Silver | ug/l | 40 | NS | 1.5 BJ | < 1 | 2.1 B | 1.2 B | 2.1 B | < 1.9 |
| Sodium | ug/l | 50,000 | NS | 15500 | 18800 | 20000 | 19400 | 21900 | 23100 J |
| Thallium | ug/l | 2 [10] | 2 | < 1.5 | < 1.5 | < 1.8 | < 0.17 | < 1.7 | < 0.09 |
| Vanadium | ug/l | NS | NS | 3.4 BJ | 1.5 B | < 0.56 | < 50 | 2.5 J | < 1.9 |
| Zinc | ug/l | 2000 | NS | 5.8 BJ | < 2.9 | < 1.4 | 5.8 J | < 20 | < 3.3 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 26 | < 26 | < 7.8 | < 200 | < 16 | < 110 |
| Antimony | ug/l | 6 | 6 | < 4 | < 2.9 | < 2.2 | < 1.3 | < 1.4 | < 4.4 |
| Arsenic | ug/l | 3 [8] | 10 | < 3 | < 2.4 | < 1.4 | < 0.92 | < 0.97 | < 1.5 |
| Barium | ug/l | 6000 | 2000 | 425 | 396 | 343 | 319 | 347 | 49.9 B |
| Beryllium | ug/l | 1 | 4 | < 1.1 | < 0.4 | < 1 | < 0.24 | < 0.44 | < 0.5 |
| Cadmium | ug/l | 4 | 5 | < 0.4 | < 0.4 | < 0.35 | < 0.17 | < 3 | < 0.6 |
| Calcium | ug/l | NS | NS | 117000 | 131000 | 110000 | 113000 | 121000 | 112000 |
| Chromium | ug/l | 70 | 100 | < 10 | 1.3 B | 1.2 B | < 0.9 | < 0.91 | < 1.6 |
| Cobalt | ug/l | NS | NS | 1.4 BJ | < 1.6 | < 0.65 | < 50 | < 0.59 | < 1.7 |
| Copper | ug/l | 1,300 | 1300 | < 1.6 | < 1.6 | < 2.5 | < 0.85 | < 1.3 | < 2.3 |
| Iron | ug/l | 300 | NS | **47100** | **5210** | **22100** | **23100** | **26000** | **949** |
| Lead | ug/l | 5 | 15 | < 1.7 | < 1.7 | < 1.9 | < 3 | < 1.7 | < 2.6 |
| Magnesium | ug/l | NS | NS | 11500 | 11500 | 10600 | 11100 | 10400 | 31900 |
| Manganese | ug/l | 50 | NS | **1400** | **900** | **1300** | **1400** | **1130** | **1910** |
| Mercury | ug/l | 2 | 2 | < 0.049 | < 0.082 J | < 0.082 | < 0.088 | < 0.075 | < 0.08 |
| Nickel | ug/l | 100 | NS | 1.9 BJ | < 10 | 2.4 B | 2.3 J | < 10 | < 1.6 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 6030 BJ | 6750 B | 5830 B | 5890 B | 5430 B | 3190 B |
| Selenium | ug/l | 40 | 50 | < 3.7 | < 3.7 | 3 B | < 1.5 | < 2.4 | < 3 |
| Silver | ug/l | 40 | NS | 1.3 BJ | < 1 | 1.2 B | 0.8 B | 2.2 B | < 1.9 |
| Sodium | ug/l | 50,000 | NS | 16400 | 18600 | 20000 | 18300 | 21800 | 23200 J |
| Thallium | ug/l | 2 [10] | 2 | < 1.5 | 1.6 B | < 1.8 | < 0.17 | < 1.7 | < 0.09 |
| Vanadium | ug/l | NS | NS | < 50 | < 0.9 | < 0.56 | < 0.43 | < 0.77 | < 1.9 |
| Zinc | ug/l | 2000 | NS | < 20 | 3.2 B | < 20 | 14.6 B | < 20 | < 3.3 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14A | OB-14A | OB-14A | OB-14A | OB-14A | OB-14B |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14A(070609) | OB-14A(102309) | OB-14A(052810) | OB-14A(051911) | OB-14A(041812) | OB-14B |
| Sample Date | | | MCLs | 7/6/2009 | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | NA | NA | NA | 384000 |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | NA | NA | NA | < 5000 |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 193000 | 403000 | 373000 | 347000 | 375000 | NA |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 22400 | 26100 | 31200 | 22400 | 23900 | 44600 |
| Cyanide | ug/l | 100 | 200 | NA | NA | NA | NA | NA | < 10 |
| Nitrate | ug/l | 10000 | 10000 | NA | NA | NA | NA | NA | < 110 |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | NA | NA | NA | NA | < 10 |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | NA | NA | NA | NA | < 100 |
| Phosphorus, Total | ug/l | NS | NS | NA | NA | NA | NA | NA | < 50 |
| Sulfate | ug/l | 250000 | NS | < 10000 | < 10000 | < 10000 | < 10000 | < 10000 | 17300 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.28 | < 0.3 | < 0.24 | < 0.24 | < 0.26 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.28 | < 0.8 | < 0.13 | < 0.13 | < 0.24 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.32 | < 0.49 | < 0.17 | < 0.17 | < 0.23 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.23 | < 0.2 | < 0.16 | < 0.24 | < 0.29 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.33 | < 0.28 | < 0.29 | < 0.29 | < 0.4 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.16 | < 0.41 | < 1.3 | < 1.3 | < 0.56 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.1 * | < 0.8* | < 2.4* | < 1.3* | < 1.1* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.52 * | < 0.45* | < 0.17* | < 0.18* | < 0.39* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.2 | < 0.2 | < 0.18 | < 0.18 | < 0.26 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.29 | < 0.29 | < 0.35 | < 0.35 | < 0.33 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.2 | < 0.24 | < 0.18 | < 0.18 | < 0.27 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.32 | < 0.21 | < 0.26 | < 0.26 | < 0.25 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.24 | < 0.17 | < 0.32 | < 0.22 | < 0.28 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 2.6 | < 2.7 | < 2.3 | < 2.3 | < 1.6 |
| 2-Hexanone | ug/l | NS | NS | < 1.3 | < 0.94 | < 1.7 | < 1.7 | < 1.4 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 1.1 | < 1.4 | < 1.9 | < 1.3 | < 0.86 |
| Acetone | ug/l | 6000 | NS | < 2.4 | < 2.9 | < 2.1 | < 2.1 | < 2.9 |
| Benzene | ug/l | 1 | 5 | < 0.21 | < 0.19 | < 0.26 | < 0.26 | < 0.23 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.17 | < 0.15 | < 0.14 | < 0.14 | < 0.22 |
| Bromoform | ug/l | 4 | 80 | < 0.54 | < 0.34 | < 0.18 | < 0.18 | < 0.23 |
| Bromomethane | ug/l | 10 | NS | < 0.22 | < 0.38 | < 0.32 | < 0.32 | < 0.3 |
| Carbon disulfide | ug/l | 700 | NS | < 0.21 | < 0.14 | < 0.15 | < 0.16 | < 0.74 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.29 | < 0.19 | < 0.18 | < 0.18 | < 0.26 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.22 | < 0.19 | < 0.14 | < 0.19 | < 0.39 |
| Chloroethane | ug/l | NS | NS | < 0.56 | < 0.67 | < 0.22 | < 0.22 | < 0.37 |
| Chloroform | ug/l | 70 | 80 | < 0.22 | < 0.25 | < 0.16 | < 0.16 | < 0.23 |
| Chloromethane | ug/l | NS | NS | < 0.35 | < 0.3 | < 0.29 | < 0.29 | < 0.29 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.18 | < 0.27 | < 0.19 | < 0.25 | < 0.22 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.15 | < 0.13 | < 0.15 | < 0.18 | < 0.25 |
| Cyclohexane | ug/l | NS | NS | < 0.5 | < 0.85 | < 0.85 | < 0.85 | < 1.9 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.19 | < 0.28 | < 0.12 | < 0.16 | < 0.22 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.75 | < 1 | < 0.88 | < 0.88 | < 0.92 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.2 | < 0.21 | < 0.27 | < 0.27 | < 0.27 |
| Freon 113 | ug/l | NS | NS | < 0.69 | < 1.2 | < 0.8 | < 0.8 | < 0.38 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.2 | < 0.54 | < 0.15 | < 0.19 | < 0.57 |
| Methyl acetate | ug/l | 7000 | NS | < 2.1 | < 1.6 | < 2.5 | < 1.7 | < 1.5 |
| Methyl tert butyl ether | ug/l | 70 | NS | 0.58 J | 0.33 J | 0.49 J | < 0.16 | 0.42 J |
| Methylcyclohexane | ug/l | NS | NS | < 0.18 | < 0.5 | < 0.11 | < 0.11 | < 0.35 |
| Methylene chloride | ug/l | 3 | 5 | < 0.27 | < 0.21 | < 0.16 | < 0.16 | < 0.3 |
| o-Xylene | ug/l | NS | NS | < 0.31 | < 0.2 | < 0.45 | < 0.45 | < 0.25 |
| Styrene | ug/l | 100 | 100 | < 0.16 | < 0.2 | < 0.11 | < 0.17 | < 0.58 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.28 | < 0.28 J | < 0.29 | < 0.29 | < 0.27 |
| Toluene | ug/l | 600 | 1000 | < 0.2 | < 0.21 | < 0.15 | < 0.15 | < 0.3 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.42 | < 0.32 | < 0.16 | < 0.16 | < 0.25 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.2 | < 0.17 | < 0.11 | < 0.15 | < 0.21 |
| Trichloroethene | ug/l | 1 | 5 | < 0.29 | < 0.26 | < 0.18 | < 0.18 | < 0.24 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.25 | < 0.26 | < 0.25 | < 0.25 | < 0.54 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.29 | < 0.22 | < 0.21 | < 0.21 | < 0.44 |
| Xylene, -m,p | ug/l | NS | NS | < 0.42 | < 0.35 | < 0.39 | < 0.39 | < 0.25 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.31 | < 0.2 | < 0.39 | < 0.39 | < 0.25 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.38 | < 0.39 | < 0.23 | < 0.58 | < 0.42 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 2.2 | < 2.3 | < 1.2 | < 2.1 | < 1.3 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.4 | < 1.5 | < 1.1 | < 1.7 | < 1.2 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.8 | < 1.9 | < 1.5 | < 2 | < 1.2 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.9 | < 2 | < 1.7 | < 2.1 | < 1.7 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 1 | < 1.1 | < 1.2 | < 4.4 | < 0.74 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.99 | < 1 | < 0.57 | < 0.48 | < 0.22 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.64 | < 0.67 | < 0.53 | < 0.63 | < 0.33 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 1.1 | < 1.2 | < 0.21 | < 0.51 | < 0.42 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.1 | < 1.1 | < 0.92 | < 1.5 | < 1.1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.47 | < 0.49 | < 0.8 | < 0.46 | < 0.66 |
| 2-Methylphenol | ug/l | NS | NS | < 1.6 | < 1.6 | < 1.1 | < 1.4 | < 1.1 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.76 | < 0.79 | < 0.52 | < 0.47 | < 0.24 |
| 2-Nitrophenol | ug/l | NS | NS | < 2.1 | < 2.2 | < 1.6 | < 2 | < 1.2 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.5 | < 1.5 | < 1.2 | < 1.5 | < 1 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 1.4 | < 1.5 | < 1 | < 4.8 | < 0.3 |
| 3-Nitroaniline | ug/l | NS | NS | < 1.4 | < 1.5 | < 0.34 | < 0.47 | < 0.29 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.83 | < 0.86 | < 2.3 | < 1.2 | < 0.51 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.34 | < 0.36 | < 0.39 | < 0.43 | < 0.35 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.4 | < 1.4 | < 1.3 | < 2.4 | < 1.1 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.46 | < 0.47 | < 0.37 | < 0.35 | < 0.25 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.5 | < 0.51 | < 0.31 | < 0.48 | < 0.35 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.83 | < 0.86 | < 0.62 | < 0.48 | < 0.18 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.97 | < 1 | < 1.7 | < 2.4 | < 0.83 |
| Acetophenone | ug/l | 700 | NS | < 0.43 | < 0.45 | < 0.38 | < 0.49 | < 0.4 |
| Atrazine | ug/l | 3 | 3 | < 0.19 | < 0.19 | < 0.3 | < 0.65 | < 0.39 |
| Benzaldehyde | ug/l | NS | NS | < 0.3 | < 0.32 | < 0.8 | < 1.7 | < 0.4 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.68 | < 0.71 | < 0.67 | < 0.44 | < 0.25 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.75 | < 0.78 | < 0.33 | < 0.54 | < 0.25 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.61 | < 0.63 | < 0.71 | < 0.52 | < 0.31 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.85 | < 0.88 | < 0.61 | < 0.57 | < 0.39 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.76 | < 0.79 | < 0.92 | < 0.79 | < 0.33 |
| Caprolactam | ug/l | NS | NS | < 0.36 | < 0.38 | < 0.52 | < 0.66 | < 0.2 |
| Carbazole | ug/l | NS | NS | < 0.42 | < 0.43 | < 0.42 | < 0.47 | < 0.17 |
| Dibenzofuran | ug/l | NS | NS | < 0.4 | < 0.41 | < 0.24 | < 0.51 | < 0.3 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.45 | < 0.46 | < 0.36 | < 0.38 | < 0.17 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.38 | < 0.39 | < 0.35 | < 0.38 | < 0.23 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.68 | < 0.7 | < 0.42 | < 0.53 | < 0.19 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.65 J | < 0.68 | < 0.5 | < 0.52 | < 0.4 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.2 | < 0.21 | < 0.13 | < 0.39 | < 0.37 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.47 | < 0.48 | < 0.11 | < 4.8 | < 0.67 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.33 | < 0.34 | < 0.17 | < 0.32 | < 0.26 |
| Isophrone | ug/l | 40 | NS | < 0.68 | < 0.7 | < 0.51 | < 0.73 | < 0.25 |
| Nitrobenzene | ug/l | 6 | NS | < 0.48 | < 0.5 | < 0.74 | < 0.69 | < 0.25 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.54 | < 0.56 | < 0.4 | < 0.41 | < 0.44 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.59 | < 0.61 | < 0.44 | < 0.64 | < 0.22 |
| Phenol | ug/l | 2000 | NS | < 0.57 | < 0.59 | < 0.72 | < 1.4 | < 0.58 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 23.8 J | 5.5 J | 0 | 0 | 8.1 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.02 | < 0.02 | < 0.017 | < 0.017 | < 0.016 |
| Acenaphthylene | ug/l | NS | NS | < 0.011 | < 0.011 | < 0.0074 | < 0.0074 | < 0.007 |
| Anthracene | ug/l | 2000 | NS | < 0.024 | < 0.025 | < 0.022 | < 0.022 | < 0.021 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.0078 | < 0.0081 | < 0.035 | < 0.035 | < 0.034 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.019 | < 0.02 | < 0.037 | < 0.037 | < 0.036 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.042 | < 0.043 | < 0.018 | < 0.018 | < 0.017 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.02 | < 0.021 | < 0.012 | < 0.012 | < 0.012 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.018 | < 0.019 | < 0.02 | < 0.02 | < 0.019 |
| Chrysene | ug/l | 5 | NS | < 0.019 | < 0.02 | < 0.019 | < 0.019 | < 0.018 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.019 | < 0.02 | < 0.021 | < 0.021 | < 0.02 |
| Fluoranthene | ug/l | 300 | NS | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.0096 |
| Fluorene | ug/l | 300 | NS | < 0.023 | < 0.024 | < 0.021 | < 0.021 | < 0.02 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.023* | < 0.024* | < 0.01 J | < 0.01 | < 0.0099 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.013 | < 0.013 | < 0.015 | < 0.015 | < 0.014 |
| Naphthalene | ug/l | 300 | NS | < 0.03 | < 0.031 | < 0.015 | < 0.015 | < 0.014 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | R | R | < 0.23 J | < 0.23 | < 0.22 |
| Phenanthrene | ug/l | NS | NS | < 0.024 | < 0.025 | < 0.018 | < 0.018 | < 0.017 |
| Pyrene | ug/l | 200 | NS | < 0.016 | < 0.017 | < 0.013 | < 0.013 | < 0.012 |
| **PCBs** | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.12 | < 0.11 | < 0.1 | < 0.096 | < 0.19 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.59* | < 0.53* | < 0.51* | < 0.48 | < 0.31 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.49 | < 0.44 | < 0.42 | < 0.4 | < 0.21 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.21 | < 0.18 | < 0.18 | < 0.17 | < 0.089 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.19 | < 0.17 | < 0.17 | < 0.16 | < 0.25 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.14 | < 0.12 | < 0.12 | < 0.11 | < 0.11 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.15 | < 0.13 | < 0.13 | < 0.12 | < 0.14 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 23 | 35.3 B | 80.9 B | < 24 | 102 BJ |
| Antimony | ug/l | 6 | 6 | < 5 | < 0.9 | < 1.8 | < 2 | < 4 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.5 | 2.8 B | 2.1 B | 2 BJ | < 2.4 |
| Barium | ug/l | 6000 | 2000 | 51.8 B | 38.3 B | 46.3 B | 40.2 BJ | 48.6 B |
| Beryllium | ug/l | 1 | 4 | < 0.4 | < 0.15 | < 0.15 | **2.6** | < 1.1 |
| Cadmium | ug/l | 4 | 5 | < 1.3 | < 0.24 | < 0.28 | < 0.28 | < 0.4 |
| Calcium | ug/l | NS | NS | 116000 | 94300 | 101000 J | 91200 J | 107000 |
| Chromium | ug/l | 70 | 100 | < 0.8 | 0.8 B | 1.2 B | < 1 | < 10 |
| Cobalt | ug/l | NS | NS | < 1.8 | 2.5 B | < 0.51 | < 0.51 | < 50 |
| Copper | ug/l | 1,300 | 1300 | < 2.7 | < 3.3 | < 2.5 | < 0.7 | < 1.6 |
| Iron | ug/l | 300 | NS | **962** | **642** | **890** | **516 J** | **1040** |
| Lead | ug/l | 5 | 15 | < 2.8 | 1.1 B | 3.2 | < 1.4 | < 1.7 |
| Magnesium | ug/l | NS | NS | 32700 | 29000 | 28500 J | 27500 | 30000 |
| Manganese | ug/l | 50 | NS | **2040 J** | **1500** | **1740 J** | **1560** | **2100** |
| Mercury | ug/l | 2 | 2 | 0.084 B | < 0.15 | < 0.15 | < 0.049 | < 0.049 |
| Nickel | ug/l | 100 | NS | < 2.8 | 2.3 B | < 1.2 | < 1.2 | 1.9 BJ |
| Potassium | ug/l | NS | NS | 3430 B | 2700 B | 3250 B | 2840 B | 3180 BJ |
| Selenium | ug/l | 40 | 50 | < 6.2 | < 0.73 | 1.6 B | < 1.6 | < 3.7 |
| Silver | ug/l | 40 | NS | < 1 | < 0.83 | < 1 | < 1 | 2.2 BJ |
| Sodium | ug/l | 50,000 | NS | 25200 | 19500 | 22400 | 19800 | 24300 |
| Thallium | ug/l | 2 [10] | 2 | < 0.09 | < 1.4 | < 1.3 | 1.3 BJ | < 1.5 |
| Vanadium | ug/l | NS | NS | < 1.8 | < 0.49 | 0.8 B | < 0.43 | < 0.9 |
| Zinc | ug/l | 2000 | NS | < 3.4 | < 2.7 | < 4 | < 6.5 | < 2.9 |
| **Metals - Dissolved** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 23 | < 26 | < 24 | < 24 | < 26 |
| Antimony | ug/l | 6 | 6 | < 5 | < 0.9 | < 1.8 | < 1.8 | < 4 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.5 | 1.6 B | < 1.7 | 2.6 BJ | < 2.4 |
| Barium | ug/l | 6000 | 2000 | 51.2 B | 37.6 B | 43.7 B | 38.8 BJ | 47.4 B |
| Beryllium | ug/l | 1 | 4 | < 0.4 | < 0.15 | < 0.15 | **2.8** | < 1.1 |
| Cadmium | ug/l | 4 | 5 | < 1.3 | < 0.24 | < 0.28 | < 0.28 | < 0.4 |
| Calcium | ug/l | NS | NS | 116000 | 92700 | 98900 J | 91400 J | 109000 |
| Chromium | ug/l | 70 | 100 | < 0.8 | 0.8 B | 0.7 B | < 0.53 | < 0.9 |
| Cobalt | ug/l | NS | NS | < 1.8 | 2.3 B | < 0.51 | < 0.51 | < 50 |
| Copper | ug/l | 1,300 | 1300 | < 2.7 | < 3.3 | < 2.5 | < 0.7 | < 1.6 |
| Iron | ug/l | 300 | NS | **894** | 26.5 J | 38.2 B | < 64.3 J | 70.5 BJ |
| Lead | ug/l | 5 | 15 | < 2.8 | < 0.94 | 2.1 B | < 1.4 | < 1.7 |
| Magnesium | ug/l | NS | NS | 32900 | 28500 | 27800 J | 27700 | 30400 |
| Manganese | ug/l | 50 | NS | **2020 J** | **1430** | **1690 J** | **1600** | **2130** |
| Mercury | ug/l | 2 | 2 | 0.1 B | < 0.15 | < 0.15 | < 0.049 | < 0.049 |
| Nickel | ug/l | 100 | NS | < 2.8 | 1.5 B | 1.6 B | < 1.4 | 1.9 BJ |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 3410 B | 2660 B | 3190 B | 2880 B | 3200 BJ |
| Selenium | ug/l | 40 | 50 | < 6.2 | < 0.73 | < 1.6 | < 1.8 | < 3.7 |
| Silver | ug/l | 40 | NS | < 1 | < 0.83 | < 1 | < 1 | 2 BJ |
| Sodium | ug/l | 50,000 | NS | 25000 | 19200 | 22000 | 20300 | 24700 |
| Thallium | ug/l | 2 [10] | 2 | < 0.09 | < 1.4 | < 1.3 | < 1.3 | < 1.5 |
| Vanadium | ug/l | NS | NS | < 1.8 | < 0.49 | < 0.43 | < 0.43 | < 0.9 |
| Zinc | ug/l | 2000 | NS | < 3.4 | < 2.7 | < 4 | < 4 | < 2.9 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-14B |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(040907) | OB-14B (071011) | OB-14B(080430) | OB-14B(080911) | OB-14B(070609) |
| Sample Date | | | MCLs | 4/9/2007 | 10/11/2007 | 4/30/2008 | 9/11/2008 | 7/6/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | 404000 | 310000 | 355000 | 338000 | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | < 5000 | < 5000 | < 5000 | < 5000 | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 405000 | 311000 | 355000 | 339000 | 414000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 45000 | 38700 | 40900 | 38300 | 41500 |
| Cyanide | ug/l | 100 | 200 | < 10 | < 10 | < 10 J | < 10 | NA |
| Nitrate | ug/l | 10000 | 10000 | < 110 | < 110 | < 110 | < 110 | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | < 10 | < 10 | < 10 | < 10 | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | < 100 | < 100 | < 100 | < 100 | NA |
| Phosphorus, Total | ug/l | NS | NS | 59 | < 50 | < 50 | < 50 | NA |
| Sulfate | ug/l | 250000 | NS | 14800 | 22000 | 18300 | 20300 | 11900 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.26 | < 0.26 | < 0.2 | < 0.24 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.24 | < 0.24 | < 0.12 | < 0.2 | < 0.28 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.23 | < 0.23 | < 0.13 | < 0.23 | < 0.32 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.29 | < 0.29 | < 0.16 | < 0.19 | < 0.23 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.4 | < 0.4 | < 0.24 | < 0.28 | < 0.33 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.56 | < 0.56 | < 0.16 | < 0.15 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.1* | < 1.1* | < 1.2* | < 1.3* | < 1.1 * |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.39* | < 0.39* | < 0.39* | < 0.21* | < 0.52 * |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.26 | < 0.26 | < 0.15 | < 0.18 | < 0.2 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.33 | < 0.33 | < 0.31 | < 0.18 | < 0.29 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.27 | < 0.27 | < 0.23 | < 0.22 | < 0.2 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.25 | < 0.25 | < 0.19 | < 0.29 | < 0.32 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.28 | < 0.28 | < 0.22 | < 0.26 | < 0.24 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 1.6 | < 1.6 | < 1.7 | < 2.9 | < 2.6 |
| 2-Hexanone | ug/l | NS | NS | < 1.4 | < 1.4 | < 1.9 | < 3 | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 0.86 | < 0.86 | < 0.74 | < 1.2 | < 1.1 |
| Acetone | ug/l | 6000 | NS | < 2.9 | < 2.9 | < 4.4 | < 7.6 | < 2.4 |
| Benzene | ug/l | 1 | 5 | < 0.23 | < 0.23 | < 0.26 | < 0.22 | < 0.21 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.22 | < 0.22 | < 0.18 | < 0.23 | < 0.17 |
| Bromoform | ug/l | 4 | 80 | < 0.23 | < 0.23 | < 0.42 | < 0.24 | < 0.54 |
| Bromomethane | ug/l | 10 | NS | < 0.3 | < 0.3 | < 0.24 | < 0.31 | < 0.22 |
| Carbon disulfide | ug/l | 700 | NS | < 0.74 | < 0.74 | < 0.13 | < 0.18 | < 0.21 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.26 | < 0.26 | < 0.35 | < 0.19 | < 0.29 J |
| Chlorobenzene | ug/l | 50 | 100 | < 0.39 | < 0.39 | < 0.15 | < 0.22 | < 0.22 |
| Chloroethane | ug/l | NS | NS | < 0.37 | < 0.37 | < 0.25 | < 0.37 | < 0.56 |
| Chloroform | ug/l | 70 | 80 | < 0.23 | < 0.23 | < 0.14 | < 0.21 | < 0.22 |
| Chloromethane | ug/l | NS | NS | < 0.29 | < 0.29 | < 0.34 | < 0.22 | < 0.35 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.22 | < 0.22 | < 0.24 | < 0.22 | < 0.18 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.25 | < 0.25 | < 0.16 | < 0.22 | < 0.15 |
| Cyclohexane | ug/l | NS | NS | < 1.9 | < 1.9 | < 0.43 | < 0.29 | < 0.5 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.22 | < 0.22 | < 0.16 | < 0.2 | < 0.19 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.92 | < 0.92 | < 0.39 | < 0.31 | < 0.75 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.27 | < 0.27 | < 0.31 | < 0.21 | < 0.2 |
| Freon 113 | ug/l | NS | NS | < 0.38 | < 0.38 | < 0.66 | < 0.49 | < 0.69 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.57 | < 0.57 | < 0.31 | < 0.19 | < 0.2 |
| Methyl acetate | ug/l | 7000 | NS | < 1.5 | < 1.5 | < 1.3 | < 2.9 | < 2.1 |
| Methyl tert butyl ether | ug/l | 70 | NS | 0.38 J | 0.38 J | 0.41 J | 0.24 J | < 0.31 |
| Methylcyclohexane | ug/l | NS | NS | < 0.35 | < 0.35 | < 0.16 | < 0.18 | < 0.18 |
| Methylene chloride | ug/l | 3 | 5 | < 0.3 | < 0.3 | < 0.2 | < 0.2 | < 0.27 |
| o-Xylene | ug/l | NS | NS | < 0.25 | NA | NA | NA | < 0.31 |
| Styrene | ug/l | 100 | 100 | < 0.58 | < 0.58 | < 0.48 | < 0.23 | < 0.16 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.27 | < 0.27 | < 0.24 | < 0.32 | < 0.28 |
| Toluene | ug/l | 600 | 1000 | < 0.3 | < 0.3 | < 0.27 | < 0.15 | < 0.2 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.25 | < 0.25 | < 0.3 | < 0.31 | < 0.42 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.21 | < 0.21 | < 0.22 | < 0.19 | < 0.2 |
| Trichloroethene | ug/l | 1 | 5 | < 0.24 | < 0.24 | < 0.22 | < 0.21 | < 0.29 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.54 | < 0.54 | < 0.23 | < 0.35 | < 0.25 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.44 | < 0.44 | < 0.22 | < 0.27 | < 0.29 |
| Xylene, -m,p | ug/l | NS | NS | < 0.25 | NA | NA | NA | < 0.42 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.25 | < 0.25 | < 0.28 | < 0.17 | < 0.31 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.42 | < 0.48 | < 0.42 | < 0.33 | < 0.35 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.3 | < 1.5 | < 1.3 | < 1.7 | < 2.1 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.2 | < 1.4 | < 1.2 | < 1.4 | < 1.4 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.2 | < 1.4 | < 1.2 | < 1.2 | < 1.7 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.7 | < 1.9 | < 1.7 | < 1.6 | < 1.8 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.74 J | < 0.84 | < 0.74 | < 18 | < 0.96 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.22 | < 0.25 | < 0.22 | < 0.46 | < 0.92 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.33 | < 0.37 | < 0.33 | < 0.5 | < 0.6 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.42 | < 0.47 | < 0.42 | < 0.32 | < 1.1 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.1 | < 1.2 | < 1.1 | < 1 | < 1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.66 | < 0.75 | < 0.66 | < 0.41 | < 0.44 |
| 2-Methylphenol | ug/l | NS | NS | < 1.1 | < 1.3 | < 1.1 | < 1.1 | < 1.5 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.24 | < 0.27 | < 0.24 | < 1.2 | < 0.71 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.2 | < 1.4 | < 1.2 | < 1.6 | < 1.9 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1 | < 1.2 | < 1 | < 0.99 | < 1.4 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 0.3 | < 0.34 | < 0.3 | < 0.39 | < 1.3 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.29 | < 0.33 | < 0.29 | < 1.4 | < 1.4 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.51 | < 0.58 | < 0.51 | < 1.1 | < 0.78 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.35 | < 0.4 | < 0.35 | < 0.38 | < 0.32 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.1 | < 1.2 | < 1.1 | < 2 | < 1.3 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.25 | < 0.29 | < 0.25 | < 0.57 | < 0.43 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.35 | < 0.4 | < 0.35 | < 0.34 | < 0.46 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.18 | < 0.2 | < 0.18 | < 1.8 | < 0.78 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.83 | < 0.94 | < 0.83 | < 5.6 | < 0.91 |
| Acetophenone | ug/l | 700 | NS | < 0.4 | < 0.45 | < 0.4 | < 0.31 | < 0.4 |
| Atrazine | ug/l | 3 | 3 | < 0.39 | < 0.44 | < 0.39 | < 0.52 | < 0.18 |
| Benzaldehyde | ug/l | NS | NS | < 0.4 | < 0.46 | < 0.4 | < 3.5 | < 0.28 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.25 | < 0.29 | < 0.25 | < 0.31 | < 0.64 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.25 | < 0.28 | < 0.25 | < 0.33 | < 0.7 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.31 | < 0.35 | < 0.31 | < 0.33 | < 0.57 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.39 | < 0.44 | < 0.39 | < 0.49 | < 0.79 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.33 | < 0.37 | < 0.33 | < 0.63 | < 0.71 |
| Caprolactam | ug/l | NS | NS | < 0.2 | < 0.22 | < 0.2 | < 0.74 | < 0.34 |
| Carbazole | ug/l | NS | NS | < 0.17 | < 0.19 | < 0.17 | < 0.39 | < 0.39 |
| Dibenzofuran | ug/l | NS | NS | < 0.3 | < 0.35 | < 0.3 | < 0.28 | < 0.37 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.17 | < 0.19 | < 0.17 | < 0.35 | < 0.42 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.23 | < 0.26 | < 0.23 | < 0.3 | < 0.35 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.19 | < 0.22 | < 0.19 | < 0.6 | < 0.64 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.4 | < 0.45 | < 0.4 | < 0.33 | < 0.61 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.37 | < 0.14 | < 0.13 | < 0.55 | < 0.19 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.67 | < 0.28 | < 0.24 | < 7.6 | < 0.44 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.26 | < 0.24 | < 0.21 | < 0.59 | < 0.3 |
| Isophrone | ug/l | 40 | NS | < 0.25 | < 0.28 | < 0.25 | < 0.29 | < 0.63 |
| Nitrobenzene | ug/l | 6 | NS | < 0.25 | < 0.29 | < 0.25 | < 0.45 | < 0.45 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.44 | < 0.5 | < 0.44 | < 0.32 | < 0.5 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.22 | < 0.24 | < 0.22 | < 0.33 | < 0.55 |
| Phenol | ug/l | 2000 | NS | < 0.65 J | < 0.66 | < 0.58 | < 1.4 | < 0.53 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 0 | 7 J | 5.8 J | 6 J | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.029 | < 0.033 | < 0.014 | < 0.015 | < 0.018 |
| Acenaphthylene | ug/l | NS | NS | < 0.039 | < 0.045 | < 0.016 | < 0.017 | < 0.01 |
| Anthracene | ug/l | 2000 | NS | < 0.026 | < 0.029 | < 0.01 | < 0.011 | < 0.022 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.024 | < 0.027 | < 0.015 | < 0.016 | < 0.0073 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.031 | < 0.035 | < 0.0049 | < 0.0053 | < 0.018 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.036 | < 0.041 | < 0.016 | < 0.018 | < 0.039 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.029 | < 0.033 | < 0.01 | < 0.011 | < 0.019 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.028 | < 0.032 | < 0.013 | < 0.013 | < 0.017 |
| Chrysene | ug/l | 5 | NS | < 0.022 | < 0.025 | < 0.023 | < 0.025 | < 0.018 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.023 | < 0.026 | < 0.023 | < 0.024 | < 0.018 |
| Fluoranthene | ug/l | 300 | NS | < 0.024 | < 0.028 | < 0.0096 | < 0.01 | < 0.0097 |
| Fluorene | ug/l | 300 | NS | < 0.027 | < 0.031 | < 0.015 | < 0.016 | < 0.022 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.0099 | < 0.011 | < 0.008 | < 0.0086 | < 0.065* |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.029 | < 0.033 | < 0.011 | < 0.011 | < 0.012 |
| Naphthalene | ug/l | 300 | NS | < 0.019 | < 0.021 | < 0.016 | < 0.017 | < 0.028 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.22 | < 0.077 | < 0.29 | < 0.11 J | < 0.43 * |
| Phenanthrene | ug/l | NS | NS | < 0.036 | < 0.041 | < 0.016 | < 0.017 | < 0.023 |
| Pyrene | ug/l | 200 | NS | < 0.022 | < 0.025 | < 0.0081 | < 0.0087 | < 0.015 |
| **PCBs** | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.3 | < 0.3 | < 0.13 | < 0.13 | < 0.1 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.41 | < 0.41 | < 0.28 | < 0.27 | < 0.5 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.31 | < 0.31 | < 0.39 | < 0.39 | < 0.41 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.27 | < 0.27 | < 0.088 | < 0.086 | < 0.17 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.28 | < 0.28 | < 0.15 | < 0.15 | < 0.16 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.18 | < 0.18 | < 0.14 | < 0.14 | < 0.12 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.14 | < 0.14 | < 0.21 | < 0.21 | < 0.12 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | < 0.0026 |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | < 0.0018 |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | < 0.0052 |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | < 0.0036 |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | < 0.0028 |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | < 0.0046 |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | < 0.0066 |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | < 0.0033 |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | < 0.0018 |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | < 0.0022 |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | < 0.0034 |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | < 0.0049 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | < 0.0032 |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | < 0.0069 |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | < 0.0037 |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | < 0.0018 |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | < 0.0027 |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | < 0.0016 |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | < 0.0018 |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | < 0.0072 |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | < 0.1 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | 57.9 B | < 7.8 | **860** | 164 B | < 110 |
| Antimony | ug/l | 6 | 6 | < 2.9 | < 2.2 | < 1.3 | < 1.4 | < 4.4 |
| Arsenic | ug/l | 3 [8] | 10 | < 2.4 | < 1.4 | 1.6 J | < 3 | **6.2** |
| Barium | ug/l | 6000 | 2000 | 40.2 B | 52.4 B | 51.7 B | 55.6 B | 92.2 B |
| Beryllium | ug/l | 1 | 4 | < 0.4 | < 1 | < 0.24 | < 0.44 | < 0.5 |
| Cadmium | ug/l | 4 | 5 | < 0.4 | < 0.35 | < 0.17 | < 3 | < 0.6 |
| Calcium | ug/l | NS | NS | 90000 | 113000 | 111000 | 112000 | 147000 |
| Chromium | ug/l | 70 | 100 | < 10 | 1.4 B | < 10 | < 0.91 | < 1.6 |
| Cobalt | ug/l | NS | NS | < 1.6 | < 0.65 | < 50 | < 0.59 | < 1.7 |
| Copper | ug/l | 1,300 | 1300 | < 1.6 | < 2.5 | < 0.85 | < 10 | < 2.3 |
| Iron | ug/l | 300 | NS | **719** | **729** | **1740** | **865** | **9890** |
| Lead | ug/l | 5 | 15 | < 1.7 | < 1.9 | 4.8 J | < 1.7 | < 2.6 |
| Magnesium | ug/l | NS | NS | 31200 | 30800 | 31700 | 31700 | 20500 |
| Manganese | ug/l | 50 | NS | **1630** | **2190** | **2100** | **2110** | **2840** |
| Mercury | ug/l | 2 | 2 | < 0.082 J | < 0.082 | < 0.088 | < 0.075 | < 0.08 |
| Nickel | ug/l | 100 | NS | < 10 | 2 B | 3.9 J | 2.4 J | < 1.6 |
| Potassium | ug/l | NS | NS | 3710 B | 3630 B | 3570 B | 3540 B | 11100 |
| Selenium | ug/l | 40 | 50 | < 3.7 | 3.5 B | < 1.5 | < 10 | < 3 |
| Silver | ug/l | 40 | NS | < 1 | 1 B | < 0.72 | 2.1 B | < 1.9 |
| Sodium | ug/l | 50,000 | NS | 28800 | 26300 | 23800 | 25300 | 25800 |
| Thallium | ug/l | 2 [10] | 2 | < 1.5 | < 1.8 | < 0.17 | < 1.7 | < 0.09 |
| Vanadium | ug/l | NS | NS | < 0.9 | < 0.56 | < 50 | < 0.77 | < 1.9 |
| Zinc | ug/l | 2000 | NS | < 2.9 | < 20 | 5.5 J | < 2.8 | < 3.3 |
| **Metals - Dissolved** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 26 | < 200 | < 200 | < 16 | < 110 |
| Antimony | ug/l | 6 | 6 | < 2.9 | < 2.2 | < 1.3 | < 1.4 | < 4.4 |
| Arsenic | ug/l | 3 [8] | 10 | < 2.4 | < 1.4 | < 0.92 | < 0.97 | **4.2** |
| Barium | ug/l | 6000 | 2000 | 39.9 B | 50.7 B | 47.7 B | 53.3 B | 86.9 B |
| Beryllium | ug/l | 1 | 4 | < 0.4 | < 1 | < 0.24 | < 0.44 | < 0.5 |
| Cadmium | ug/l | 4 | 5 | < 0.4 | < 0.35 | < 0.17 | < 3 | < 0.6 |
| Calcium | ug/l | NS | NS | 92100 | 111000 | 114000 | 112000 | 142000 |
| Chromium | ug/l | 70 | 100 | 1.3 B | 1.7 B | < 0.9 | < 0.91 | < 1.6 |
| Cobalt | ug/l | NS | NS | < 1.6 | < 0.65 | < 50 | < 0.59 | < 1.7 |
| Copper | ug/l | 1,300 | 1300 | < 1.6 | < 2.5 | < 0.85 | < 10 | < 2.3 |
| Iron | ug/l | 300 | NS | 54.2 B | 99.6 B | 97.5 J | 102 J | **9620** |
| Lead | ug/l | 5 | 15 | < 1.7 | < 1.9 | < 3 | < 1.7 | < 2.6 |
| Magnesium | ug/l | NS | NS | 31400 | 31000 | 32000 | 31600 | 19800 |
| Manganese | ug/l | 50 | NS | **1660** | **2180** | **2080** | **2090** | **2770** |
| Mercury | ug/l | 2 | 2 | **2.2 J** | < 0.082 | < 0.088 | < 0.075 | 0.1 B |
| Nickel | ug/l | 100 | NS | < 10 | 2.6 B | 2 J | 2.3 J | < 1.6 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 3730 B | 3500 B | 3470 B | 3590 B | 10600 |
| Selenium | ug/l | 40 | 50 | < 3.7 | 2.6 B | < 1.5 | < 10 | < 3 |
| Silver | ug/l | 40 | NS | < 1 | 0.8 B | < 0.72 | 2 J | < 1.9 |
| Sodium | ug/l | 50,000 | NS | 28900 | 25800 | 24100 | 26100 | 24800 |
| Thallium | ug/l | 2 [10] | 2 | < 1.5 | < 1.8 | < 0.17 | < 1.7 | < 0.09 |
| Vanadium | ug/l | NS | NS | < 0.9 | < 0.56 | < 0.43 | < 0.77 | < 1.9 |
| Zinc | ug/l | 2000 | NS | 3.5 B | 7.3 J | 3.6 J | < 20 | < 3.3 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-14B | OB-14B | OB-14B | OB-14B | OB-16 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-14B(102309) | OB-14B(052810) | OB-14B(051911) | OB-14B(041812) | OB-16 (9/27/2006) |
| Sample Date | | | MCLs | 10/23/2009 | 5/28/2010 | 5/19/2011 | 4/18/2012 | 9/27/2006 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | NA | NA | 418000 |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | NA | NA | < 5000 |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 366000 | 405000 | 408000 | 414000 | NA |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 35300 | 43400 | 51800 | 53500 | 36200 |
| Cyanide | ug/l | 100 | 200 | NA | NA | NA | NA | < 10 |
| Nitrate | ug/l | 10000 | 10000 | NA | NA | NA | NA | < 110 |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | NA | NA | NA | < 10 |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | NA | NA | NA | < 100 |
| Phosphorus, Total | ug/l | NS | NS | NA | NA | NA | NA | 86 |
| Sulfate | ug/l | 250000 | NS | 14000 | 11800 | < 10000 | 12700 | 19300 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.28 | < 0.3 | < 0.24 | < 0.24 | < 0.26 | NA |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.28 | < 0.8 | < 0.13 | < 0.13 | < 0.24 | NA |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.32 | < 0.49 | < 0.17 | < 0.17 | < 0.23 | NA |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.23 | < 0.2 | < 0.16 | < 0.24 | < 0.29 | NA |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.33 | < 0.28 | < 0.29 | < 0.29 | < 0.4 | NA |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.16 | < 0.41 | < 1.3 | < 1.3 | < 0.56 | NA |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.1 * | < 0.8* | < 2.4* | < 1.3* | < 1.1* | NA |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.52 * | < 0.45* | < 0.17* | < 0.18* | < 0.39* | NA |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.2 | < 0.2 | < 0.18 | < 0.18 | < 0.26 | NA |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.29 | < 0.29 | < 0.35 | < 0.35 | < 0.33 | NA |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.2 | < 0.24 | < 0.18 | < 0.18 | < 0.27 | NA |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.32 | < 0.21 | < 0.26 | < 0.26 | < 0.25 | NA |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.24 | < 0.17 | < 0.32 | < 0.22 | < 0.28 | NA |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 2.6 | < 2.7 | < 2.3 | < 2.3 | < 1.6 | NA |
| 2-Hexanone | ug/l | NS | NS | < 1.3 | < 0.94 | < 1.7 | < 1.7 | < 1.4 | NA |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 1.1 | < 1.4 | < 1.9 | < 1.3 | < 0.86 | NA |
| Acetone | ug/l | 6000 | NS | < 2.4 | < 2.9 | < 2.1 | < 2.1 | < 2.9 | NA |
| Benzene | ug/l | 1 | 5 | < 0.21 | < 0.19 | < 0.26 | < 0.26 | < 0.23 | NA |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.17 | < 0.15 | < 0.14 | < 0.14 | < 0.22 | NA |
| Bromoform | ug/l | 4 | 80 | < 0.54 | < 0.34 | < 0.18 | < 0.18 | < 0.23 | NA |
| Bromomethane | ug/l | 10 | NS | < 0.22 | < 0.38 | < 0.32 | < 0.32 | < 0.3 | NA |
| Carbon disulfide | ug/l | 700 | NS | < 0.21 | < 0.14 | < 0.15 | < 0.16 | < 0.74 | NA |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.29 | < 0.19 | < 0.18 | < 0.18 | < 0.26 | NA |
| Chlorobenzene | ug/l | 50 | 100 | < 0.22 | < 0.19 | < 0.14 | < 0.19 | < 0.39 | NA |
| Chloroethane | ug/l | NS | NS | < 0.56 | < 0.67 | < 0.22 | < 0.22 | < 0.37 | NA |
| Chloroform | ug/l | 70 | 80 | < 0.22 | < 0.25 | < 0.16 | < 0.16 | < 0.23 | NA |
| Chloromethane | ug/l | NS | NS | < 0.35 | < 0.3 | < 0.29 | < 0.29 | < 0.29 | NA |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.18 | < 0.27 | < 0.19 | < 0.25 | < 0.22 | NA |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.15 | < 0.13 | < 0.15 | < 0.18 | < 0.25 | NA |
| Cyclohexane | ug/l | NS | NS | < 0.5 | < 0.85 | < 0.85 | < 0.85 | < 1.9 | NA |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.19 | < 0.28 | < 0.12 | < 0.16 | < 0.22 | NA |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.75 | < 1 | < 0.88 | < 0.88 | < 0.92 | NA |
| Ethylbenzene | ug/l | 700 | 700 | < 0.2 | < 0.21 | < 0.27 | < 0.27 | < 0.27 | NA |
| Freon 113 | ug/l | NS | NS | < 0.69 | < 1.2 | < 0.8 | < 0.8 | < 0.38 | NA |
| Isopropylbenzene | ug/l | 700 | NS | < 0.2 | < 0.54 | < 0.15 | < 0.19 | < 0.57 | NA |
| Methyl acetate | ug/l | 7000 | NS | < 2.1 | < 1.6 | < 2.5 | < 1.7 | < 1.5 | NA |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.31 | < 0.2 | < 0.14 | < 0.16 | < 0.23 | NA |
| Methylcyclohexane | ug/l | NS | NS | < 0.18 | < 0.5 | < 0.11 | < 0.11 | < 0.35 | NA |
| Methylene chloride | ug/l | 3 | 5 | < 0.27 | < 0.21 | < 0.16 | < 0.16 | < 0.3 | NA |
| o-Xylene | ug/l | NS | NS | < 0.31 | < 0.2 | < 0.45 | < 0.45 | < 0.25 | NA |
| Styrene | ug/l | 100 | 100 | < 0.16 | < 0.2 | < 0.11 | < 0.17 | < 0.58 | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.28 | < 0.28 | < 0.29 | < 0.29 | < 0.27 | NA |
| Toluene | ug/l | 600 | 1000 | < 0.2 | < 0.21 | < 0.15 | < 0.15 | < 0.3 | NA |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.42 | < 0.32 | < 0.16 | < 0.16 | < 0.25 | NA |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.2 | < 0.17 | < 0.11 | < 0.15 | < 0.21 | NA |
| Trichloroethene | ug/l | 1 | 5 | < 0.29 | < 0.26 | < 0.18 | < 0.18 | < 0.24 | NA |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.25 | < 0.26 | < 0.25 | < 0.25 | < 0.54 | NA |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.29 | < 0.22 | < 0.21 | < 0.21 | < 0.44 | NA |
| Xylene, -m,p | ug/l | NS | NS | < 0.42 | < 0.35 | < 0.39 | < 0.39 | < 0.25 | NA |
| Xylenes | ug/l | 1,000 | 10000 | < 0.31 | < 0.2 | < 0.39 | < 0.39 | < 0.25 | NA |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.36 | < 0.33 | < 0.23 J | < 0.59 | < 0.46 | < 0.45 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 2.1 | < 1.9 | < 1.2 J | < 2.1 | < 1.5 | < 1.4 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.4 | < 1.3 | < 1.1 J | < 1.7 | < 1.3 | < 1.3 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.7 | < 1.6 | < 1.5 J | < 2.1 | < 1.3 | < 1.3 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 | < 1.6 | < 1.7 J | < 2.1 | < 1.8 | < 1.8 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.99 | < 0.89 | < 1.2 J | < 4.5 | < 0.81 | < 0.78 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.96 | < 0.86 | < 0.57 J | < 0.49 | < 0.24 | < 0.23 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.62 | < 0.56 | < 0.53 J | < 0.65 | < 0.36 | < 0.35 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 1.1 | < 0.98 | < 0.21 J | < 0.52 | < 0.46 | < 0.44 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.1 | < 0.95 | < 0.92 J | < 1.6 | < 1.2 | < 1.1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.45 | < 0.41 | < 0.8 J | < 0.47 | < 0.72 | < 0.7 |
| 2-Methylphenol | ug/l | NS | NS | < 1.5 | < 1.4 | < 1.1 J | < 1.5 | < 1.2 | < 1.2 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.74 | < 0.66 | < 0.52 J | < 0.48 | < 0.26 | < 0.25 |
| 2-Nitrophenol | ug/l | NS | NS | < 2 | < 1.8 | < 1.6 J | < 2.1 | < 1.4 | < 1.3 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.4 | < 1.3 | < 1.2 J | < 1.6 | < 1.1 | < 1.1 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 1.4 | < 1.2 | < 1 J | < 4.9 | < 0.32 | < 0.31 |
| 3-Nitroaniline | ug/l | NS | NS | < 1.4 | < 1.3 | < 0.34 J | < 0.48 | < 0.32 | < 0.31 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.8 | < 0.72 | < 2.3 J | < 1.3 | < 0.56 | < 0.55 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.33 | < 0.3 | < 0.39 J | < 0.44 | < 0.38 | < 0.37 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.3 | < 1.2 | < 1.3 J | < 2.5 | < 1.2 | < 1.1 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.44 | < 0.4 | < 0.37 J | < 0.36 | < 0.28 | < 0.27 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.48 | < 0.43 | < 0.31 J | < 0.49 | < 0.39 | < 0.38 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.8 | < 0.72 | < 0.62 J | < 0.49 | < 0.2 | < 0.19 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.94 | < 0.84 | < 1.7 J | < 2.4 | < 0.91 | < 0.88 |
| Acetophenone | ug/l | 700 | NS | < 0.42 | < 0.37 | < 0.38 J | < 0.5 | < 0.44 | < 0.42 |
| Atrazine | ug/l | 3 | 3 | < 0.18 | < 0.16 | < 0.3 J | < 0.66 | < 0.43 | < 0.42 |
| Benzaldehyde | ug/l | NS | NS | < 0.29 | R | < 0.8 J | < 1.7 | < 0.44 | < 0.43 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.66 | < 0.59 | < 0.67 J | < 0.45 | < 0.28 | < 0.27 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.73 | < 0.65 | < 0.33 J | < 0.56 | < 0.27 | < 0.26 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.59 | < 0.53 | < 0.71 J | < 0.53 | < 0.34 | < 0.33 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.82 | < 0.74 | < 0.61 J | < 0.58 | < 0.43 | < 0.41 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.73 | < 0.66 | < 0.92 J | < 0.81 | < 0.36 | < 0.35 |
| Caprolactam | ug/l | NS | NS | < 0.35 | < 0.32 | < 0.52 J | < 0.67 | < 0.21 | < 0.21 |
| Carbazole | ug/l | NS | NS | < 0.4 | < 0.36 | < 0.42 J | < 0.48 | < 0.18 | < 0.18 |
| Dibenzofuran | ug/l | NS | NS | < 0.38 | < 0.34 | < 0.24 J | < 0.52 | < 0.33 | < 0.32 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.43 | < 0.39 | < 0.36 J | < 0.39 | < 0.18 | < 0.18 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.36 | < 0.33 | < 0.35 J | < 0.39 | < 0.25 | < 0.24 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.66 | < 0.59 | < 0.42 J | < 0.54 | < 0.21 | < 0.2 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.63 | < 0.57 | < 0.5 J | < 0.53 | < 0.43 | < 0.42 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.19 | < 0.18 | < 0.13 J | < 0.4 | < 0.41 | < 0.4 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.45 | < 0.41 | < 0.11 J | < 4.9 | < 0.74 | < 0.71 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.31 | < 0.28 | < 0.17 J | < 0.32 | < 0.29 | < 0.28 |
| Isophrone | ug/l | 40 | NS | < 0.65 | < 0.59 | < 0.51 J | < 0.74 | < 0.27 | < 0.26 |
| Nitrobenzene | ug/l | 6 | NS | < 0.47 | < 0.42 | < 0.74 J | < 0.71 | < 0.28 | < 0.27 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.52 | < 0.47 | < 0.4 J | < 0.42 | < 0.48 | < 0.47 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.57 | < 0.52 | < 0.44 J | < 0.65 | < 0.24 | < 0.23 |
| Phenol | ug/l | 2000 | NS | < 0.55 | < 0.5 | < 0.72 J | < 1.5 | < 0.63 | < 0.61 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 6.3 J | 27.4 J | 0 | 0 | 6.3 J | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.019 | < 0.017 | < 0.017 | < 0.017 | < 0.018 | < 0.031 |
| Acenaphthylene | ug/l | NS | NS | < 0.011 | < 0.0095 | < 0.0074 | < 0.0075 | < 0.0077 | < 0.042 |
| Anthracene | ug/l | 2000 | NS | < 0.023 | < 0.021 | < 0.022 | < 0.023 | < 0.023 | < 0.027 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.0076 | < 0.0068 | < 0.035 | < 0.036 | < 0.037 | < 0.025 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.019 | < 0.017 | < 0.037 | < 0.038 | < 0.039 | < 0.033 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.04 | < 0.036 | < 0.018 | < 0.018 | < 0.019 | < 0.038 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.02 | < 0.018 | < 0.012 | < 0.013 | < 0.013 | < 0.031 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.017 | < 0.016 | < 0.02 | < 0.02 | < 0.021 | < 0.03 |
| Chrysene | ug/l | 5 | NS | < 0.019 | < 0.017 | < 0.019 | < 0.019 | < 0.019 | < 0.023 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.018 | < 0.016 | < 0.021 | < 0.022 | < 0.022 | < 0.024 |
| Fluoranthene | ug/l | 300 | NS | < 0.01 | < 0.009 | < 0.01 | < 0.01 | < 0.011 | < 0.026 |
| Fluorene | ug/l | 300 | NS | < 0.022 | < 0.02 | < 0.021 | < 0.021 | < 0.022 | < 0.029 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.022* | < 0.02 | < 0.01 | < 0.011 | < 0.011 | < 0.011 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.012 | < 0.011 | < 0.015 | < 0.015 | < 0.016 | < 0.031 |
| Naphthalene | ug/l | 300 | NS | < 0.029 | < 0.026 | < 0.015 | < 0.015 | < 0.015 | < 0.02 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.33* | < 0.3 | < 0.23 | < 0.24 | < 0.25 | < 0.24 |
| Phenanthrene | ug/l | NS | NS | < 0.023 | < 0.021 | < 0.018 | < 0.018 | < 0.019 | < 0.038 |
| Pyrene | ug/l | 200 | NS | < 0.016 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.024 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | R | < 0.099 | < 0.099 | < 0.1 | < 0.21 | < 0.31 |
| PCB 1221 | ug/l | 0.5 | 0.5 | R | < 0.49 | < 0.5 | < 0.5 | < 0.34 | < 0.42 |
| PCB 1232 | ug/l | 0.5 | 0.5 | R | < 0.41 | < 0.41 | < 0.41 | < 0.23 | < 0.32 |
| PCB 1242 | ug/l | 0.5 | 0.5 | R | < 0.17 | < 0.17 | < 0.17 | < 0.099 | < 0.28 |
| PCB 1248 | ug/l | 0.5 | 0.5 | R | < 0.16 | < 0.16 | < 0.16 | < 0.28 | < 0.29 |
| PCB 1254 | ug/l | 0.5 | 0.5 | R | < 0.11 | < 0.12 | < 0.12 | < 0.12 | < 0.19 |
| PCB 1260 | ug/l | 0.5 | 0.5 | R | < 0.12 | < 0.12 | < 0.12 | < 0.16 | < 0.14 |
| Total PCBs | ug/l | 0.5 | 0.5 | R | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 23 | < 26 | < 24 | < 24 | 129 BJ | < 26 |
| Antimony | ug/l | 6 | 6 | < 5 | < 0.9 | < 1.8 | < 1.8 | < 4 | < 2.9 |
| Arsenic | ug/l | 3 [8] | 10 | **4.4** | **8.8** | **4.6** | **7.4** | **5.1** | **6.1** |
| Barium | ug/l | 6000 | 2000 | 79.6 B | 87.7 B | 81 B | 80.4 BJ | 88.1 B | 90.4 B |
| Beryllium | ug/l | 1 | 4 | < 0.4 | < 0.15 | < 0.15 | < 0.15 | < 0.4 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | < 1.3 | < 0.24 | < 0.28 | < 0.28 | 0.6 B | < 0.4 |
| Calcium | ug/l | NS | NS | 133000 | 141000 | 138000 | 123000 J | 149000 | 141000 |
| Chromium | ug/l | 70 | 100 | < 0.8 | 0.9 B | < 0.53 | < 1.6 | < 0.9 | 0.9 B |
| Cobalt | ug/l | NS | NS | < 1.8 | 5.2 B | 1.8 B | < 1.2 | 1.5 B | < 1.6 |
| Copper | ug/l | 1,300 | 1300 | < 2.7 | < 3.3 | < 2.5 | < 2.5 | < 2 | < 1.6 |
| Iron | ug/l | 300 | NS | **8050** | **15400** | **11100** | **12200 J** | **12400** | **13200** |
| Lead | ug/l | 5 | 15 | < 2.8 | < 0.94 | 3.7 | < 1.4 | < 1.7 | < 1.7 |
| Magnesium | ug/l | NS | NS | 19600 | 20700 | 21500 | 18000 | 20500 | 19500 |
| Manganese | ug/l | 50 | NS | **2230** | **3940** | **2860** | **3250** | **3030** | **3440** |
| Mercury | ug/l | 2 | 2 | < 0.037 | < 0.15 | < 0.15 | < 0.049 | < 0.049 | < 0.082 |
| Nickel | ug/l | 100 | NS | < 2.8 | 1.7 B | < 1.2 | < 1.2 | < 10 | < 10 |
| Potassium | ug/l | NS | NS | 8670 | 10600 | 8980 B | 10000 | 9650 B | 10100 |
| Selenium | ug/l | 40 | 50 | < 6.2 | < 0.73 | < 1.6 | < 1.6 | < 3.7 | < 3.7 |
| Silver | ug/l | 40 | NS | < 1 | < 0.83 | < 1 | < 1 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 21100 J | 31300 | 26800 | 25100 | 25700 | 27900 |
| Thallium | ug/l | 2 [10] | 2 | < 0.09 | < 1.4 | < 1.3 | < 1.3 | < 2 | < 1.5 |
| Vanadium | ug/l | NS | NS | < 1.8 | < 0.49 | < 0.43 | 0.6 BJ | < 0.9 | < 0.9 |
| Zinc | ug/l | 2000 | NS | < 3.4 | < 2.7 | < 4 | < 4 | < 2.9 | < 2.9 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 23 | < 26 | < 24 | < 24 | 134 B | < 26 |
| Antimony | ug/l | 6 | 6 | < 5 | < 0.9 | < 1.8 | < 1.8 | < 4 | < 2.9 |
| Arsenic | ug/l | 3 [8] | 10 | **3.3** | **3.6** | < 1.7 | 2.6 BJ | < 2.4 | < 2.4 |
| Barium | ug/l | 6000 | 2000 | 76.8 B | 69.6 B | 64.2 B | 62.5 BJ | 72.3 B | 68 B |
| Beryllium | ug/l | 1 | 4 | < 0.4 | < 0.15 | < 0.15 | < 0.15 | < 0.4 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | < 1.3 | < 0.24 | < 0.28 | < 0.28 | 0.4 B | < 0.4 |
| Calcium | ug/l | NS | NS | 135000 | 136000 | 134000 | 120000 J | 148000 | 139000 |
| Chromium | ug/l | 70 | 100 | < 0.8 | 1.7 B | < 0.53 | < 1.2 | < 10 | < 0.9 |
| Cobalt | ug/l | NS | NS | < 1.8 | 4.6 B | 1.7 B | 1.1 BJ | 1.6 B | < 1.6 |
| Copper | ug/l | 1,300 | 1300 | < 2.7 | < 3.3 | < 2.5 | < 2.5 | < 10 | < 1.6 |
| Iron | ug/l | 300 | NS | **9140** | **5400** | **912** | **3660 J** | **2610** | **907** |
| Lead | ug/l | 5 | 15 | < 2.8 | < 0.94 | 1.6 B | < 1.4 | < 1.7 | < 1.7 |
| Magnesium | ug/l | NS | NS | 20100 | 20200 | 20800 | 17600 | 20900 | 19300 |
| Manganese | ug/l | 50 | NS | **2470** | **3830** | **2740** | **3210** | **2990** | **3410** |
| Mercury | ug/l | 2 | 2 | < 0.037 | < 0.15 | < 0.15 | < 0.049 | < 0.049 | < 0.082 J |
| Nickel | ug/l | 100 | NS | < 2.8 | 1.4 B | < 1.2 | < 1.2 | < 10 | < 10 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 8340 | 10400 | 8890 B | 9760 B | 9780 B | 9990 B |
| Selenium | ug/l | 40 | 50 | < 6.2 | < 0.73 | < 1.6 | < 2.1 | < 3.7 | < 3.7 |
| Silver | ug/l | 40 | NS | < 1 | < 0.83 | < 1 | < 1 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 20900 J | 30400 | 26500 | 24600 | 26100 | 27400 |
| Thallium | ug/l | 2 [10] | 2 | < 0.09 | < 1.4 | < 1.3 | < 1.3 | < 1.5 | < 1.5 |
| Vanadium | ug/l | NS | NS | < 1.8 | < 0.49 | < 0.43 | < 0.43 | < 0.9 | < 0.9 |
| Zinc | ug/l | 2000 | NS | 4.8 B | < 2.7 | < 4 | < 4 | 13.6 BJ | 3.8 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 | OB-16 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16(041007) | OB-16(071010) | OB-16(080501) | OB-16(080911) | OB-16(070809) | OB-16(102309) |
| Sample Date | | | MCLs | 4/10/2007 | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | 444000 | 488000 | 414000 | 442000 | NA | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | < 5000 | < 5000 | < 5000 | < 5000 | NA | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 445000 | 488000 | 414000 | 442000 | 443000 | 431000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 34800 | 30300 | 42400 | 34600 | 49800 | 49800 |
| Cyanide | ug/l | 100 | 200 | < 10 | < 10 | < 10 | < 10 | NA | NA |
| Nitrate | ug/l | 10000 | 10000 | < 110 | < 110 | < 110 | < 110 J | NA | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | < 10 | < 10 | < 10 | < 10 J | NA | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | < 100 | < 100 | < 100 | < 100 | NA | NA |
| Phosphorus, Total | ug/l | NS | NS | < 50 | 170 | 130 | 180 | NA | NA |
| Sulfate | ug/l | 250000 | NS | 19600 | < 10000 | 21200 | 13300 | 19800 | 14900 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.26 | < 0.26 | < 0.2 | < 0.24 | < 0.28 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.24 | < 0.24 | < 0.12 | < 0.2 | < 0.28 | < 0.28 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.23 | < 0.23 | < 0.13 | < 0.23 | < 0.32 | < 0.32 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.29 | < 0.29 | < 0.16 | < 0.19 | 0.91 J | 0.68 J |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.4 | < 0.4 | < 0.24 | < 0.28 | < 0.33 | < 0.33 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.56 | < 0.56 | < 0.16 | < 0.15 | < 0.16 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.1* | < 1.1* | < 1.2* | < 1.3* | < 1.1 * | < 1.1 * |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.39* | < 0.39* | < 0.39* | < 0.21* | < 0.52 * | < 0.52 * |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.26 | < 0.26 | < 0.15 | < 0.18 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.33 | < 0.33 | < 0.31 | < 0.18 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.27 | < 0.27 | < 0.23 | < 0.22 | < 0.2 | < 0.2 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.25 | < 0.25 | < 0.19 | < 0.29 | < 0.32 | < 0.32 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.28 | < 0.28 | < 0.22 | < 0.26 | < 0.24 | < 0.24 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 1.6 | < 1.6 | < 1.7 | < 2.9 | < 2.6 | < 2.6 |
| 2-Hexanone | ug/l | NS | NS | < 1.4 | < 1.4 | < 1.9 | < 3 | < 1.3 | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 0.86 | < 0.86 | < 0.74 | < 1.2 | < 1.1 | < 1.1 |
| Acetone | ug/l | 6000 | NS | < 2.9 | < 2.9 | < 4.4 | < 7.6 | < 2.4 | < 2.4 |
| Benzene | ug/l | 1 | 5 | < 0.23 | < 0.23 | < 0.26 | < 0.22 | < 0.21 | < 0.21 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.22 | < 0.22 | < 0.18 | < 0.23 | < 0.17 | < 0.17 |
| Bromoform | ug/l | 4 | 80 | < 0.23 | < 0.23 | < 0.42 | < 0.24 | < 0.54 | < 0.54 |
| Bromomethane | ug/l | 10 | NS | < 0.3 | < 0.3 | < 0.24 | < 0.31 | < 0.22 | < 0.22 |
| Carbon disulfide | ug/l | 700 | NS | < 0.74 | < 0.74 | < 0.13 | < 0.18 | < 0.21 | < 0.21 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.26 | < 0.26 | < 0.35 | < 0.19 | < 0.29 J | < 0.29 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.39 | < 0.39 | < 0.15 | < 0.22 | < 0.22 | < 0.22 |
| Chloroethane | ug/l | NS | NS | < 0.37 | < 0.37 | < 0.25 | < 0.37 | < 0.56 | < 0.56 |
| Chloroform | ug/l | 70 | 80 | < 0.23 | < 0.23 | < 0.14 | < 0.21 | < 0.22 | < 0.22 |
| Chloromethane | ug/l | NS | NS | < 0.29 | < 0.29 | < 0.34 | < 0.22 | < 0.35 | < 0.35 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.22 | < 0.22 | < 0.24 | < 0.22 | < 0.18 | < 0.18 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.25 | < 0.25 | < 0.16 | < 0.22 | < 0.15 | < 0.15 |
| Cyclohexane | ug/l | NS | NS | < 1.9 | < 1.9 | < 0.43 | < 0.29 | < 0.5 | < 0.5 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.22 | < 0.22 | < 0.16 | < 0.2 | < 0.19 | < 0.19 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.92 | < 0.92 | < 0.39 | < 0.31 | < 0.75 | < 0.75 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.27 | < 0.27 | < 0.31 | < 0.21 | < 0.2 | < 0.2 |
| Freon 113 | ug/l | NS | NS | < 0.38 | < 0.38 | < 0.66 | < 0.49 | < 0.69 | < 0.69 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.57 | < 0.57 | < 0.31 | < 0.19 | < 0.2 | < 0.2 |
| Methyl acetate | ug/l | 7000 | NS | < 1.5 | < 1.5 | < 1.3 | < 2.9 | < 2.1 | < 2.1 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.23 | < 0.23 | < 0.2 | < 0.18 | < 0.31 | < 0.31 |
| Methylcyclohexane | ug/l | NS | NS | < 0.35 | < 0.35 | < 0.16 | < 0.18 | < 0.18 | < 0.18 |
| Methylene chloride | ug/l | 3 | 5 | < 0.3 | < 0.3 | < 0.2 | < 0.2 | < 0.27 | < 0.27 |
| o-Xylene | ug/l | NS | NS | < 0.25 | NA | NA | NA | < 0.31 | < 0.31 |
| Styrene | ug/l | 100 | 100 | < 0.58 | < 0.58 | < 0.48 | < 0.23 | < 0.16 | < 0.16 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.27 | < 0.27 | < 0.24 | < 0.32 | < 0.28 | < 0.28 |
| Toluene | ug/l | 600 | 1000 | < 0.3 | < 0.3 | < 0.27 | < 0.15 | < 0.2 | < 0.2 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.25 | < 0.25 | < 0.3 | < 0.31 | < 0.42 | < 0.42 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.21 | < 0.21 | < 0.22 | < 0.19 | < 0.2 | < 0.2 |
| Trichloroethene | ug/l | 1 | 5 | < 0.24 | < 0.24 | < 0.22 | < 0.21 | < 0.29 | < 0.29 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.54 | < 0.54 | < 0.23 | < 0.35 | < 0.25 | < 0.25 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.44 | < 0.44 | < 0.22 | < 0.27 | < 0.29 | < 0.29 |
| Xylene, -m,p | ug/l | NS | NS | < 0.25 | NA | NA | NA | < 0.42 | < 0.42 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.25 | < 0.25 | < 0.28 | < 0.17 | < 0.31 | < 0.31 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | NA | < 0.47 | < 0.42 | < 0.3 | < 0.33 | < 0.34 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | NA | < 1.5 | < 1.3 | < 1.6 | < 1.9 | < 2 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | NA | < 1.3 | < 1.2 | < 1.3 | < 1.3 | < 1.3 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | NA | < 1.3 | < 1.2 | < 1.2 | < 1.6 | < 1.6 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | NA | < 1.8 | < 1.7 | < 1.5 | < 1.6 | < 1.7 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | NA | < 0.81 | < 0.74 | < 17 | < 0.89 | < 0.92 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | NA | < 0.24 | < 0.22 | < 0.43 | < 0.86 | < 0.89 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | NA | < 0.36 | < 0.33 | < 0.46 | < 0.56 | < 0.58 |
| 2-Chloronaphthalene | ug/l | 600 | NS | NA | < 0.46 | < 0.42 | < 0.3 | < 0.98 | < 1 |
| 2-Chlorophenol | ug/l | 40 | NS | NA | < 1.2 | < 1.1 | < 0.97 | < 0.95 | < 0.98 |
| 2-Methylnaphthalene | ug/l | NS | NS | NA | < 0.73 | < 0.66 | < 0.38 | < 0.41 | < 0.42 |
| 2-Methylphenol | ug/l | NS | NS | NA | < 1.2 | < 1.1 | < 1 | < 1.4 | < 1.4 |
| 2-Nitroaniline | ug/l | NS | NS | NA | < 0.26 | < 0.24 | < 1.1 | < 0.66 | < 0.68 |
| 2-Nitrophenol | ug/l | NS | NS | NA | < 1.4 | < 1.2 | < 1.5 | < 1.8 | < 1.9 |
| 3&4-Methylphenol | ug/l | NS | NS | NA | < 1.1 | < 1 | < 0.93 | < 1.3 | < 1.3 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | NA | < 0.33 | < 0.3 | < 0.36 | < 1.2 | < 1.3 |
| 3-Nitroaniline | ug/l | NS | NS | NA | < 0.32 | < 0.29 | < 1.3 | < 1.3 | < 1.3 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | NA | < 0.57 | < 0.51 | < 0.99 | < 0.72 | < 0.74 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | NA | < 0.39 | < 0.35 | < 0.36 | < 0.3 | < 0.31 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | NA | < 1.2 | < 1.1 | < 1.8 | < 1.2 | < 1.2 |
| 4-Chloroaniline | ug/l | 30 | NS | NA | < 0.28 | < 0.25 | < 0.53 | < 0.4 | < 0.41 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | NA | < 0.39 | < 0.35 | < 0.31 | < 0.43 | < 0.44 |
| 4-Nitroaniline | ug/l | NS | NS | NA | < 0.2 | < 0.18 | < 1.7 | < 0.72 | < 0.74 |
| 4-Nitrophenol | ug/l | NS | NS | NA | < 0.91 J | < 0.83 | < 5.2 | < 0.84 | < 0.87 |
| Acetophenone | ug/l | 700 | NS | NA | < 0.44 | < 0.4 | < 0.29 | < 0.37 | < 0.39 |
| Atrazine | ug/l | 3 | 3 | NA | < 0.43 | < 0.39 | < 0.49 | < 0.16 | < 0.17 |
| Benzaldehyde | ug/l | NS | NS | NA | < 0.45 | < 0.4 | < 3.3 | < 0.27 | < 0.27 |
| Benzyl butyl phthalate | ug/l | 100 | NS | NA | < 0.28 | < 0.25 | < 0.29 | < 0.59 | < 0.61 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | NA | < 0.27 | < 0.25 | < 0.31 | < 0.65 | < 0.67 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | NA | < 0.34 | < 0.31 | < 0.31 | < 0.53 | < 0.55 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | NA | < 0.43 | < 0.39 | < 0.45 | < 0.74 | < 0.76 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | NA | < 0.36 | < 0.33 | < 0.59 | < 0.66 | < 0.68 |
| Caprolactam | ug/l | NS | NS | NA | < 0.22 | < 0.2 | < 0.69 | < 0.32 | < 0.32 |
| Carbazole | ug/l | NS | NS | NA | < 0.18 | < 0.17 | < 0.36 | < 0.36 | < 0.38 |
| Dibenzofuran | ug/l | NS | NS | NA | < 0.34 | < 0.3 | < 0.27 | < 0.34 | < 0.35 |
| Diethyl phthalate | ug/l | 6000 | NS | NA | < 0.18 | < 0.17 | < 0.33 | < 0.39 | < 0.4 |
| Dimethyl phthalate | ug/l | NS | NS | NA | < 0.25 | < 0.23 | < 0.28 | < 0.33 | < 0.34 |
| di-n-butyl phthalate | ug/l | 700 | NS | NA | < 0.21 | < 0.19 | < 0.56 | < 0.59 | < 0.61 |
| di-n-octylphthalate | ug/l | 100 | NS | NA | < 0.44 | < 0.4 | < 0.31 | < 0.57 | < 0.59 |
| Hexachlorobutadiene | ug/l | 1 | NS | NA | < 0.14 | < 0.13 | < 0.51 | < 0.18 | < 0.18 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | NA | < 0.27 | < 0.24 | < 7.1 | < 0.41 | < 0.42 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | NA | < 0.23 | < 0.21 | < 0.55 | < 0.28 | < 0.29 |
| Isophrone | ug/l | 40 | NS | NA | < 0.28 | < 0.25 | < 0.27 | < 0.59 | < 0.61 |
| Nitrobenzene | ug/l | 6 | NS | NA | < 0.28 | < 0.25 | < 0.42 | < 0.42 | < 0.43 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | NA | < 0.48 | < 0.44 | < 0.3 | < 0.47 | < 0.48 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | NA | < 0.24 | < 0.22 | < 0.31 | < 0.52 | < 0.53 |
| Phenol | ug/l | 2000 | NS | NA | < 0.64 | < 0.58 | < 1.3 | < 0.5 | < 0.51 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | NA | 12 J | 13 J | 23.1 J | 9.2 J | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | NA | < 0.032 | < 0.014 | < 0.014 | < 0.017 | < 0.018 |
| Acenaphthylene | ug/l | NS | NS | NA | < 0.043 | < 0.016 | < 0.016 | < 0.0095 | < 0.0098 |
| Anthracene | ug/l | 2000 | NS | NA | < 0.028 | < 0.01 | < 0.01 | < 0.021 | < 0.022 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | NA | < 0.026 | < 0.015 | < 0.015 | < 0.0068 | < 0.007 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | NA | < 0.034 | < 0.0049 | < 0.0049 | < 0.017 | < 0.017 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | NA | < 0.04 | < 0.016 | < 0.016 | < 0.036 | < 0.037 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | NA | < 0.032 | < 0.01 | < 0.01 | < 0.018 | < 0.018 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | NA | < 0.031 | < 0.013 | < 0.013 | < 0.016 | < 0.016 |
| Chrysene | ug/l | 5 | NS | NA | < 0.024 | < 0.023 | < 0.023 | < 0.017 | < 0.017 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | NA | < 0.025 | < 0.023 | < 0.023 | < 0.016 | < 0.017 |
| Fluoranthene | ug/l | 300 | NS | NA | < 0.027 | < 0.0096 | < 0.0096 | < 0.009 | < 0.0093 |
| Fluorene | ug/l | 300 | NS | NA | < 0.03 | < 0.015 | < 0.015 | < 0.02 | < 0.021 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | NA | < 0.011 | < 0.008 | < 0.008 | < 0.061* | < 0.021* |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | NA | < 0.032 | < 0.011 | < 0.011 | < 0.011 | < 0.011 |
| Naphthalene | ug/l | 300 | NS | NA | < 0.02 | < 0.016 | < 0.016 | < 0.026 | < 0.027 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | NA | < 0.075 | < 0.29 | < 0.1 J | < 0.4 * | < 0.31* |
| Phenanthrene | ug/l | NS | NS | NA | < 0.04 | < 0.016 | < 0.016 | < 0.021 | < 0.022 |
| Pyrene | ug/l | 200 | NS | NA | < 0.024 | < 0.0081 | < 0.0081 | < 0.014 | < 0.014 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | NA | < 0.33 | < 0.13 | < 0.14 | < 0.1 | < 0.1 |
| PCB 1221 | ug/l | 0.5 | 0.5 | NA | < 0.45 | < 0.27 | < 0.3 | < 0.52* | < 0.5 |
| PCB 1232 | ug/l | 0.5 | 0.5 | NA | < 0.34 | < 0.39 | < 0.43 | < 0.43 | < 0.41 |
| PCB 1242 | ug/l | 0.5 | 0.5 | NA | < 0.3 | < 0.086 | < 0.096 | < 0.18 | < 0.17 |
| PCB 1248 | ug/l | 0.5 | 0.5 | NA | < 0.31 | < 0.15 | < 0.16 | < 0.17 | < 0.16 |
| PCB 1254 | ug/l | 0.5 | 0.5 | NA | < 0.2 | < 0.14 | < 0.16 | < 0.12 | < 0.12 |
| PCB 1260 | ug/l | 0.5 | 0.5 | NA | < 0.15 | < 0.21 | < 0.23 | < 0.13 | < 0.12 |
| Total PCBs | ug/l | 0.5 | 0.5 | NA | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | < 0.0027 | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | < 0.0018 | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | < 0.0054 | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | < 0.0037 | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | < 0.0029 | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | < 0.0048 | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | < 0.0068 | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | < 0.0034 | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | < 0.0019 | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | < 0.0023 | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | < 0.0036 | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | < 0.0051 | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | < 0.0033 | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | < 0.0071 | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | < 0.0038 | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | < 0.0019 | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | < 0.0028 | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | < 0.0016 | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | < 0.0019 | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | < 0.0074 | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | < 0.1 | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | NA | < 7.8 | **492** | 60 J | < 110 | < 23 |
| Antimony | ug/l | 6 | 6 | NA | < 2.2 | < 1.3 | < 1.4 | < 4.4 | < 5 |
| Arsenic | ug/l | 3 [8] | 10 | NA | **7.8** | **9.1** | **6.9 J** | < 1.5 | < 1.5 |
| Barium | ug/l | 6000 | 2000 | NA | 92.5 B | 123 B | 99.9 B | 11.4 B | 10.1 B |
| Beryllium | ug/l | 1 | 4 | NA | < 0.24 | < 0.24 | < 1 | < 0.5 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | NA | < 0.35 | < 0.17 | < 0.24 | < 0.6 | < 1.3 |
| Calcium | ug/l | NS | NS | NA | 136000 | 147000 | 143000 | 85500 | 71800 |
| Chromium | ug/l | 70 | 100 | NA | 1.2 B | < 10 | < 0.91 | < 1.6 | < 0.8 |
| Cobalt | ug/l | NS | NS | NA | 0.7 B | < 50 | < 50 | < 1.7 | < 1.8 |
| Copper | ug/l | 1,300 | 1300 | NA | < 2.5 | < 0.85 | < 10 | < 2.3 | < 2.7 |
| Iron | ug/l | 300 | NS | NA | **14300** | **16700** | **17700** | **1770** | **1410** |
| Lead | ug/l | 5 | 15 | NA | < 1.9 | < 3 | < 1.7 | < 2.6 | 3.5 |
| Magnesium | ug/l | NS | NS | NA | 19600 | 20100 | 18800 | 26800 | 24100 |
| Manganese | ug/l | 50 | NS | NA | **3440** | **3210** | **4180** | **619** | **496** |
| Mercury | ug/l | 2 | 2 | NA | < 0.082 | < 0.088 | < 0.075 | < 0.08 | < 0.037 |
| Nickel | ug/l | 100 | NS | NA | 1.8 B | 2.8 J | < 0.94 | < 1.6 | < 2.8 |
| Potassium | ug/l | NS | NS | NA | 9470 B | 10200 | 9640 B | 904 B | 676 B |
| Selenium | ug/l | 40 | 50 | NA | 2.1 B | < 1.5 | 8.7 B | < 3 | < 6.2 |
| Silver | ug/l | 40 | NS | NA | 0.8 B | < 0.72 | 6.9 B | < 1.9 | < 1 |
| Sodium | ug/l | 50,000 | NS | NA | 30100 | 34500 | 34600 | 14700 J | 11800 J |
| Thallium | ug/l | 2 [10] | 2 | NA | < 1.8 | < 0.17 | < 1.7 | < 0.09 | < 0.09 |
| Vanadium | ug/l | NS | NS | NA | < 0.56 | < 0.43 | < 0.77 | < 1.9 | < 1.8 |
| Zinc | ug/l | 2000 | NS | NA | < 1.4 | 5 J | < 20 | < 3.3 | < 3.4 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | NA | < 200 | < 200 | 50 J | < 110 | < 23 |
| Antimony | ug/l | 6 | 6 | NA | < 2.2 | < 1.3 | < 1.4 | < 4.4 | < 5 |
| Arsenic | ug/l | 3 [8] | 10 | NA | < 1.4 | **6** | < 3 | < 1.5 | < 1.5 |
| Barium | ug/l | 6000 | 2000 | NA | 67.7 B | 112 B | 70.6 B | 12.2 B | 10.1 B |
| Beryllium | ug/l | 1 | 4 | NA | < 1 | < 0.24 | < 1 | < 0.5 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | NA | < 0.35 | < 0.17 | < 3 | < 0.6 | < 1.3 |
| Calcium | ug/l | NS | NS | NA | 136000 | 146000 | 143000 | 82000 | 70400 |
| Chromium | ug/l | 70 | 100 | NA | 1.6 B | < 0.9 | < 0.91 | < 1.6 | < 0.8 |
| Cobalt | ug/l | NS | NS | NA | 0.9 B | < 50 | < 50 | < 1.7 | < 1.8 |
| Copper | ug/l | 1,300 | 1300 | NA | < 2.5 | < 0.85 | < 1.3 | < 2.3 | < 2.7 |
| Iron | ug/l | 300 | NS | NA | **988** | **13900** | **5150** | **1580** | **1080** |
| Lead | ug/l | 5 | 15 | NA | < 1.9 | < 3 | 1.8 B | < 2.6 | < 2.8 |
| Magnesium | ug/l | NS | NS | NA | 20200 | 19700 | 19700 | 26300 | 23700 |
| Manganese | ug/l | 50 | NS | NA | **3530** | **3260** | **4010** | **586** | **482** |
| Mercury | ug/l | 2 | 2 | NA | < 0.082 | < 0.088 | < 0.075 | < 0.08 | < 0.037 |
| Nickel | ug/l | 100 | NS | NA | 2 B | 2.4 J | < 0.94 | < 1.6 | < 2.8 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | NA | 9570 B | 9890 B | 9430 B | 910 B | 669 B |
| Selenium | ug/l | 40 | 50 | NA | 4.2 B | < 1.5 | 8.3 B | < 3 | < 6.2 |
| Silver | ug/l | 40 | NS | NA | 0.8 B | < 0.72 | 6.9 B | < 1.9 | < 1 |
| Sodium | ug/l | 50,000 | NS | NA | 30600 | 34200 | 33800 | 14800 J | 11800 J |
| Thallium | ug/l | 2 [10] | 2 | NA | < 1.8 | < 0.17 | < 1.7 | < 0.09 | < 0.09 |
| Vanadium | ug/l | NS | NS | NA | < 0.56 | < 0.43 | < 50 | < 1.9 | < 1.8 |
| Zinc | ug/l | 2000 | NS | NA | < 20 | 8.5 B | < 2.8 | < 3.3 | 7.5 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-16 | OB-16 | OB-16 | OB-16 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-16 | OB-16(052710) | OB-16(051911) | OB-16(041712) | OB-17 | OB-17(041007) |
| Sample Date | | | MCLs | 10/29/2009 | 5/27/2010 | 5/19/2011 | 4/17/2012 | 9/27/2006 | 4/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | NA | NA | 286000 | 276000 |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | NA | NA | < 5000 | < 5000 |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | NA | 407000 | 429000 | 451000 | NA | 276000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | NA | 68100 | 67200 | 57800 | 6100 | 5700 |
| Cyanide | ug/l | 100 | 200 | NA | NA | NA | NA | < 10 | < 10 |
| Nitrate | ug/l | 10000 | 10000 | NA | NA | NA | NA | < 110 | < 110 |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | NA | NA | NA | < 10 | < 10 |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | NA | NA | NA | < 100 | < 100 |
| Phosphorus, Total | ug/l | NS | NS | NA | NA | NA | NA | < 50 | < 50 |
| Sulfate | ug/l | 250000 | NS | NA | 15200 | 10700 | < 10000 | 44600 | 38500 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.3 | < 0.24 | < 0.24 | < 0.26 | < 0.26 | < 0.26 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.8 | < 0.13 | < 0.13 | < 0.24 | < 0.24 | < 0.24 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.49 | < 0.17 | < 0.17 | < 0.23 | < 0.23 | < 0.23 |
| 1,1-Dichloroethane | ug/l | 50 | NS | 1.1 | 0.57 J | < 0.24 | 1 | 1.3 | 1 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.28 | < 0.29 | < 0.29 | < 0.4 | < 0.4 | < 0.4 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.41 | < 1.3 | < 1.3 | < 0.56 | < 0.56 | < 0.56 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 0.8* | < 2.4* | < 1.3* | < 1.1* | < 1.1* | < 1.1* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.45* | < 0.17* | < 0.18* | < 0.39* | < 0.39* | < 0.39* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.2 | < 0.18 | < 0.18 | < 0.26 | < 0.26 | < 0.26 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.29 | < 0.35 | < 0.35 | < 0.33 | < 0.33 | < 0.33 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.24 | < 0.18 | < 0.18 | < 0.27 | < 0.27 | < 0.27 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.21 | < 0.26 | < 0.26 | < 0.25 | < 0.25 | < 0.25 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.17 | < 0.32 | < 0.22 | < 0.28 | < 0.28 | < 0.28 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 2.7 | < 2.3 | < 2.3 | < 1.6 | < 1.6 | < 1.6 |
| 2-Hexanone | ug/l | NS | NS | < 0.94 | < 1.7 | < 1.7 | < 1.4 | < 1.4 | < 1.4 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 1.4 | < 1.9 | < 1.3 | < 0.86 | < 0.86 | < 0.86 |
| Acetone | ug/l | 6000 | NS | < 2.9 | < 2.1 | < 2.1 | < 2.9 | < 2.9 | < 2.9 |
| Benzene | ug/l | 1 | 5 | < 0.19 | < 0.26 | < 0.26 | < 0.23 | < 0.23 | < 0.23 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.15 | < 0.14 | < 0.14 | < 0.22 | < 0.22 | < 0.22 |
| Bromoform | ug/l | 4 | 80 | < 0.34 | < 0.18 | < 0.18 | < 0.23 | < 0.23 | < 0.23 |
| Bromomethane | ug/l | 10 | NS | < 0.38 | < 0.32 | < 0.32 | < 0.3 | < 0.3 | < 0.3 |
| Carbon disulfide | ug/l | 700 | NS | < 0.14 | < 0.15 | < 0.16 | < 0.74 | < 0.74 | < 0.74 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.19 | < 0.18 | < 0.18 | < 0.26 | < 0.26 | < 0.26 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.19 | < 0.14 | < 0.19 | < 0.39 | < 0.39 | < 0.39 |
| Chloroethane | ug/l | NS | NS | < 0.67 | < 0.22 | < 0.22 | < 0.37 | < 0.37 | < 0.37 |
| Chloroform | ug/l | 70 | 80 | < 0.25 | < 0.16 | < 0.16 | < 0.23 | < 0.23 | < 0.23 |
| Chloromethane | ug/l | NS | NS | < 0.3 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.27 | < 0.19 | < 0.25 | < 0.22 | < 0.22 | < 0.22 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.13 | < 0.15 | < 0.18 | < 0.25 | < 0.25 | < 0.25 |
| Cyclohexane | ug/l | NS | NS | < 0.85 | < 0.85 | < 0.85 | < 1.9 | < 1.9 | < 1.9 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.28 | < 0.12 | < 0.16 | < 0.22 | < 0.22 | < 0.22 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 1 | < 0.88 | < 0.88 | < 0.92 | < 0.92 | < 0.92 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.21 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| Freon 113 | ug/l | NS | NS | < 1.2 | < 0.8 | < 0.8 | < 0.38 | < 0.38 | < 0.38 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.54 | < 0.15 | < 0.19 | < 0.57 | < 0.57 | < 0.57 |
| Methyl acetate | ug/l | 7000 | NS | < 1.6 | < 2.5 | < 1.7 | < 1.5 | < 1.5 | < 1.5 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.2 | < 0.14 | < 0.16 | < 0.23 | < 0.23 | < 0.23 |
| Methylcyclohexane | ug/l | NS | NS | < 0.5 | < 0.11 | < 0.11 | < 0.35 | < 0.35 | < 0.35 |
| Methylene chloride | ug/l | 3 | 5 | < 0.21 | < 0.16 | < 0.16 | < 0.3 | < 0.3 | < 0.3 |
| o-Xylene | ug/l | NS | NS | < 0.2 | < 0.45 | < 0.45 | < 0.25 | < 0.25 | NA |
| Styrene | ug/l | 100 | 100 | < 0.2 | < 0.11 | < 0.17 | < 0.58 | < 0.58 | < 0.58 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.28 | < 0.29 | < 0.29 | < 0.27 | < 0.27 | < 0.27 |
| Toluene | ug/l | 600 | 1000 | < 0.21 | < 0.15 | < 0.15 | < 0.3 | < 0.3 | < 0.3 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.32 | < 0.16 | < 0.16 | < 0.25 | < 0.25 | < 0.25 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.17 | < 0.11 | < 0.15 | < 0.21 | < 0.21 | < 0.21 |
| Trichloroethene | ug/l | 1 | 5 | < 0.26 | < 0.18 | < 0.18 | < 0.24 | < 0.24 | < 0.24 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.26 | < 0.25 | < 0.25 | < 0.54 | < 0.54 | < 0.54 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.22 | < 0.21 | < 0.21 | < 0.44 | < 0.44 | < 0.44 |
| Xylene, -m,p | ug/l | NS | NS | < 0.35 | < 0.39 | < 0.39 | < 0.25 | < 0.25 | NA |
| Xylenes | ug/l | 1,000 | 10000 | < 0.2 | < 0.39 | < 0.39 | < 0.25 | < 0.25 | < 0.25 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.36 | < 0.24 J | < 0.59 | < 0.42 | < 0.44 | < 0.43 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 2.1 | < 1.2 J | < 2.1 | < 1.3 | < 1.4 | < 1.4 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.4 | < 1.1 J | < 1.7 | < 1.2 | < 1.3 | < 1.3 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.7 | < 1.5 J | < 2.1 | < 1.2 | < 1.3 | < 1.3 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 | < 1.8 J | < 2.1 | < 1.7 | < 1.7 | < 1.7 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.99 | < 1.2 J | < 4.5 | < 0.74 | < 0.77 | < 0.76 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.96 | < 0.58 J | < 0.49 | < 0.22 | < 0.23 | < 0.23 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.62 | < 0.54 J | < 0.64 | < 0.33 | < 0.34 | < 0.34 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 1.1 | < 0.21 J | < 0.52 | < 0.42 | < 0.43 | < 0.43 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.1 | < 0.94 J | < 1.6 | < 1.1 | < 1.1 | < 1.1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.45 | < 0.82 J | < 0.46 | < 0.66 | < 0.69 | < 0.68 |
| 2-Methylphenol | ug/l | NS | NS | < 1.5 | < 1.1 J | < 1.5 | < 1.1 | < 1.2 | < 1.2 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.74 | < 0.53 J | < 0.48 | < 0.24 | < 0.24 | < 0.24 |
| 2-Nitrophenol | ug/l | NS | NS | < 2 | < 1.6 J | < 2.1 | < 1.2 | < 1.3 | < 1.3 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.4 | < 1.2 J | < 1.6 | < 1 | < 1.1 | < 1.1 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 1.4 | < 1 J | < 4.9 | < 0.3 | < 0.31 | < 0.3 |
| 3-Nitroaniline | ug/l | NS | NS | < 1.4 | < 0.35 J | < 0.48 | < 0.29 | < 0.3 | < 0.3 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.8 | < 2.4 J | < 1.3 | < 0.51 | < 0.53 | < 0.53 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.33 | < 0.4 J | < 0.44 | < 0.35 | < 0.36 | < 0.36 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.3 | < 1.3 J | < 2.4 | < 1.1 | < 1.1 | < 1.1 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.44 | < 0.37 J | < 0.36 | < 0.25 | < 0.26 | < 0.26 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.48 | < 0.31 J | < 0.49 | < 0.35 | < 0.37 | < 0.36 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.8 | < 0.63 J | < 0.48 | < 0.18 | < 0.19 | < 0.18 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.94 | < 1.7 J | < 2.4 | < 0.83 | < 0.86 | < 0.85 J |
| Acetophenone | ug/l | 700 | NS | < 0.42 | < 0.39 J | < 0.5 | < 0.4 | < 0.42 | < 0.41 |
| Atrazine | ug/l | 3 | 3 | < 0.18 | < 0.3 J | < 0.66 | < 0.39 | < 0.41 | < 0.4 |
| Benzaldehyde | ug/l | NS | NS | R | < 0.82 J | < 1.7 | < 0.4 | < 0.42 | < 0.42 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.66 | < 0.69 J | < 0.45 | < 0.25 | < 0.26 | < 0.26 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.73 | < 0.34 J | < 0.55 | < 0.25 | < 0.26 | < 0.26 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.59 | < 0.72 J | < 0.53 | < 0.31 | < 0.32 | < 0.32 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.82 | < 0.62 J | < 0.58 | < 0.39 | < 0.41 | < 0.4 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.73 | < 0.94 BJ | < 0.8 | < 0.33 | < 0.34 | < 0.34 |
| Caprolactam | ug/l | NS | NS | < 0.35 | < 0.53 J | < 0.67 | < 0.2 | < 0.2 | < 0.2 |
| Carbazole | ug/l | NS | NS | < 0.4 | < 0.43 J | < 0.48 | < 0.17 | < 0.17 | < 0.17 |
| Dibenzofuran | ug/l | NS | NS | < 0.38 | < 0.25 J | < 0.52 | < 0.3 | < 0.32 | < 0.31 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.43 | < 0.37 J | < 0.39 | < 0.17 | < 0.17 | < 0.17 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.36 | < 0.36 J | < 0.39 | < 0.23 | < 0.23 | < 0.23 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.66 | < 0.43 J | < 0.53 | < 0.19 | < 0.2 | < 0.2 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.63 | < 0.51 J | < 0.53 | < 0.4 | < 0.41 | < 0.41 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.19 | < 0.14 J | < 0.4 | < 0.37 | < 0.39 | < 0.13 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.45 | < 0.11 J | < 4.8 | < 0.67 | < 0.7 | < 0.25 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.31 | < 0.17 J | < 0.32 | < 0.26 | < 0.27 | < 0.22 |
| Isophrone | ug/l | 40 | NS | < 0.65 | < 0.53 J | < 0.74 | < 0.25 | < 0.26 | < 0.26 |
| Nitrobenzene | ug/l | 6 | NS | < 0.47 | < 0.76 J | < 0.7 | < 0.25 | < 0.26 | < 0.26 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.52 | < 0.41 J | < 0.42 | < 0.44 | < 0.46 | < 0.45 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.57 | < 0.45 J | < 0.65 | < 0.22 | < 0.22 | < 0.22 |
| Phenol | ug/l | 2000 | NS | < 0.55 | < 0.73 J | < 1.5 | < 0.58 | < 0.6 | < 0.59 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 0 | 17.7 J | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.019 | < 0.017 | < 0.017 | < 0.016 | < 0.03 | < 0.03 |
| Acenaphthylene | ug/l | NS | NS | < 0.011 | < 0.0075 | < 0.0075 | < 0.007 | < 0.041 | < 0.041 |
| Anthracene | ug/l | 2000 | NS | < 0.023 | < 0.023 | < 0.022 | < 0.021 | < 0.027 | < 0.026 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.0076 | < 0.036 | < 0.036 | < 0.034 | < 0.025 | < 0.024 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.019 | < 0.038 | < 0.038 | < 0.036 | < 0.032 | < 0.032 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.04 | < 0.018 | < 0.018 | < 0.017 | < 0.037 | < 0.037 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.02 | < 0.013 | < 0.013 | < 0.012 | < 0.03 | < 0.03 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.017 | < 0.02 | < 0.02 | < 0.019 | < 0.029 | < 0.029 |
| Chrysene | ug/l | 5 | NS | < 0.019 | < 0.019 | < 0.019 | < 0.018 | < 0.023 | < 0.023 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.018 | < 0.022 | < 0.022 | < 0.02 | < 0.023 | < 0.023 |
| Fluoranthene | ug/l | 300 | NS | < 0.01 | < 0.01 | < 0.01 | < 0.0096 | < 0.025 | < 0.025 |
| Fluorene | ug/l | 300 | NS | < 0.022 | < 0.021 | < 0.021 | < 0.02 | < 0.028 | < 0.028 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.022* | < 0.011 | < 0.011 | < 0.0099 | < 0.01 | < 0.01 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.012 | < 0.015 | < 0.015 | < 0.014 | < 0.03 | < 0.03 |
| Naphthalene | ug/l | 300 | NS | < 0.029 | < 0.015 | < 0.015 | < 0.014 | < 0.019 | < 0.019 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.33* | < 0.24 | < 0.24 | < 0.22 | < 0.23 | < 0.07 |
| Phenanthrene | ug/l | NS | NS | < 0.023 | < 0.018 | < 0.018 | < 0.017 | < 0.038 | < 0.037 |
| Pyrene | ug/l | 200 | NS | < 0.016 | < 0.013 | < 0.013 | < 0.012 | < 0.023 | < 0.023 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.094 | < 0.099 | < 0.094 | < 0.2 | < 0.3 | < 0.34 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.47 | < 0.49 | < 0.47 | < 0.32 | < 0.41 | < 0.46 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.39 | < 0.41 | < 0.39 | < 0.22 | < 0.31 | < 0.35 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.16 | < 0.17 | < 0.16 | < 0.094 | < 0.27 | < 0.3 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.15 | < 0.16 | < 0.15 | < 0.27 | < 0.28 | < 0.31 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.11 | < 0.11 | < 0.11 | < 0.12 | < 0.18 | < 0.2 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.12 | < 0.12 | < 0.12 | < 0.15 | < 0.14 | < 0.16 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 26 | < 24 | **683** | 85.5 B | < 26 | < 7.8 |
| Antimony | ug/l | 6 | 6 | < 0.9 | < 1.8 | 2.5 B | < 4 | < 2.9 | < 2.2 |
| Arsenic | ug/l | 3 [8] | 10 | 2.5 B | < 1.7 | < 1.7 | < 2.4 | < 2.4 | 1.9 B |
| Barium | ug/l | 6000 | 2000 | 15.1 B | 9.6 B | 38.6 BJ | 11.3 B | 12 B | 12.1 B |
| Beryllium | ug/l | 1 | 4 | < 0.15 | < 0.15 | < 0.15 | < 0.4 | < 0.4 | < 0.24 |
| Cadmium | ug/l | 4 | 5 | < 0.24 | < 0.28 | < 0.28 | 1 B | < 0.4 | < 0.35 |
| Calcium | ug/l | NS | NS | 98300 | 65300 | 18700 J | 89000 | 94300 | 91600 |
| Chromium | ug/l | 70 | 100 | 1.3 B | 0.8 B | < 5.3 | < 10 | 1.1 B | 1.5 B |
| Cobalt | ug/l | NS | NS | 2.9 B | 1 B | < 0.51 | < 0.4 | < 1.6 | < 0.65 |
| Copper | ug/l | 1,300 | 1300 | < 3.3 | < 2.5 | 18.9 | < 2 | < 1.6 | < 2.5 |
| Iron | ug/l | 300 | NS | **3830** | **1570** | 79.9 BJ | **3130** | **1730** | **2620** |
| Lead | ug/l | 5 | 15 | 1.7 B | 2.3 B | < 1.4 | < 1.7 | < 1.7 | < 1.9 |
| Magnesium | ug/l | NS | NS | 31100 | 22400 | 5660 | 28700 | 29400 | 29100 |
| Manganese | ug/l | 50 | NS | **669** | **472** | **64.5** | **496** | **462** | **538** |
| Mercury | ug/l | 2 | 2 | < 0.15 | < 0.15 | < 0.049 | < 0.049 | < 0.082 | < 0.082 |
| Nickel | ug/l | 100 | NS | 0.9 B | < 1.2 | < 2.4 | < 10 | < 10 | 1.7 B |
| Potassium | ug/l | NS | NS | 893 B | 682 B | 1260 B | 834 B | 878 B | 795 B |
| Selenium | ug/l | 40 | 50 | < 0.73 | < 1.6 | < 1.6 | < 3.7 | < 3.7 | 3 B |
| Silver | ug/l | 40 | NS | < 0.83 | < 1 | < 1 | < 1 | < 1 | < 0.53 |
| Sodium | ug/l | 50,000 | NS | 17200 | 12200 | 4950 B | 15000 | 16800 | 15400 |
| Thallium | ug/l | 2 [10] | 2 | < 1.4 | < 1.3 | < 1.3 | < 1.5 | < 1.5 | < 1.8 |
| Vanadium | ug/l | NS | NS | 0.9 B | < 0.43 | < 0.43 | < 0.9 | < 0.9 | < 0.56 |
| Zinc | ug/l | 2000 | NS | < 2.7 | < 4 B | 28.6 J | < 2.9 | 3.5 J | < 20 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 26 | < 24 | < 24 | 80.3 B | < 26 | < 7.8 |
| Antimony | ug/l | 6 | 6 | < 0.9 | < 1.8 | < 2.1 | < 4 | < 2.9 | < 2.2 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.1 | < 1.7 | < 1.7 | < 2.4 | < 2.4 | < 1.4 |
| Barium | ug/l | 6000 | 2000 | 13.4 B | 8.9 B | 6.6 J | 11 B | 11.3 B | 11 B |
| Beryllium | ug/l | 1 | 4 | < 0.15 | < 0.15 | < 0.15 | < 0.4 | < 0.4 | < 1 |
| Cadmium | ug/l | 4 | 5 | < 0.24 | < 0.28 | < 0.28 | 1.3 B | < 0.4 | < 0.35 |
| Calcium | ug/l | NS | NS | 95600 | 65100 | 19400 J | 91100 | 94100 | 91200 |
| Chromium | ug/l | 70 | 100 | 1 B | 1 B | < 0.53 | < 0.9 | 1.2 B | 1 B |
| Cobalt | ug/l | NS | NS | 3 B | 1.1 B | < 0.51 | < 0.4 | < 1.6 | < 0.65 |
| Copper | ug/l | 1,300 | 1300 | 3.5 B | < 2.5 | < 2.5 | < 2 | < 1.6 | < 2.5 |
| Iron | ug/l | 300 | NS | **419** | 200 | < 25 | **1430** | 110 | **310** |
| Lead | ug/l | 5 | 15 | < 0.94 | 2.4 B | < 1.4 | < 1.7 | < 1.7 | < 1.9 |
| Magnesium | ug/l | NS | NS | 30200 | 22200 | 5820 | 28800 | 29200 | 29600 |
| Manganese | ug/l | 50 | NS | **610** | **463** | **57.6** | **493** | **457** | **533** |
| Mercury | ug/l | 2 | 2 | < 0.15 | < 0.15 | < 0.049 | < 0.049 | < 0.082 J | < 0.082 |
| Nickel | ug/l | 100 | NS | < 0.73 | < 1.2 | < 1.2 | < 10 | < 10 | 1.6 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 887 B | 682 B | 1170 B | 824 B | 870 B | 801 B |
| Selenium | ug/l | 40 | 50 | < 0.73 | < 1.6 | < 1.6 | < 3.7 | < 3.7 | 3.3 B |
| Silver | ug/l | 40 | NS | < 0.83 | < 1 | < 1 | < 1 | < 1 | < 0.53 |
| Sodium | ug/l | 50,000 | NS | 16800 | 12200 | 5090 B | 15200 | 16500 | 15500 |
| Thallium | ug/l | 2 [10] | 2 | < 1.4 | < 1.3 | < 1.3 | < 1.5 | < 1.5 | < 1.8 |
| Vanadium | ug/l | NS | NS | < 0.49 | < 0.43 | < 0.43 | < 0.9 | < 0.9 | < 0.56 |
| Zinc | ug/l | 2000 | NS | < 2.7 | < 4 | < 4 | < 2.9 | 4.2 B | < 20 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 | OB-17 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(071010) | OB-17(080501) | OB-17(080911) | OB-17(070809) | OB-17(102309) | OB-17(052710) |
| Sample Date | | | MCLs | 10/10/2007 | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | 326000 | 224000 | 67500 | NA | NA | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | < 5000 | < 5000 | < 5000 | NA | NA | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 326000 | 224000 | 67500 | 220000 | 349000 | 341000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 6200 | 7700 | 5900 | 7100 | 6800 | 7800 |
| Cyanide | ug/l | 100 | 200 | < 10 | < 10 | < 10 | NA | NA | NA |
| Nitrate | ug/l | 10000 | 10000 | < 110 | < 110 | 260 J | NA | NA | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | < 10 | < 10 | < 10 J | NA | NA | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | < 100 | < 100 | 260 | NA | NA | NA |
| Phosphorus, Total | ug/l | NS | NS | < 50 | < 50 | < 50 | NA | NA | NA |
| Sulfate | ug/l | 250000 | NS | 41200 | 32400 | 14100 | 46900 | 46500 | 44000 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.2 | < 0.24 | < 0.28 | < 0.28 | < 0.28 | < 0.3 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.12 | < 0.2 | < 0.28 | < 0.28 | < 0.28 | < 0.8 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.13 | < 0.23 | < 0.32 | < 0.32 | < 0.32 | < 0.49 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.16 | 1 | < 0.23 | < 0.23 | < 0.23 | < 0.2 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.24 | < 0.28 | < 0.33 | < 0.33 | < 0.33 | < 0.28 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.16 | < 0.15 | < 0.16 | < 0.16 | < 0.16 | < 0.41 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.2* | < 1.3* | < 1.1 * | < 1.1 * | < 1.1 * | < 0.8* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.39* | < 0.21* | < 0.52 * | < 0.52 * | < 0.52 * | < 0.45* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.15 | < 0.18 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.31 | < 0.18 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.23 | < 0.22 | < 0.2 | < 0.2 | < 0.2 | < 0.24 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.19 | < 0.29 | < 0.32 | < 0.32 | < 0.32 | < 0.21 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.22 | < 0.26 | < 0.24 | < 0.24 | < 0.24 | < 0.17 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 1.7 | < 2.9 | < 2.6 | < 2.6 | < 2.6 | < 2.7 |
| 2-Hexanone | ug/l | NS | NS | < 1.9 | < 3 | < 1.3 | < 1.3 | < 1.3 | < 0.94 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 0.74 | < 1.2 | < 1.1 | < 1.1 | < 1.1 | < 1.4 |
| Acetone | ug/l | 6000 | NS | < 4.4 | < 7.6 | < 2.4 | < 2.4 | < 2.4 | < 2.9 |
| Benzene | ug/l | 1 | 5 | < 0.26 | < 0.22 | < 0.21 | < 0.21 | < 0.21 | < 0.19 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.18 | < 0.23 | < 0.17 | < 0.17 | < 0.17 | < 0.15 |
| Bromoform | ug/l | 4 | 80 | < 0.42 | < 0.24 | < 0.54 | < 0.54 | < 0.54 | < 0.34 |
| Bromomethane | ug/l | 10 | NS | < 0.24 | < 0.31 | < 0.22 | < 0.22 | < 0.22 | < 0.38 |
| Carbon disulfide | ug/l | 700 | NS | < 0.13 | < 0.18 | < 0.21 | < 0.21 | < 0.21 | < 0.14 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.35 | < 0.19 | < 0.29 J | < 0.29 | < 0.29 | < 0.19 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.15 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.19 |
| Chloroethane | ug/l | NS | NS | < 0.25 | < 0.37 | < 0.56 | < 0.56 | < 0.56 | < 0.67 |
| Chloroform | ug/l | 70 | 80 | < 0.14 | < 0.21 | < 0.22 | < 0.22 | < 0.22 | < 0.25 |
| Chloromethane | ug/l | NS | NS | < 0.34 | < 0.22 | < 0.35 | < 0.35 | < 0.35 | < 0.3 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.24 | < 0.22 | < 0.18 | < 0.18 | < 0.18 | < 0.27 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.16 | < 0.22 | < 0.15 | < 0.15 | < 0.15 | < 0.13 |
| Cyclohexane | ug/l | NS | NS | < 0.43 | < 0.29 | < 0.5 | < 0.5 | < 0.5 | < 0.85 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.16 | < 0.2 | < 0.19 | < 0.19 | < 0.19 | < 0.28 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.39 | < 0.31 | < 0.75 | < 0.75 | < 0.75 | < 1 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.31 | < 0.21 | < 0.2 | < 0.2 | < 0.2 | < 0.21 |
| Freon 113 | ug/l | NS | NS | < 0.66 | < 0.49 | < 0.69 | < 0.69 | < 0.69 | < 1.2 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.31 | < 0.19 | < 0.2 | < 0.2 | < 0.2 | < 0.54 |
| Methyl acetate | ug/l | 7000 | NS | < 1.3 | < 2.9 | < 2.1 | < 2.1 | < 2.1 | < 1.6 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.2 | < 0.18 | < 0.31 | < 0.31 | < 0.31 | < 0.2 |
| Methylcyclohexane | ug/l | NS | NS | < 0.16 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.5 |
| Methylene chloride | ug/l | 3 | 5 | < 0.2 | < 0.2 | < 0.27 | < 0.27 | < 0.27 | < 0.21 |
| o-Xylene | ug/l | NS | NS | NA | NA | < 0.31 | < 0.31 | < 0.31 | < 0.2 |
| Styrene | ug/l | 100 | 100 | < 0.48 | < 0.23 | < 0.16 | < 0.16 | < 0.16 | < 0.2 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.24 | < 0.32 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| Toluene | ug/l | 600 | 1000 | < 0.27 | < 0.15 | < 0.2 | < 0.2 | < 0.2 | < 0.21 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.3 | < 0.31 | < 0.42 | < 0.42 | < 0.42 | < 0.32 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.22 | < 0.19 | < 0.2 | < 0.2 | < 0.2 | < 0.17 |
| Trichloroethene | ug/l | 1 | 5 | < 0.22 | < 0.21 | < 0.29 | < 0.29 | < 0.29 | < 0.26 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.23 | < 0.35 | < 0.25 | < 0.25 | < 0.25 | < 0.26 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.22 | < 0.27 | < 0.29 | < 0.29 | < 0.29 | < 0.22 |
| Xylene, -m,p | ug/l | NS | NS | NA | NA | < 0.42 | < 0.42 | < 0.42 | < 0.35 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.28 | < 0.17 | < 0.31 | < 0.31 | < 0.31 | < 0.2 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.42 | < 0.32 | < 0.35 | < 0.35 | < 0.33 | < 0.37 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.3 | < 1.7 | < 2.1 | < 2.1 | < 1.9 | < 2.2 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.2 | < 1.4 | < 1.4 | < 1.3 | < 1.3 | < 1.4 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.2 | < 1.2 | < 1.7 | < 1.7 | < 1.6 | < 1.8 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.7 | < 1.6 | < 1.8 | < 1.7 | < 1.6 | < 1.8 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.74 | < 18 | < 0.96 | < 0.95 | < 0.89 | < 1 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.22 | < 0.45 | < 0.92 | < 0.91 | < 0.86 | < 0.97 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.33 | < 0.49 | < 0.6 | < 0.59 | < 0.56 | < 0.63 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.42 | < 0.32 | < 1.1 | < 1 | < 0.98 | < 1.1 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.1 | < 1 | < 1 | < 1 | < 0.95 | < 1.1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.66 | < 0.41 | < 0.44 | < 0.43 | < 0.41 | < 0.46 |
| 2-Methylphenol | ug/l | NS | NS | < 1.1 | < 1.1 | < 1.5 | < 1.4 | < 1.4 | < 1.5 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.24 | < 1.2 | < 0.71 | < 0.7 | < 0.66 | < 0.74 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.2 | < 1.6 | < 1.9 | < 1.9 | < 1.8 | < 2 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1 | < 0.98 | < 1.4 | < 1.4 | < 1.3 | < 1.4 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 0.3 | < 0.38 | < 1.3 | < 1.3 | < 1.2 | < 1.4 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.29 | < 1.3 | < 1.4 | < 1.3 | < 1.3 | < 1.4 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.51 | < 1.1 | < 0.78 | < 0.77 | < 0.72 | < 0.81 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.35 | < 0.38 | < 0.32 | < 0.32 | < 0.3 | < 0.34 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.1 | < 1.9 | < 1.3 | < 1.3 | < 1.2 | < 1.3 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.25 | < 0.56 | < 0.43 | < 0.42 | < 0.4 | < 0.45 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.35 | < 0.33 | < 0.46 | < 0.46 | < 0.43 | < 0.48 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.18 | < 1.8 | < 0.78 | < 0.77 | < 0.72 | < 0.81 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.83 | < 5.5 | < 0.91 | < 0.9 | < 0.84 | < 0.95 |
| Acetophenone | ug/l | 700 | NS | < 0.4 | < 0.3 | < 0.4 | < 0.4 | < 0.37 | < 0.42 |
| Atrazine | ug/l | 3 | 3 | < 0.39 | < 0.52 | < 0.18 | < 0.17 | < 0.16 | < 0.18 |
| Benzaldehyde | ug/l | NS | NS | < 0.4 | < 3.5 | < 0.28 | < 0.28 | < 0.27 | R |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.25 | < 0.31 | < 0.64 | < 0.63 | < 0.59 | < 0.67 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.25 | < 0.33 | < 0.7 | < 0.7 | < 0.65 | < 0.73 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.31 | < 0.33 | < 0.57 | < 0.56 | < 0.53 | < 0.6 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.39 | < 0.48 | < 0.79 | < 0.79 | < 0.74 | < 0.83 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.33 | < 0.62 | < 0.71 | < 0.7 | < 0.66 | < 0.74 |
| Caprolactam | ug/l | NS | NS | < 0.2 | < 0.73 | < 0.34 | < 0.34 | < 0.32 | < 0.35 |
| Carbazole | ug/l | NS | NS | < 0.17 | < 0.38 | < 0.39 | < 0.39 | < 0.36 | < 0.41 |
| Dibenzofuran | ug/l | NS | NS | < 0.3 | < 0.28 | < 0.37 | < 0.37 | < 0.34 | < 0.39 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.17 | < 0.35 | < 0.42 | < 0.41 | < 0.39 | < 0.44 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.23 | < 0.3 | < 0.35 | < 0.35 | < 0.33 | < 0.37 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.19 | < 0.59 | < 0.64 | < 0.63 | < 0.59 | < 0.67 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.4 | < 0.33 | < 0.61 | < 0.61 | < 0.57 | < 0.64 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.13 | < 0.54 | < 0.19 | < 0.19 | < 0.18 | < 0.2 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.24 | < 7.6 | < 0.44 | < 0.43 | < 0.41 | < 0.46 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.21 | < 0.59 | < 0.3 | < 0.3 | < 0.28 | < 0.32 |
| Isophrone | ug/l | 40 | NS | < 0.25 | < 0.29 | < 0.63 | < 0.63 | < 0.59 | < 0.66 |
| Nitrobenzene | ug/l | 6 | NS | < 0.25 | < 0.45 | < 0.45 | < 0.45 | < 0.42 | < 0.47 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.44 | < 0.32 | < 0.5 | < 0.5 | < 0.47 | < 0.53 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.22 | < 0.32 | < 0.55 | < 0.55 | < 0.52 | < 0.58 |
| Phenol | ug/l | 2000 | NS | < 0.58 | < 1.4 | < 0.53 | < 0.53 | < 0.5 | < 0.56 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 4 J | 17 J | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.014 | < 0.015 | < 0.018 | < 0.018 | < 0.017 | < 0.019 |
| Acenaphthylene | ug/l | NS | NS | < 0.016 | < 0.017 | < 0.01 | < 0.01 | < 0.0095 | < 0.011 |
| Anthracene | ug/l | 2000 | NS | < 0.01 | < 0.011 | < 0.022 | < 0.022 | < 0.021 | < 0.023 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.015 | < 0.016 | < 0.0073 | < 0.0072 | < 0.0068 | < 0.0076 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.0049 | < 0.0052 | < 0.018 | < 0.018 | < 0.017 | < 0.019 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.016 | < 0.017 | < 0.039 | < 0.039 | < 0.036 | < 0.041 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.01 | < 0.011 | < 0.019 | < 0.019 | < 0.018 | < 0.02 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.013 | < 0.013 | < 0.017 | < 0.017 | < 0.016 | < 0.018 |
| Chrysene | ug/l | 5 | NS | < 0.023 | < 0.025 | < 0.018 | < 0.018 | < 0.017 | < 0.019 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.023 | < 0.024 | < 0.018 | < 0.017 | < 0.016 | < 0.018 |
| Fluoranthene | ug/l | 300 | NS | < 0.0096 | < 0.01 | < 0.0097 | < 0.0096 | < 0.009 | < 0.01 |
| Fluorene | ug/l | 300 | NS | < 0.015 | < 0.016 | < 0.022 | < 0.021 | < 0.02 | < 0.023 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.008 | < 0.0085 | < 0.065* | < 0.021* | < 0.02 | < 0.022* |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.011 | < 0.011 | < 0.012 | < 0.012 | < 0.011 | < 0.012 |
| Naphthalene | ug/l | 300 | NS | < 0.016 | < 0.017 | < 0.028 | < 0.027 | < 0.026 | < 0.029 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.29 | < 0.11 J | < 0.43 * | < 0.32* | < 0.3 | < 0.34* |
| Phenanthrene | ug/l | NS | NS | < 0.016 | < 0.017 | < 0.023 | < 0.022 | < 0.021 | < 0.024 |
| Pyrene | ug/l | 200 | NS | < 0.0081 | < 0.0086 | < 0.015 | < 0.015 | < 0.014 | < 0.016 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.13 | < 0.14 | < 0.099 | < 0.094 | < 0.1 | < 0.094 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.27 | < 0.29 | < 0.49 | < 0.47 | < 0.52* | < 0.47 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.39 | < 0.41 | < 0.41 | < 0.39 | < 0.43 | < 0.39 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.086 | < 0.091 | < 0.17 | < 0.16 | < 0.18 | < 0.16 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.15 | < 0.15 | < 0.16 | < 0.15 | < 0.17 | < 0.15 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.14 | < 0.15 | < 0.11 | < 0.11 | < 0.12 | < 0.11 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.21 | < 0.22 | < 0.12 | < 0.12 | < 0.13 | < 0.12 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | < 0.0025 | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | < 0.0018 | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | < 0.0052 | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | < 0.0035 | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | < 0.0027 | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | < 0.0046 | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | < 0.0065 | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | < 0.0033 | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | < 0.0018 | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | < 0.0022 | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | < 0.0034 | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | < 0.0049 | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | < 0.0032 | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | < 0.0068 | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | < 0.0037 | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | < 0.0018 | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | < 0.0027 | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | < 0.0015 | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | < 0.0018 | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | < 0.0071 | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | < 0.099 | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 200 | 51.2 J | < 110 | < 23 | < 23 | **262** |
| Antimony | ug/l | 6 | 6 | < 1.3 | < 1.4 | < 4.4 | < 5 | < 5 | < 0.9 |
| Arsenic | ug/l | 3 [8] | 10 | < 0.92 | < 0.97 | < 1.5 | < 1.5 | < 1.5 | < 1.1 |
| Barium | ug/l | 6000 | 2000 | 4 J | 12.6 J | 7.7 B | 6.6 B | 7.6 B | 8.6 B |
| Beryllium | ug/l | 1 | 4 | < 0.24 | < 0.44 | < 0.5 | < 0.4 | < 0.4 | < 0.15 |
| Cadmium | ug/l | 4 | 5 | < 0.17 | < 0.24 | < 0.6 | < 1.3 | < 1.3 | < 0.24 |
| Calcium | ug/l | NS | NS | 19300 | 102000 | 39900 | 46800 | 47900 | 45500 |
| Chromium | ug/l | 70 | 100 | < 0.9 | < 0.91 | 1.9 B | < 0.8 | < 0.8 | 1.6 B |
| Cobalt | ug/l | NS | NS | < 50 | < 0.59 | < 1.7 | < 1.8 | < 1.8 | 1.7 B |
| Copper | ug/l | 1,300 | 1300 | < 0.85 | < 1.3 | < 2.3 | < 2.7 | < 2.7 | < 3.3 |
| Iron | ug/l | 300 | NS | **1350** | **5200** | 78.5 B | < 25 | < 25 | 251 |
| Lead | ug/l | 5 | 15 | < 3 | < 1.7 | < 2.6 | < 2.8 | < 2.8 | 1.2 B |
| Magnesium | ug/l | NS | NS | 5910 | 31100 | 8120 | 9520 | 9770 | 9020 |
| Manganese | ug/l | 50 | NS | **165** | **608** | < 0.4 | 0.77 BJ | 1.5 BJ | 9.4 B |
| Mercury | ug/l | 2 | 2 | < 0.088 | < 0.075 | < 0.08 | < 0.037 | < 0.037 | < 0.15 |
| Nickel | ug/l | 100 | NS | < 10 | < 0.94 | < 1.6 | < 2.8 | < 2.8 | < 0.73 |
| Potassium | ug/l | NS | NS | 756 B | 775 B | 358 B | 310 B | 354 B | 445 B |
| Selenium | ug/l | 40 | 50 | < 1.5 | < 2.4 | < 3 | < 6.2 | < 6.2 | < 0.73 |
| Silver | ug/l | 40 | NS | < 0.72 | < 10 | < 1.9 | < 1 | < 1 | < 0.83 |
| Sodium | ug/l | 50,000 | NS | 6540 B | 15000 | 6600 BJ | 6260 BJ | 6370 BJ | 6160 B |
| Thallium | ug/l | 2 [10] | 2 | < 0.17 | < 1.7 | < 0.09 | < 0.09 | < 0.09 | < 1.4 |
| Vanadium | ug/l | NS | NS | < 0.43 | < 0.77 | < 1.9 | < 1.8 | < 1.8 | 0.7 B |
| Zinc | ug/l | 2000 | NS | 2.5 J | < 2.8 | < 3.3 | < 3.4 | < 3.4 | < 2.7 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 200 | 47.3 J | < 110 | < 23 | < 23 | < 26 |
| Antimony | ug/l | 6 | 6 | < 1.3 | < 1.4 | < 4.4 | < 5 | < 5 | < 0.9 |
| Arsenic | ug/l | 3 [8] | 10 | < 0.92 | < 0.97 | < 1.5 | < 1.5 | < 1.5 | < 1.1 |
| Barium | ug/l | 6000 | 2000 | 3.8 J | 9.5 J | 5.8 B | 6.6 B | 7.3 B | 7.7 B |
| Beryllium | ug/l | 1 | 4 | < 0.24 | < 0.44 | < 0.5 | < 0.4 | < 0.4 | < 0.15 |
| Cadmium | ug/l | 4 | 5 | < 0.17 | < 3 | < 0.6 | < 1.3 | < 1.3 | < 0.24 |
| Calcium | ug/l | NS | NS | 18800 | 102000 | 40400 | 45100 | 44600 | 47900 |
| Chromium | ug/l | 70 | 100 | < 0.9 | < 10 | < 1.6 | < 0.8 | < 0.8 | 1.9 B |
| Cobalt | ug/l | NS | NS | < 0.3 | < 0.59 | < 1.7 | < 1.8 | < 1.8 | 1.6 B |
| Copper | ug/l | 1,300 | 1300 | < 0.85 | < 1.3 | < 2.3 | < 2.7 | < 2.7 | < 3.3 |
| Iron | ug/l | 300 | NS | 106 J | 102 J | < 67 | < 25 | < 25 | < 6.3 |
| Lead | ug/l | 5 | 15 | < 3 | < 1.7 | < 2.6 | < 2.8 | < 2.8 | 1 B |
| Magnesium | ug/l | NS | NS | 5720 | 32800 | 8080 | 9300 | 9120 | 9340 |
| Manganese | ug/l | 50 | NS | **160** | **580** | < 0.4 | < 0.6 | < 0.6 | < 0.17 |
| Mercury | ug/l | 2 | 2 | < 0.088 | < 0.075 | < 0.08 | < 0.037 | < 0.037 | < 0.15 |
| Nickel | ug/l | 100 | NS | < 10 | 1.5 J | < 1.6 | < 2.8 | < 2.8 | 0.9 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 795 B | 785 B | 345 B | 307 B | 319 B | 380 B |
| Selenium | ug/l | 40 | 50 | < 1.5 | 2.7 J | < 3 | < 6.2 | < 6.2 | < 0.73 |
| Silver | ug/l | 40 | NS | < 0.72 | < 0.85 | < 1.9 | < 1 | < 1 | < 0.83 |
| Sodium | ug/l | 50,000 | NS | 6390 B | 14800 | 6470 BJ | 6250 BJ | 6060 BJ | 6490 B |
| Thallium | ug/l | 2 [10] | 2 | < 0.17 | < 1.7 | < 0.09 | < 0.09 | < 0.09 | < 1.4 |
| Vanadium | ug/l | NS | NS | < 0.43 | < 0.77 | < 1.9 | < 1.8 | < 1.8 | < 0.49 |
| Zinc | ug/l | 2000 | NS | 15.6 B | < 2.8 | < 3.3 | 5.7 B | 5.7 B | < 2.7 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-17 | OB-17 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-17(051911) | OB-17(041712) | OB-18 | DUP(041007) (OB-18) | OB-18(041007) | OB-18(071010) |
| Sample Date | | | MCLs | 5/19/2011 | 4/17/2012 | 9/26/2006 | 4/10/2007 | 4/10/2007 | 10/10/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | 123000 | 163000 | 165000 | 157000 |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | < 5000 | < 5000 | < 5000 | < 5000 |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 65300 | 366000 | NA | 164000 | 166000 | 157000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 8300 | 8100 | < 2000 | < 2000 | < 2000 | < 2000 |
| Cyanide | ug/l | 100 | 200 | NA | NA | < 10 | < 10 | < 10 | < 10 |
| Nitrate | ug/l | 10000 | 10000 | NA | NA | 150 | < 110 | < 110 | < 110 |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | NA | < 10 | < 10 | < 10 | < 10 |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | NA | 150 | < 100 | < 100 | < 100 |
| Phosphorus, Total | ug/l | NS | NS | NA | NA | < 50 | < 50 | < 50 | < 50 |
| Sulfate | ug/l | 250000 | NS | 10200 | 44600 | 15200 | 14900 | 15000 | 13900 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.24 | < 0.24 | < 0.26 | < 0.26 | < 0.26 | < 0.2 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.13 | < 0.13 | < 0.24 | < 0.24 | < 0.24 | < 0.12 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.17 | < 0.17 | < 0.23 | < 0.23 | < 0.23 | < 0.13 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.16 | < 0.24 | < 0.29 | < 0.29 | < 0.29 | < 0.16 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.29 | < 0.29 | < 0.4 | < 0.4 | < 0.4 | < 0.24 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 1.3 | < 1.3 | < 0.56 | < 0.56 | < 0.56 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 2.4* | < 1.3* | < 1.1* | < 1.1* | < 1.1* | < 1.2* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.17* | < 0.18* | < 0.39* | < 0.39* | < 0.39* | < 0.39* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.18 | < 0.18 | < 0.26 | < 0.26 | < 0.26 | < 0.15 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.35 | < 0.35 | < 0.33 | < 0.33 | < 0.33 | < 0.31 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.18 | < 0.18 | < 0.27 | < 0.27 | < 0.27 | < 0.23 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.26 | < 0.26 | < 0.25 | < 0.25 | < 0.25 | < 0.19 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.32 | < 0.22 | < 0.28 | < 0.28 | < 0.28 | < 0.22 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 2.3 | < 2.3 | < 1.6 | < 1.6 | < 1.6 | < 1.7 |
| 2-Hexanone | ug/l | NS | NS | < 1.7 | < 1.7 | < 1.4 | < 1.4 | < 1.4 | < 1.9 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 1.9 | < 1.3 | < 0.86 | < 0.86 | < 0.86 | < 0.74 |
| Acetone | ug/l | 6000 | NS | < 2.1 | < 2.1 | < 2.9 | < 2.9 | < 2.9 | < 4.4 |
| Benzene | ug/l | 1 | 5 | < 0.26 | < 0.26 | < 0.23 | < 0.23 | < 0.23 | < 0.26 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.14 | < 0.14 | < 0.22 | < 0.22 | < 0.22 | < 0.18 |
| Bromoform | ug/l | 4 | 80 | < 0.18 | < 0.18 | < 0.23 | < 0.23 | < 0.23 | < 0.42 |
| Bromomethane | ug/l | 10 | NS | < 0.32 | < 0.32 | < 0.3 | < 0.3 | < 0.3 | < 0.24 |
| Carbon disulfide | ug/l | 700 | NS | < 0.15 | < 0.16 | < 0.74 | < 0.74 | < 0.74 | < 0.13 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.18 | < 0.18 | < 0.26 | < 0.26 | < 0.26 | < 0.35 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.14 | < 0.19 | < 0.39 | < 0.39 | < 0.39 | < 0.15 |
| Chloroethane | ug/l | NS | NS | < 0.22 | < 0.22 | < 0.37 | < 0.37 | < 0.37 | < 0.25 |
| Chloroform | ug/l | 70 | 80 | < 0.16 | < 0.16 | < 0.23 | < 0.23 | < 0.23 | < 0.14 |
| Chloromethane | ug/l | NS | NS | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.34 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.19 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | < 0.24 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.15 | < 0.18 | < 0.25 | < 0.25 | < 0.25 | < 0.16 |
| Cyclohexane | ug/l | NS | NS | < 0.85 | < 0.85 | < 1.9 | < 1.9 | < 1.9 | < 0.43 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.12 | < 0.16 | < 0.22 | < 0.22 | < 0.22 | < 0.16 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.88 | < 0.88 | < 0.92 | < 0.92 | < 0.92 | < 0.39 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.31 |
| Freon 113 | ug/l | NS | NS | < 0.8 | < 0.8 | < 0.38 | < 0.38 | < 0.38 | < 0.66 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.15 | < 0.19 | < 0.57 | < 0.57 | < 0.57 | < 0.31 |
| Methyl acetate | ug/l | 7000 | NS | < 2.5 | < 1.7 | < 1.5 | < 1.5 | < 1.5 | < 1.3 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.14 | < 0.16 | < 0.23 | < 0.23 | < 0.23 | < 0.2 |
| Methylcyclohexane | ug/l | NS | NS | < 0.11 | < 0.11 | < 0.35 | < 0.35 | < 0.35 | < 0.16 |
| Methylene chloride | ug/l | 3 | 5 | < 0.16 | < 0.16 | < 0.3 | < 0.3 | < 0.3 | < 0.2 |
| o-Xylene | ug/l | NS | NS | < 0.45 | < 0.45 | < 0.25 | < 0.25 | NA | NA |
| Styrene | ug/l | 100 | 100 | < 0.11 | < 0.17 | < 0.58 | < 0.58 | < 0.58 | < 0.48 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.29 | < 0.29 | < 0.27 | < 0.27 | < 0.27 | < 0.24 |
| Toluene | ug/l | 600 | 1000 | < 0.15 | < 0.15 | < 0.3 | < 0.3 | < 0.3 | < 0.27 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.16 | < 0.16 | < 0.25 | < 0.25 | < 0.25 | < 0.3 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.11 | < 0.15 | < 0.21 | < 0.21 | < 0.21 | < 0.22 |
| Trichloroethene | ug/l | 1 | 5 | < 0.18 | < 0.18 | < 0.24 | < 0.24 | < 0.24 | < 0.22 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.25 | < 0.25 | < 0.54 | < 0.54 | < 0.54 | < 0.23 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.21 | < 0.21 | < 0.44 | < 0.44 | < 0.44 | < 0.22 |
| Xylene, -m,p | ug/l | NS | NS | < 0.39 | < 0.39 | < 0.25 | < 0.25 | NA | NA |
| Xylenes | ug/l | 1,000 | 10000 | < 0.39 | < 0.39 | < 0.25 | < 0.25 | < 0.25 | < 0.28 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.24 J | < 0.58 | < 0.47 | < 0.44 | < 0.43 | < 0.42 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.2 J | < 2.1 | < 1.5 | < 1.4 | < 1.3 | < 1.3 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.1 J | < 1.7 | < 1.4 | < 1.3 | < 1.2 | < 1.2 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.5 J | < 2 | < 1.4 | < 1.3 | < 1.2 | < 1.2 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 J | < 2.1 | < 1.9 | < 1.7 | < 1.7 | < 1.7 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 1.2 J | < 4.4 | < 0.83 | < 0.77 | < 0.75 | < 0.74 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.58 J | < 0.48 | < 0.25 | < 0.23 | < 0.22 | < 0.22 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.54 J | < 0.63 | < 0.37 | < 0.34 | < 0.33 | < 0.33 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.21 J | < 0.51 | < 0.47 | < 0.43 | < 0.42 | < 0.42 |
| 2-Chlorophenol | ug/l | 40 | NS | < 0.94 J | < 1.5 | < 1.2 | < 1.1 | < 1.1 | < 1.1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.82 J | < 0.46 | < 0.74 | < 0.69 | < 0.67 | < 0.66 |
| 2-Methylphenol | ug/l | NS | NS | < 1.1 J | < 1.4 | < 1.3 | < 1.2 | < 1.1 | < 1.1 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.53 J | < 0.47 | < 0.26 | < 0.24 | < 0.24 | < 0.24 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.6 J | < 2 | < 1.4 | < 1.3 | < 1.3 | < 1.2 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.2 J | < 1.5 | < 1.2 | < 1.1 | < 1.1 | < 1 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 1 J | < 4.8 | < 0.33 | < 0.31 | < 0.3 | < 0.3 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.35 J | < 0.47 | < 0.32 | < 0.3 | < 0.29 | < 0.29 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 2.4 J | < 1.2 | < 0.58 | < 0.53 | < 0.52 | < 0.51 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.4 J | < 0.43 | < 0.39 | < 0.36 | < 0.35 | < 0.35 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.3 J | < 2.4 | < 1.2 | < 1.1 | < 1.1 | < 1.1 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.37 J | < 0.35 | < 0.28 | < 0.26 | < 0.26 | < 0.25 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.31 J | < 0.48 | < 0.4 | < 0.37 | < 0.36 | < 0.35 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.63 J | < 0.48 | < 0.2 | < 0.19 | < 0.18 | < 0.18 |
| 4-Nitrophenol | ug/l | NS | NS | < 1.7 J | < 2.4 | < 0.93 | < 0.86 | < 0.84 J | < 0.83 |
| Acetophenone | ug/l | 700 | NS | < 0.39 J | < 0.49 | < 0.45 | < 0.42 | < 0.4 | < 0.4 |
| Atrazine | ug/l | 3 | 3 | < 0.3 J | < 0.65 | < 0.44 | < 0.41 | < 0.4 | < 0.39 |
| Benzaldehyde | ug/l | NS | NS | < 0.82 J | < 1.7 | < 0.45 | < 0.42 | < 0.41 | < 0.4 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.69 J | < 0.44 | < 0.28 | < 0.26 | < 0.25 | < 0.25 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.34 J | < 0.54 | < 0.28 | < 0.26 | < 0.25 | < 0.25 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.72 J | < 0.52 | < 0.35 | < 0.32 | < 0.31 | < 0.31 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.62 J | < 0.57 | < 0.44 | < 0.41 | < 0.4 | < 0.39 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.94 BJ | < 0.79 | < 0.37 | < 0.34 | < 0.33 | < 0.33 |
| Caprolactam | ug/l | NS | NS | < 0.53 J | < 0.66 | < 0.22 | < 0.2 | < 0.2 | < 0.2 |
| Carbazole | ug/l | NS | NS | < 0.43 J | < 0.47 | < 0.19 | < 0.17 | < 0.17 | < 0.17 |
| Dibenzofuran | ug/l | NS | NS | < 0.25 J | < 0.51 | < 0.34 | < 0.32 | < 0.31 | < 0.3 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.37 J | < 0.38 | < 0.19 | < 0.17 | < 0.17 | < 0.17 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.36 J | < 0.38 | < 0.25 | < 0.23 | < 0.23 | < 0.23 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.43 J | < 0.53 | < 0.21 | < 0.2 | < 0.19 | < 0.19 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.51 J | < 0.52 | < 0.44 | < 0.41 | < 0.4 | < 0.4 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.14 J | < 0.39 | < 0.42 | < 0.39 | < 0.13 | < 0.13 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.11 J | < 4.8 | < 0.76 | < 0.7 | < 0.25 | < 0.24 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.17 J | < 0.32 | < 0.3 | < 0.27 | < 0.21 | < 0.21 |
| Isophrone | ug/l | 40 | NS | < 0.53 J | < 0.73 | < 0.28 | < 0.26 | < 0.25 | < 0.25 |
| Nitrobenzene | ug/l | 6 | NS | < 0.76 J | < 0.69 | < 0.28 | < 0.26 | < 0.26 | < 0.25 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.41 J | < 0.41 | < 0.49 | < 0.46 | < 0.44 | < 0.44 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.45 J | < 0.64 | < 0.24 | < 0.22 | < 0.22 | < 0.22 |
| Phenol | ug/l | 2000 | NS | < 0.73 J | < 1.4 | < 0.65 | < 0.6 | < 0.59 | < 0.58 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 7.4 J | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.017 | < 0.017 | < 0.018 | < 0.03 | < 0.03 | < 0.014 |
| Acenaphthylene | ug/l | NS | NS | < 0.0075 | < 0.0074 | < 0.0079 | < 0.041 | < 0.04 | < 0.016 |
| Anthracene | ug/l | 2000 | NS | < 0.023 | < 0.022 | < 0.024 | < 0.027 | < 0.026 | < 0.01 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.036 | < 0.035 | < 0.038 | < 0.025 | < 0.024 | < 0.015 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.038 | < 0.037 | < 0.04 | < 0.032 | < 0.031 | < 0.0049 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.018 | < 0.018 | < 0.019 | < 0.037 | < 0.037 | < 0.016 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.013 | < 0.012 | < 0.013 | < 0.03 | < 0.029 | < 0.01 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.02 | < 0.02 | < 0.021 | < 0.029 | < 0.029 | < 0.013 |
| Chrysene | ug/l | 5 | NS | < 0.019 | < 0.019 | < 0.02 | < 0.023 | < 0.022 | < 0.023 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.022 | < 0.021 | < 0.023 | < 0.023 | < 0.023 | < 0.023 |
| Fluoranthene | ug/l | 300 | NS | < 0.01 | < 0.01 | < 0.011 | < 0.025 | < 0.025 | < 0.0096 |
| Fluorene | ug/l | 300 | NS | < 0.021 | < 0.021 | < 0.022 | < 0.028 | < 0.027 | < 0.015 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.011 | < 0.01 | < 0.011 | < 0.01 | < 0.01 | < 0.008 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.015 | < 0.015 | < 0.016 | < 0.03 | < 0.03 | < 0.011 |
| Naphthalene | ug/l | 300 | NS | < 0.015 | < 0.015 | < 0.016 | < 0.019 | < 0.019 | < 0.016 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.24 | < 0.23 | < 0.25 | < 0.23 | < 0.069 | < 0.29 |
| Phenanthrene | ug/l | NS | NS | < 0.018 | < 0.018 | < 0.019 | < 0.038 | < 0.037 | < 0.016 |
| Pyrene | ug/l | 200 | NS | < 0.013 | < 0.013 | < 0.014 | < 0.023 | < 0.023 | < 0.0081 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.099 | < 0.094 | < 0.19 | < 0.3 | < 0.33 | < 0.13 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.49 | < 0.47 | < 0.31 | < 0.41 | < 0.45 | < 0.27 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.41 | < 0.39 | < 0.21 | < 0.31 | < 0.34 | < 0.39 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.17 | < 0.16 | < 0.089 | < 0.27 | < 0.3 | < 0.086 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.16 | < 0.15 | < 0.25 | < 0.28 | < 0.31 | < 0.15 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.11 | < 0.11 | < 0.11 | < 0.18 | < 0.2 | < 0.14 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.12 | < 0.12 | < 0.14 | < 0.14 | < 0.15 | < 0.21 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 24 | < 114 J | **420** | 57.3 B | < 7.8 | **236** |
| Antimony | ug/l | 6 | 6 | < 1.8 | < 1.8 | < 4 | < 2.9 | < 2.2 | < 1.3 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.7 | < 1.7 | < 2.4 | < 2.4 | < 1.4 | < 0.92 |
| Barium | ug/l | 6000 | 2000 | 6.5 B | 8.5 BJ | 9.4 B | 8.5 B | 7 B | 8.9 J |
| Beryllium | ug/l | 1 | 4 | < 0.15 | < 0.15 | < 0.4 | < 0.4 | < 0.24 | < 0.24 |
| Cadmium | ug/l | 4 | 5 | < 0.28 | < 0.28 | 0.4 B | < 0.4 | < 0.35 | < 0.17 |
| Calcium | ug/l | NS | NS | 45100 | 34900 J | 48700 | 44700 | 45300 | 50600 |
| Chromium | ug/l | 70 | 100 | 0.9 B | < 1.5 | < 10 | 2.6 B | 1.6 B | < 10 |
| Cobalt | ug/l | NS | NS | < 0.51 | < 0.51 | < 0.4 | < 1.6 | < 0.65 | < 0.3 |
| Copper | ug/l | 1,300 | 1300 | < 2.5 | < 2.5 | < 2 | < 1.6 | < 2.5 | < 0.85 |
| Iron | ug/l | 300 | NS | 18.1 B | < 66.8 J | **490 J** | 85.4 B | 25 B | 278 |
| Lead | ug/l | 5 | 15 | < 1.4 | < 1.4 | < 1.7 | < 1.7 | < 1.9 | < 0.94 |
| Magnesium | ug/l | NS | NS | 9630 | 7420 | 10200 | 8980 | 9430 | 10900 |
| Manganese | ug/l | 50 | NS | 0.8 B | 4.9 BJ | 9.8 B | 8.5 B | < 0.46 | 6.3 J |
| Mercury | ug/l | 2 | 2 | < 0.15 | < 0.049 | < 0.049 | < 0.082 | < 0.082 | < 0.088 |
| Nickel | ug/l | 100 | NS | < 1.2 | < 1.2 | < 10 | < 10 | 0.7 B | < 10 |
| Potassium | ug/l | NS | NS | < 48 B | 288 B | 521 B | 427 B | 369 B | 520 J |
| Selenium | ug/l | 40 | 50 | < 1.6 | < 1.6 | < 3.7 | < 3.7 | < 1.9 | < 1.5 |
| Silver | ug/l | 40 | NS | < 1 | < 1 | < 1 | < 1 | < 0.53 | < 0.72 |
| Sodium | ug/l | 50,000 | NS | 6090 B | 5230 B | 6210 B | 6490 B | 6150 B | 6130 B |
| Thallium | ug/l | 2 [10] | 2 | < 1.3 | < 1.3 | < 1.5 | < 1.5 | < 1.8 | < 0.17 |
| Vanadium | ug/l | NS | NS | < 0.43 | < 0.43 | < 0.9 | < 0.9 | < 0.56 | < 0.43 |
| Zinc | ug/l | 2000 | NS | < 4 | < 5.1 | < 2.9 | 3.6 J | < 20 | < 1.7 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 24 | < 24 | 45 B | < 26 | 26.6 J | < 200 |
| Antimony | ug/l | 6 | 6 | < 1.8 | < 1.8 | < 4 | < 2.9 | < 2.2 | < 1.3 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.7 | < 1.7 | < 2.4 | < 2.4 | < 1.4 | < 0.92 |
| Barium | ug/l | 6000 | 2000 | 6.5 B | 7.2 J | 6.9 B | 7.7 B | 6.6 B | 7 J |
| Beryllium | ug/l | 1 | 4 | < 0.15 | < 0.15 | < 0.4 | < 0.4 | < 0.24 | < 0.24 |
| Cadmium | ug/l | 4 | 5 | < 0.28 | < 0.28 | 0.5 B | < 0.4 | < 0.35 | < 0.17 |
| Calcium | ug/l | NS | NS | 45200 | 35400 J | 47100 | 44800 | 43000 | 47400 |
| Chromium | ug/l | 70 | 100 | 1.2 B | < 1 | < 10 | 1.9 B | 2 B | < 0.9 |
| Cobalt | ug/l | NS | NS | < 0.51 | < 0.51 | < 0.4 | < 1.6 | < 0.65 | < 0.3 |
| Copper | ug/l | 1,300 | 1300 | < 2.5 | < 2.5 | < 2 | < 1.6 | < 2.5 | < 0.85 |
| Iron | ug/l | 300 | NS | < 7.4 | < 18 J | < 100 | < 12 | 23 J | < 100 |
| Lead | ug/l | 5 | 15 | 1.8 B | < 1.4 | < 1.7 | < 1.7 | < 1.9 | < 1.1 |
| Magnesium | ug/l | NS | NS | 9650 | 7500 | 9650 | 9010 | 9130 | 10200 |
| Manganese | ug/l | 50 | NS | 0.5 B | < 1.4 | < 15 | < 15 | < 0.46 | < 15 |
| Mercury | ug/l | 2 | 2 | 0.17 B | < 0.049 | < 0.049 | < 0.082 J | < 0.082 | < 0.088 |
| Nickel | ug/l | 100 | NS | < 1.2 | < 1.2 | < 0.6 | < 10 | 1.2 B | < 0.41 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | < 48 B | 246 B | 382 B | 417 B | 370 B | 375 J |
| Selenium | ug/l | 40 | 50 | < 1.6 | < 1.6 | < 3.7 | < 3.7 | < 1.9 | < 1.5 |
| Silver | ug/l | 40 | NS | < 1 | < 1 | < 1 | < 1 | < 0.53 | < 0.72 |
| Sodium | ug/l | 50,000 | NS | 6150 B | 5300 B | 6000 B | 6450 B | 5900 B | 5820 B |
| Thallium | ug/l | 2 [10] | 2 | < 1.3 | < 1.3 | < 1.5 | < 1.5 | < 1.8 | < 0.17 |
| Vanadium | ug/l | NS | NS | < 0.43 | < 0.43 | < 0.9 | < 0.9 | < 0.56 | < 0.43 |
| Zinc | ug/l | 2000 | NS | < 4 | < 4 | < 20 | 5.3 B | < 20 | 3.1 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 | OB-18 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(080501) | OB-18(080911) | OB-18(070809) | OB-18(102309) | OB-18(052710) | OB-18(051911) |
| Sample Date | | | MCLs | 5/1/2008 | 9/11/2008 | 7/8/2009 | 10/23/2009 | 5/27/2010 | 5/19/2011 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | 151000 | 127000 | NA | NA | NA | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | < 5000 | < 5000 | NA | NA | NA | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 151000 | 127000 | 159000 | 155000 | 150000 | 161000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | < 2000 | < 2000 | < 2000 | < 2000 | < 2000 | < 2000 |
| Cyanide | ug/l | 100 | 200 | < 10 | 21 | NA | NA | NA | NA |
| Nitrate | ug/l | 10000 | 10000 | < 110 | < 110 J | NA | NA | NA | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | < 10 | < 10 J | NA | NA | NA | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | 100 | < 100 | NA | NA | NA | NA |
| Phosphorus, Total | ug/l | NS | NS | < 50 | 59 | NA | NA | NA | NA |
| Sulfate | ug/l | 250000 | NS | 13900 | 14500 | 15200 | 14100 | 14500 | 13400 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.24 | < 0.28 | < 0.28 | < 0.24 | < 0.26 | < 0.26 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.2 | < 0.28 | < 0.28 | < 0.13 | < 0.24 | < 0.24 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.23 | < 0.32 | < 0.32 | < 0.17 | < 0.23 | < 0.23 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.19 | < 0.23 | < 0.23 | < 0.16 | < 0.29 | < 0.29 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.28 | < 0.33 | < 0.33 | < 0.29 | < 0.4 | < 0.4 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.15 | < 0.16 | < 0.16 | < 1.3 | < 0.56 | < 0.56 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.3* | < 1.1* | < 1.1* | < 2.4* | < 1.1* | < 1.1* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.21* | < 0.52* | < 0.52* | < 0.17* | < 0.39* | < 0.39* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.18 | < 0.2 | < 0.2 | < 0.18 | < 0.26 | < 0.26 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.18 | < 0.29 | < 0.29 | < 0.35 | < 0.33 | < 0.33 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.22 | < 0.2 | < 0.2 | < 0.18 | < 0.27 | < 0.27 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.29 | < 0.32 | < 0.32 | < 0.26 | < 0.25 | < 0.25 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.26 | < 0.24 | < 0.24 | < 0.32 | < 0.28 | < 0.28 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 2.9 | < 2.6 | < 2.6 | < 2.3 | < 1.6 | < 1.6 |
| 2-Hexanone | ug/l | NS | NS | < 3 | < 1.3 | < 1.3 | < 1.7 | < 1.4 | < 1.4 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 1.2 | < 1.1 | < 1.1 | < 1.9 | < 0.86 | < 0.86 |
| Acetone | ug/l | 6000 | NS | < 7.6 | < 2.4 | < 2.4 | < 2.1 | < 2.9 | < 2.9 |
| Benzene | ug/l | 1 | 5 | < 0.22 | < 0.21 | < 0.21 | < 0.26 | < 0.23 | < 0.23 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.23 | < 0.17 | < 0.17 | < 0.14 | < 0.22 | < 0.22 |
| Bromoform | ug/l | 4 | 80 | < 0.24 | < 0.54 | < 0.54 | < 0.18 | < 0.23 | < 0.23 |
| Bromomethane | ug/l | 10 | NS | < 0.31 | < 0.22 | < 0.22 | < 0.32 | < 0.3 | < 0.3 |
| Carbon disulfide | ug/l | 700 | NS | < 0.18 | < 0.21 | < 0.21 | < 0.15 | < 0.74 | < 0.74 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.19 | < 0.29 | < 0.29 | < 0.18 | < 0.26 | < 0.26 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.22 | < 0.22 | < 0.22 | < 0.14 | < 0.39 | < 0.39 |
| Chloroethane | ug/l | NS | NS | < 0.37 | < 0.56 | < 0.56 | < 0.22 | < 0.37 | < 0.37 |
| Chloroform | ug/l | 70 | 80 | < 0.21 | < 0.22 | < 0.22 | < 0.16 | < 0.23 | < 0.23 |
| Chloromethane | ug/l | NS | NS | < 0.22 | < 0.35 | < 0.35 | < 0.29 | < 0.29 | < 0.29 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.22 | < 0.18 | < 0.18 | < 0.19 | < 0.22 | < 0.22 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.22 | < 0.15 | < 0.15 | < 0.15 | < 0.25 | < 0.25 |
| Cyclohexane | ug/l | NS | NS | < 0.29 | < 0.5 | < 0.5 | < 0.85 | < 1.9 | < 1.9 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.2 | < 0.19 | < 0.19 | < 0.12 | < 0.22 | < 0.22 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.31 | < 0.75 | < 0.75 | < 0.88 | < 0.92 | < 0.92 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.21 | < 0.2 | < 0.2 | < 0.27 | < 0.27 | < 0.27 |
| Freon 113 | ug/l | NS | NS | < 0.49 | < 0.69 | < 0.69 | < 0.8 | < 0.38 | < 0.38 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.19 | < 0.2 | < 0.2 | < 0.15 | < 0.57 | < 0.57 |
| Methyl acetate | ug/l | 7000 | NS | < 2.9 | < 2.1 | < 2.1 | < 2.5 | < 1.5 | < 1.5 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.18 | < 0.31 | < 0.31 | < 0.14 | < 0.23 | < 0.23 |
| Methylcyclohexane | ug/l | NS | NS | < 0.18 | < 0.18 | < 0.18 | < 0.11 | < 0.35 | < 0.35 |
| Methylene chloride | ug/l | 3 | 5 | < 0.2 | < 0.27 | < 0.27 | < 0.16 | < 0.3 | < 0.3 |
| o-Xylene | ug/l | NS | NS | NA | < 0.31 | < 0.31 | < 0.45 | < 0.25 | NA |
| Styrene | ug/l | 100 | 100 | < 0.23 | < 0.16 | < 0.16 | < 0.11 | < 0.58 | < 0.58 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.32 | < 0.28 | < 0.28 | < 0.29 | < 0.27 | < 0.27 |
| Toluene | ug/l | 600 | 1000 | < 0.15 | < 0.2 | < 0.2 | < 0.15 | < 0.3 | < 0.3 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.31 | < 0.42 | < 0.42 | < 0.16 | < 0.25 | < 0.25 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.19 | < 0.2 | < 0.2 | < 0.11 | < 0.21 | < 0.21 |
| Trichloroethene | ug/l | 1 | 5 | < 0.21 | < 0.29 | < 0.29 | < 0.18 | < 0.24 | < 0.24 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.35 | < 0.25 | < 0.25 | < 0.25 | < 0.54 | < 0.54 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.27 | < 0.29 | < 0.29 | < 0.21 | < 0.44 | < 0.44 |
| Xylene, -m,p | ug/l | NS | NS | NA | < 0.42 | < 0.42 | < 0.39 | < 0.25 | NA |
| Xylenes | ug/l | 1,000 | 10000 | < 0.17 | < 0.31 | < 0.31 | < 0.39 | < 0.25 | < 0.25 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.36 | < 0.38 | < 0.36 | < 0.25 J | < 0.47 | < 0.42 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.9 | < 2.2 | < 2.1 | < 1.2 J | < 1.5 | < 1.3 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.5 | < 1.5 | < 1.4 | < 1.1 J | < 1.4 | < 1.2 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.4 | < 1.8 | < 1.7 | < 1.6 J | < 1.4 | < 1.2 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 | < 1.9 | < 1.8 | < 1.9 J | < 1.9 | < 1.7 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 20 | < 1 | < 0.99 | < 1.2 J | < 0.83 | < 0.74 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.51 | < 1 | < 0.96 | < 0.61 J | < 0.25 | < 0.22 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.55 | < 0.65 | < 0.62 | < 0.56 J | < 0.37 | < 0.33 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.35 | < 1.1 | < 1.1 | < 0.22 J | < 0.47 | < 0.42 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.2 | < 1.1 | < 1.1 | < 0.98 J | < 1.2 | < 1.1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.46 | < 0.47 | < 0.45 | < 0.86 J | < 0.74 | < 0.66 |
| 2-Methylphenol | ug/l | NS | NS | < 1.2 | < 1.6 | < 1.5 | < 1.2 J | < 1.3 | < 1.1 |
| 2-Nitroaniline | ug/l | NS | NS | < 1.3 | < 0.77 | < 0.74 | < 0.56 J | < 0.26 | < 0.24 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.8 | < 2.1 | < 2 | < 1.7 J | < 1.4 | < 1.2 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.1 | < 1.5 | < 1.4 | < 1.2 J | < 1.2 | < 1 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 0.43 | < 1.4 | < 1.4 J | < 1.1 J | < 0.33 | < 0.3 |
| 3-Nitroaniline | ug/l | NS | NS | < 1.5 | < 1.5 | < 1.4 | < 0.36 J | < 0.32 | < 0.29 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 1.2 | < 0.84 | < 0.8 | < 2.5 J | < 0.58 | < 0.51 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.43 | < 0.35 | < 0.33 | < 0.42 J | < 0.39 | < 0.35 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 2.2 | < 1.4 | < 1.3 | < 1.4 J | < 1.2 | < 1.1 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.63 | < 0.46 | < 0.44 | < 0.39 J | < 0.28 | < 0.25 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.37 | < 0.5 | < 0.48 | < 0.33 J | < 0.4 | < 0.35 |
| 4-Nitroaniline | ug/l | NS | NS | < 2 | < 0.84 | < 0.8 | < 0.66 J | < 0.2 | < 0.18 |
| 4-Nitrophenol | ug/l | NS | NS | < 6.2 | < 0.98 | < 0.94 | < 1.8 J | < 0.93 | < 0.83 |
| Acetophenone | ug/l | 700 | NS | < 0.34 | < 0.43 | < 0.42 | < 0.41 J | < 0.45 | < 0.4 |
| Atrazine | ug/l | 3 | 3 | < 0.58 | < 0.19 | < 0.18 | < 0.32 J | < 0.44 | < 0.39 |
| Benzaldehyde | ug/l | NS | NS | < 3.9 | < 0.31 | R | < 0.86 J | < 0.45 | < 0.4 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.34 | < 0.69 | < 0.66 | < 0.72 J | < 0.28 | < 0.25 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.37 | < 0.76 | < 0.73 | < 0.36 J | < 0.28 | < 0.25 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.37 | < 0.62 | < 0.59 | < 0.76 J | < 0.35 | < 0.31 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.54 | < 0.86 | < 0.82 | < 0.65 J | < 0.44 | < 0.39 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.7 | < 0.77 | < 0.73 | < 0.99 J | < 0.37 | < 0.33 |
| Caprolactam | ug/l | NS | NS | < 0.82 | < 0.37 | < 0.35 | < 0.55 J | < 0.22 | < 0.2 |
| Carbazole | ug/l | NS | NS | < 0.43 | < 0.42 | < 0.4 | < 0.45 J | < 0.19 | < 0.17 |
| Dibenzofuran | ug/l | NS | NS | < 0.32 | < 0.4 | < 0.38 | < 0.26 J | < 0.34 | < 0.3 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.39 | < 0.45 | < 0.43 | < 0.39 J | < 0.19 | < 0.17 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.34 | < 0.38 | < 0.36 | < 0.38 J | < 0.25 | < 0.23 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.66 | < 0.69 | < 0.66 | < 0.45 J | < 0.21 | < 0.19 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.37 | < 0.66 | < 0.63 | < 0.54 J | < 0.44 | < 0.4 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.61 | < 0.2 | < 0.19 J | < 0.14 J | < 0.42 | < 0.13 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 8.5 | < 0.47 | < 0.45 | < 0.12 J | < 0.76 | < 0.24 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.65 | < 0.33 | < 0.31 J | < 0.18 J | < 0.3 | < 0.21 |
| Isophrone | ug/l | 40 | NS | < 0.33 | < 0.68 | < 0.65 | < 0.55 J | < 0.28 | < 0.25 |
| Nitrobenzene | ug/l | 6 | NS | < 0.5 | < 0.49 | < 0.47 | < 0.79 J | < 0.28 | < 0.25 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.36 | < 0.54 | < 0.52 | < 0.43 J | < 0.49 | < 0.44 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.36 | < 0.6 | < 0.57 | < 0.47 J | < 0.24 | < 0.22 |
| Phenol | ug/l | 2000 | NS | < 1.5 | < 0.58 | < 0.55 | < 0.77 J | < 0.65 | < 0.58 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.016 | < 0.02 | < 0.019 | < 0.018 | < 0.018 | < 0.032 |
| Acenaphthylene | ug/l | NS | NS | < 0.019 | < 0.011 | < 0.011 | < 0.0079 | < 0.0079 | < 0.044 |
| Anthracene | ug/l | 2000 | NS | < 0.012 | < 0.024 | < 0.023 | < 0.024 | < 0.024 | < 0.028 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.018 | < 0.0079 | < 0.0076 | < 0.038 | < 0.038 | < 0.026 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.0058 | < 0.02 | < 0.019 | < 0.04 | < 0.04 | < 0.034 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.019 | < 0.042 | < 0.04 | < 0.019 | < 0.019 | < 0.04 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.012 | < 0.021 | < 0.02 | < 0.013 | < 0.013 | < 0.032 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.015 | < 0.018 | < 0.017 | < 0.021 | < 0.021 | < 0.031 |
| Chrysene | ug/l | 5 | NS | < 0.028 | < 0.019 | < 0.019 | < 0.02 | < 0.02 | < 0.024 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.027 | < 0.019 | < 0.018 | < 0.023 | < 0.023 | < 0.025 |
| Fluoranthene | ug/l | 300 | NS | < 0.011 | < 0.01 | < 0.01 | < 0.011 | < 0.011 | < 0.027 |
| Fluorene | ug/l | 300 | NS | < 0.018 | < 0.023 | < 0.022 | < 0.022 | < 0.022 | < 0.03 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.0095 | < 0.071* | < 0.022* | < 0.011 | < 0.011 | < 0.011 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.013 | < 0.013 | < 0.012 | < 0.016 | < 0.016 | < 0.032 |
| Naphthalene | ug/l | 300 | NS | < 0.019 | < 0.03 | < 0.029 | < 0.016 | < 0.016 | < 0.021 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.12 J | R | < 0.33* | < 0.25 | < 0.25 | < 0.076 |
| Phenanthrene | ug/l | NS | NS | < 0.019 | < 0.025 | < 0.023 | < 0.019 | < 0.019 | < 0.04 |
| Pyrene | ug/l | 200 | NS | < 0.0096 | < 0.016 | < 0.016 | < 0.014 | < 0.014 | < 0.025 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.14 | < 0.1 | < 0.1 | < 0.1 | < 0.22 | < 0.33 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.29 | < 0.52* | < 0.51* | < 0.52* | < 0.36 | < 0.45 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.42 | < 0.43 | < 0.42 | < 0.43 | < 0.24 | < 0.34 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.093 | < 0.18 | < 0.18 | < 0.18 | < 0.1 | < 0.29 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.16 | < 0.17 | < 0.17 | < 0.17 | < 0.3 | < 0.3 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.15 | < 0.12 | < 0.12 | < 0.12 | < 0.13 | < 0.2 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.23 | < 0.13 | < 0.13 | < 0.13 | < 0.17 | < 0.15 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | < 0.0027 | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | < 0.0019 | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | < 0.0056 | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | < 0.0038 | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | < 0.003 | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | < 0.0049 | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | < 0.007 | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | < 0.0035 | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | < 0.0019 | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | < 0.0024 | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | < 0.0037 | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | < 0.0052 | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | < 0.0034 | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | < 0.0073 | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | < 0.004 | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | < 0.002 | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | < 0.0029 | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | < 0.0017 | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | < 0.002 | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | < 0.0077 | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | < 0.11 | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | **327** | **21600** | **13200** | **1560** | **2280** | **577** |
| Antimony | ug/l | 6 | 6 | < 1.4 | < 5 | < 5 | < 1.8 | < 4 | < 2.2 |
| Arsenic | ug/l | 3 [8] | 10 | < 0.97 | **9.5** | **5.2** | < 1.7 | < 2.4 | < 1.4 |
| Barium | ug/l | 6000 | 2000 | 8.5 J | 123 B | 71.8 B | 17.3 B | 22.5 B | 17.9 B |
| Beryllium | ug/l | 1 | 4 | < 0.44 | 0.92 B | 0.74 B | < 0.15 | < 0.4 | < 0.24 |
| Cadmium | ug/l | 4 | 5 | < 0.24 | < 1.3 | < 1.3 | < 0.28 | 0.6 B | < 0.35 |
| Calcium | ug/l | NS | NS | 50000 | 44800 J | 34500 | 36200 | 31900 | 32900 |
| Chromium | ug/l | 70 | 100 | < 10 | 34.3 | 18.9 | 2.3 B | < 10 | 1.7 B |
| Cobalt | ug/l | NS | NS | < 0.59 | 17.4 B | 8.8 B | 0.6 B | 1 B | < 0.65 |
| Copper | ug/l | 1,300 | 1300 | < 1.3 | 96.7 | 35.3 | < 2.5 | 18.2 J | < 2.5 |
| Iron | ug/l | 300 | NS | **404** | **35200** | **19900** | **1600** | **2960** | **709** |
| Lead | ug/l | 5 | 15 | < 1.7 | **19.5** | **9.1** | 2.3 B | < 1.7 | < 1.9 |
| Magnesium | ug/l | NS | NS | 10600 | 19700 J | 13600 | 7860 | 6230 | 7520 |
| Manganese | ug/l | 50 | NS | 9 B | **2060** | **805** | 39.4 | **64.2** | 10 B |
| Mercury | ug/l | 2 | 2 | < 0.075 | < 0.037 | < 0.037 | < 0.15 | < 0.049 | < 0.082 |
| Nickel | ug/l | 100 | NS | 2.5 B | 39.6 B | 20.4 B | 2.3 B | < 10 | 1.6 B |
| Potassium | ug/l | NS | NS | 483 B | 5500 J | 3480 B | 1470 B | 1360 B | 958 J |
| Selenium | ug/l | 40 | 50 | < 2.4 | < 6.2 | < 6.2 | < 1.6 | < 10 | 2.5 B |
| Silver | ug/l | 40 | NS | < 0.85 | < 1 | < 1 | < 1 | < 1 | < 0.53 |
| Sodium | ug/l | 50,000 | NS | 6030 B | 12100 | 8390 BJ | 14300 | 13500 | 17800 |
| Thallium | ug/l | 2 [10] | 2 | < 1.7 | 0.6 B | < 0.09 | < 1.3 | < 1.5 | < 1.8 |
| Vanadium | ug/l | NS | NS | < 50 | 36.1 B | 21.5 B | 2.4 B | 3.3 BJ | 0.8 B |
| Zinc | ug/l | 2000 | NS | < 2.8 | 105 J | 56.9 | < 4 B | 24.1 J | < 20 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 200 | < 23 | < 23 | < 24 | 53.8 B | < 200 |
| Antimony | ug/l | 6 | 6 | < 1.4 | < 5 | < 5 | < 1.8 | < 4 | < 2.2 |
| Arsenic | ug/l | 3 [8] | 10 | < 0.97 | < 1.5 | < 1.5 | < 1.7 | < 2.4 | < 1.4 |
| Barium | ug/l | 6000 | 2000 | 6.4 J | 10.5 B | 4.7 B | 8.7 B | 10.5 B | 12.9 B |
| Beryllium | ug/l | 1 | 4 | < 0.44 | < 0.4 | < 0.4 | < 0.15 | < 0.4 | < 0.24 |
| Cadmium | ug/l | 4 | 5 | < 0.24 | < 1.3 | < 1.3 | < 0.28 | < 0.4 | < 0.35 |
| Calcium | ug/l | NS | NS | 50100 | 40000 J | 32700 | 36000 | 33600 | 32500 |
| Chromium | ug/l | 70 | 100 | < 0.91 | 2.6 B | < 0.8 | < 0.53 | < 10 | 1.1 B |
| Cobalt | ug/l | NS | NS | < 0.59 | 2.9 B | < 1.8 | < 0.51 | < 0.4 | < 0.65 |
| Copper | ug/l | 1,300 | 1300 | < 1.3 | < 2.7 | < 2.7 | < 2.5 | < 2 | < 2.5 |
| Iron | ug/l | 300 | NS | < 24 | 157 | < 25 | 15 B | < 100 | < 100 |
| Lead | ug/l | 5 | 15 | < 1.7 | < 2.8 | < 2.8 | < 1.4 | < 1.7 | < 1.9 |
| Magnesium | ug/l | NS | NS | 10600 | 12900 J | 10600 | 6870 | 6180 | 7700 |
| Manganese | ug/l | 50 | NS | < 15 | **1040** | **484** | 2.4 B | 6 BJ | 1.6 J |
| Mercury | ug/l | 2 | 2 | < 0.075 | < 0.037 | < 0.037 | < 0.15 | < 0.049 | < 0.082 |
| Nickel | ug/l | 100 | NS | 1.8 J | 7 B | 2.8 B | < 1.2 | < 10 | 1 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 386 B | 1770 BJ | 937 B | 955 B | 765 B | 774 B |
| Selenium | ug/l | 40 | 50 | < 2.4 | < 6.2 | < 6.2 | < 1.6 | < 10 | 1.9 B |
| Silver | ug/l | 40 | NS | < 0.85 | < 1 | < 1 | < 1 | < 1 | < 0.53 |
| Sodium | ug/l | 50,000 | NS | 5980 B | 11500 | 8480 BJ | 14000 | 14200 | 17200 |
| Thallium | ug/l | 2 [10] | 2 | < 1.7 | 0.48 B | 0.11 B | < 1.3 | < 1.5 | < 1.8 |
| Vanadium | ug/l | NS | NS | < 0.77 | < 1.8 | < 1.8 | < 0.43 | < 0.9 | < 0.56 |
| Zinc | ug/l | 2000 | NS | < 2.8 | 4.5 B | < 3.4 | < 4 | < 20 | 6.8 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-18 | OB-22 | OB-22 | OB-22 | OB-22 | OB-22 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-18(041712) | OB-22 | OB-22(040407) | OB-22(080501) | OB-22(070809) | OB-22(052810) |
| Sample Date | | | MCLs | 4/17/2012 | 11/30/2006 | 4/4/2007 | 5/1/2008 | 7/8/2009 | 5/28/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | 95600 | 50500 | NA | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | < 5000 | < 5000 | NA | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 161000 | NA | 95600 | 50500 | 69300 | 54000 |
| Bromide | ug/l | NS | NS | NA | 160 | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | < 2000 | NA | 15200 | 54000 | 41700 | 56200 |
| Cyanide | ug/l | 100 | 200 | NA | < 10 | < 10 | < 10 | NA | NA |
| Nitrate | ug/l | 10000 | 10000 | NA | < 110 | 190 | < 110 | NA | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | < 10 | < 10 | < 10 | NA | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | < 100 | 190 | < 100 | NA | NA |
| Phosphorus, Total | ug/l | NS | NS | NA | 230 | 730 | < 50 | NA | NA |
| Sulfate | ug/l | 250000 | NS | 14800 | NA | 37800 | 21900 | 18300 | 22200 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.2 | < 0.24 | < 0.28 | < 0.28 | < 0.24 | < 0.26 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.12 | < 0.2 | < 0.28 | < 0.28 | < 0.13 | < 0.24 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.13 | < 0.23 | < 0.32 | < 0.32 | < 0.17 | < 0.23 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.16 | < 0.19 | < 0.23 | < 0.23 | < 0.16 | < 0.29 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.24 | < 0.28 | < 0.33 | < 0.33 | < 0.29 | < 0.4 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.16 | < 0.15 | < 0.16 | < 0.16 | < 1.3 | < 0.56 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.2* | < 1.3* | < 1.1 * | < 1.1 * | < 2.4* | < 1.1* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.39* | < 0.21* | < 0.52 * | < 0.52 * | < 0.17* | < 0.39* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.15 | < 0.18 | < 0.2 | < 0.2 | < 0.18 | < 0.26 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.31 | < 0.18 | < 0.29 J | < 0.29 | < 0.35 | < 0.33 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.23 | < 0.22 | < 0.2 | < 0.2 | < 0.18 | < 0.27 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.19 | < 0.29 | < 0.32 | < 0.32 | < 0.26 | < 0.25 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.22 | < 0.26 | < 0.24 | < 0.24 | < 0.32 | < 0.28 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 1.7 | < 2.9 | < 2.6 | < 2.6 | < 2.3 | < 1.6 |
| 2-Hexanone | ug/l | NS | NS | < 1.9 | < 3 | < 1.3 | < 1.3 | < 1.7 | < 1.4 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 0.74 | < 1.2 | < 1.1 | < 1.1 | < 1.9 | < 0.86 |
| Acetone | ug/l | 6000 | NS | < 4.4 | < 7.6 | < 2.4 | < 2.4 | < 2.1 | < 2.9 |
| Benzene | ug/l | 1 | 5 | < 0.26 | < 0.22 | < 0.21 | < 0.21 | < 0.26 | < 0.23 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.18 | < 0.23 | < 0.17 | < 0.17 | < 0.14 | < 0.22 |
| Bromoform | ug/l | 4 | 80 | < 0.42 | < 0.24 | < 0.54 | < 0.54 | < 0.18 | < 0.23 |
| Bromomethane | ug/l | 10 | NS | < 0.24 | < 0.31 | < 0.22 | < 0.22 | < 0.32 | < 0.3 |
| Carbon disulfide | ug/l | 700 | NS | < 0.13 | < 0.18 | < 0.21 | < 0.21 | < 0.15 | < 0.74 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.35 | < 0.19 | < 0.29 | < 0.29 | < 0.18 | < 0.26 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.15 | < 0.22 | < 0.22 | < 0.22 | < 0.14 | < 0.39 |
| Chloroethane | ug/l | NS | NS | < 0.25 | < 0.37 | < 0.56 | < 0.56 | < 0.22 | < 0.37 |
| Chloroform | ug/l | 70 | 80 | < 0.14 | < 0.21 | < 0.22 | < 0.22 | < 0.16 | < 0.23 |
| Chloromethane | ug/l | NS | NS | < 0.34 | < 0.22 | < 0.35 | < 0.35 | < 0.29 | < 0.29 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.24 | < 0.22 | < 0.18 | < 0.18 | < 0.19 | < 0.22 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.16 | < 0.22 | < 0.15 | < 0.15 | < 0.15 | < 0.25 |
| Cyclohexane | ug/l | NS | NS | < 0.43 | < 0.29 | < 0.5 | < 0.5 | < 0.85 | < 1.9 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.16 | < 0.2 | < 0.19 | < 0.19 | < 0.12 | < 0.22 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.39 | < 0.31 | < 0.75 | < 0.75 | < 0.88 | < 0.92 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.31 | < 0.21 | 8.4 | 0.38 J | < 0.27 | < 0.27 |
| Freon 113 | ug/l | NS | NS | < 0.66 | < 0.49 | < 0.69 | < 0.69 | < 0.8 | < 0.38 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.31 | < 0.19 | 2 | < 0.2 | < 0.15 | < 0.57 |
| Methyl acetate | ug/l | 7000 | NS | < 1.3 | < 2.9 | < 2.1 | < 2.1 | < 2.5 | < 1.5 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.2 | < 0.18 | < 0.31 | < 0.31 | < 0.14 | 0.65 J |
| Methylcyclohexane | ug/l | NS | NS | < 0.16 | < 0.18 | < 0.18 | < 0.18 | < 0.11 | < 0.35 |
| Methylene chloride | ug/l | 3 | 5 | < 0.2 | < 0.2 | < 0.27 | < 0.27 | < 0.16 | < 0.3 |
| o-Xylene | ug/l | NS | NS | NA | NA | 35.6 | 3.2 | < 0.45 | < 0.25 |
| Styrene | ug/l | 100 | 100 | < 0.48 | < 0.23 | < 0.16 | < 0.16 | < 0.11 | < 0.58 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.24 | < 0.32 | < 0.28 | < 0.28 | < 0.29 | < 0.27 |
| Toluene | ug/l | 600 | 1000 | < 0.27 | < 0.15 | 2.3 | < 0.2 | < 0.15 | < 0.3 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.3 | < 0.31 | < 0.42 | < 0.42 | < 0.16 | < 0.25 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.22 | < 0.19 | < 0.2 | < 0.2 | < 0.11 | < 0.21 |
| Trichloroethene | ug/l | 1 | 5 | < 0.22 | < 0.21 | < 0.29 | < 0.29 | < 0.18 | < 0.24 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.23 | < 0.35 | < 0.25 | < 0.25 | < 0.25 | < 0.54 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.22 | < 0.27 | < 0.29 | < 0.29 | < 0.21 | < 0.44 |
| Xylene, -m,p | ug/l | NS | NS | NA | NA | 23.2 | 1 | < 0.39 | < 0.25 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.28 | < 0.17 | 58.8 | 4.3 | < 0.39 | < 0.25 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 126.2 J | 18.9 J | 0 | 5.3 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.42 | NA | < 0.37 | < 0.45 | < 0.24 J | < 0.42 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.3 | NA | < 2.2 | < 2.7 | < 1.2 J | < 1.3 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.2 | NA | < 1.4 | < 1.8 | < 1.1 J | < 1.2 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.2 | NA | < 1.8 | < 2.2 | < 1.5 J | < 1.2 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.7 | NA | < 1.8 | < 2.3 | < 1.8 J | < 1.7 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.74 | NA | < 1 | < 1.2 | < 1.2 J | < 0.74 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.22 | NA | < 0.97 | < 1.2 | < 0.59 J | < 0.22 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.33 | NA | < 0.63 | < 0.78 | < 0.54 J | < 0.33 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.42 | NA | < 1.1 | < 1.4 | < 0.22 J | < 0.42 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.1 | NA | < 1.1 | < 1.3 | < 0.95 J | < 1.1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.66 | NA | < 0.46 | < 0.57 | < 0.83 J | < 0.66 |
| 2-Methylphenol | ug/l | NS | NS | < 1.1 | NA | < 1.5 | < 1.9 | < 1.1 J | < 1.1 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.24 | NA | < 0.74 | < 0.92 | < 0.54 J | < 0.24 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.2 | NA | < 2 | < 2.5 | < 1.6 J | < 1.2 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1 | NA | < 1.4 | < 1.8 | < 1.2 J | < 1 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 0.3 | NA | < 1.4 | < 1.7 | < 1.1 J | < 0.3 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.29 | NA | < 1.4 | < 1.8 | < 0.35 J | < 0.29 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.51 | NA | < 0.81 | < 1 | < 2.4 J | < 0.51 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.35 | NA | < 0.34 | < 0.42 | < 0.41 J | < 0.35 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.1 | NA | < 1.3 | < 1.6 | < 1.3 J | < 1.1 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.25 | NA | < 0.45 | < 0.55 | < 0.38 J | < 0.25 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.35 | NA | < 0.48 | < 0.6 | < 0.32 J | < 0.35 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.18 | NA | < 0.81 | < 1 | < 0.64 J | < 0.18 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.83 | NA | < 0.95 | < 1.2 | < 1.7 J | < 0.83 |
| Acetophenone | ug/l | 700 | NS | < 0.4 | NA | < 0.42 | < 0.52 | < 0.39 J | < 0.4 |
| Atrazine | ug/l | 3 | 3 | < 0.39 | NA | < 0.18 | < 0.23 | < 0.31 J | < 0.39 |
| Benzaldehyde | ug/l | NS | NS | < 0.4 | NA | < 0.3 | < 0.37 | < 0.83 J | < 0.4 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.25 | NA | < 0.67 | < 0.82 | < 0.69 J | < 0.25 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.25 | NA | < 0.73 | < 0.91 | < 0.35 J | < 0.25 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.31 | NA | < 0.6 | < 0.74 | < 0.73 J | < 0.31 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.39 | NA | < 0.83 | < 1 | < 0.63 J | < 0.39 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | 1.4 J | NA | < 0.74 | **6.6** | < 0.95 J | < 2 |
| Caprolactam | ug/l | NS | NS | < 0.2 | NA | < 0.35 | < 0.44 | < 0.53 J | < 0.2 |
| Carbazole | ug/l | NS | NS | < 0.17 | NA | 0.62 J | < 0.51 | 0.59 J | < 0.17 |
| Dibenzofuran | ug/l | NS | NS | < 0.3 | NA | 0.47 J | 0.9 J | < 0.25 J | 0.69 J |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.17 | NA | < 0.44 | < 0.54 | < 0.37 J | < 0.17 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.23 | NA | < 0.37 | < 0.46 | < 0.37 J | < 0.23 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.19 | NA | < 0.67 | < 0.82 | < 0.43 J | < 0.19 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.4 | NA | < 0.64 | < 0.79 | < 0.52 J | < 0.4 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.13 | NA | < 0.2 | < 0.24 | < 0.14 J | < 0.37 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.24 | NA | < 0.46 | < 0.57 | < 0.11 J | < 0.67 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.21 | NA | < 0.32 | < 0.39 | < 0.18 J | < 0.26 |
| Isophrone | ug/l | 40 | NS | < 0.25 | NA | < 0.66 | < 0.82 | < 0.53 J | < 0.25 |
| Nitrobenzene | ug/l | 6 | NS | < 0.25 | NA | < 0.47 | < 0.58 | < 0.77 J | < 0.25 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.44 | NA | < 0.53 | < 0.65 | < 0.42 J | < 0.44 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.22 | NA | 1.3 J | < 0.72 | < 0.45 J | 1.6 J |
| Phenol | ug/l | 2000 | NS | < 0.58 | NA | < 0.56 | < 0.69 | < 0.74 J | < 0.58 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 0 | NA | 283.9 J | 130.7 J | 99.9 J | 254.4 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.014 | NA | 1 | 1.24 | 0.414 | 1.03 |
| Acenaphthylene | ug/l | NS | NS | < 0.016 | NA | < 0.011 | < 0.013 | < 0.0076 | < 0.007 |
| Anthracene | ug/l | 2000 | NS | < 0.01 | NA | < 0.023 | < 0.029 | < 0.023 | < 0.021 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.015 | NA | < 0.0076 | < 0.0094 | < 0.037 | < 0.034 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.0049 | NA | < 0.019 | < 0.023 | < 0.039 | < 0.036 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.016 | NA | < 0.041 | < 0.05 | < 0.018 | < 0.017 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.01 | NA | < 0.02 | < 0.025 | < 0.013 | < 0.012 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.013 | NA | < 0.018 | < 0.022 | < 0.02 | < 0.019 |
| Chrysene | ug/l | 5 | NS | < 0.023 | NA | < 0.019 | < 0.023 | < 0.019 | < 0.018 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.023 | NA | < 0.018 | < 0.023 | < 0.022 | < 0.02 |
| Fluoranthene | ug/l | 300 | NS | < 0.0096 | NA | < 0.01 | < 0.013 | < 0.01 | < 0.0096 |
| Fluorene | ug/l | 300 | NS | < 0.015 | NA | 0.627 | 0.573 | 0.347 | 0.538 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.008 | NA | < 0.068* | < 0.028* | < 0.011 | < 0.0099 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.011 | NA | < 0.012 | < 0.015 | < 0.016 | < 0.014 |
| Naphthalene | ug/l | 300 | NS | < 0.016 | NA | 3.54 | 0.549 | < 0.015 | < 0.014 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.29 | NA | < 0.44* | < 0.42* | < 0.24 | < 0.22 |
| Phenanthrene | ug/l | NS | NS | < 0.016 | NA | 0.45 | 0.397 | < 0.018 | 0.24 |
| Pyrene | ug/l | 200 | NS | < 0.0081 | NA | < 0.016 | < 0.019 | < 0.013 | < 0.012 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.13 | NA | < 0.11 | < 0.094 | < 0.1 | < 0.21 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.28 | NA | < 0.53* | < 0.47 | < 0.5 | < 0.34 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.39 | NA | < 0.44 | < 0.39 | < 0.41 | < 0.23 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.088 | NA | < 0.18 | < 0.16 | < 0.17 | < 0.099 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.15 | NA | < 0.17 | < 0.15 | < 0.16 | < 0.28 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.14 | NA | < 0.12 | < 0.11 | < 0.12 | < 0.12 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.21 | NA | < 0.13 | < 0.12 | < 0.12 | < 0.16 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | NA | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | < 0.0027 | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | < 0.0019 | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | < 0.0055 | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | < 0.0038 | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | < 0.0029 | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | < 0.0049 | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | < 0.0069 | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | < 0.0035 | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | < 0.0019 | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | < 0.0024 | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | < 0.0036 | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | < 0.0052 | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | < 0.0034 | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | < 0.0072 | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | < 0.0039 | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | < 0.0019 | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | < 0.0029 | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | < 0.0017 | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | < 0.0019 | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | < 0.0076 | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | < 0.11 | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | **528** | NA | < 23 | **268** | < 24 | 177 B |
| Antimony | ug/l | 6 | 6 | 3.9 J | NA | < 5 | < 5 | < 1.8 B | < 4 |
| Arsenic | ug/l | 3 [8] | 10 | < 0.92 | NA | 1.8 B | < 1.5 | < 1.7 | < 2.4 |
| Barium | ug/l | 6000 | 2000 | 17 B | NA | 497 | 668 | 499 | 436 |
| Beryllium | ug/l | 1 | 4 | < 0.24 | NA | < 0.4 | < 0.4 | < 0.15 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | < 0.17 | NA | < 1.3 | 1.5 B | < 0.28 | 0.5 B |
| Calcium | ug/l | NS | NS | 40700 | NA | 125000 | 148000 | 127000 | 117000 |
| Chromium | ug/l | 70 | 100 | < 10 | NA | < 0.8 | < 0.8 | 1.3 B | < 10 |
| Cobalt | ug/l | NS | NS | < 0.3 | NA | < 1.8 | 1.8 B | 2.9 B | 1.2 B |
| Copper | ug/l | 1,300 | 1300 | < 0.85 | NA | < 2.7 | 24.7 B | 4.3 B | < 10 |
| Iron | ug/l | 300 | NS | **696** | NA | **24600** | **14100** | **7760** | **42300** |
| Lead | ug/l | 5 | 15 | < 0.94 | NA | < 2.8 J | **24.1** | 2.5 B | **7.5** |
| Magnesium | ug/l | NS | NS | 6250 | NA | 14700 | 17100 | 16600 | 12400 |
| Manganese | ug/l | 50 | NS | 15.4 | NA | **1450** | **1650** | **1130** | **1400** |
| Mercury | ug/l | 2 | 2 | < 0.088 | NA | < 0.037 | 0.06 B | < 0.15 | < 0.049 |
| Nickel | ug/l | 100 | NS | < 10 | NA | < 2.8 | 6.3 B | 5.3 B | < 10 |
| Potassium | ug/l | NS | NS | 3540 B | NA | 12300 | 15900 | 14300 | 10000 |
| Selenium | ug/l | 40 | 50 | < 10 | NA | < 6.2 | < 6.2 | < 1.6 | < 10 |
| Silver | ug/l | 40 | NS | < 0.72 | NA | < 1 | < 1 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 15300 | NA | **121000** | **170000** | **368000** | **86900** |
| Thallium | ug/l | 2 [10] | 2 | < 0.17 | NA | 0.093 B | < 0.09 | < 1.3 | < 1.5 |
| Vanadium | ug/l | NS | NS | < 50 | NA | < 1.8 | < 1.8 | < 0.43 | < 0.9 |
| Zinc | ug/l | 2000 | NS | 4.2 J | NA | 38.7 | 155 | 63.7 | 47.9 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 200 | NA | 23.2 B | < 23 | < 24 | 103 B |
| Antimony | ug/l | 6 | 6 | 3.8 J | NA | < 5 | < 5 | < 1.8 B | < 4 |
| Arsenic | ug/l | 3 [8] | 10 | < 0.92 | NA | < 1.5 | < 1.5 | < 1.7 | < 2.4 |
| Barium | ug/l | 6000 | 2000 | 13.7 B | NA | 507 | 381 | 414 | 332 |
| Beryllium | ug/l | 1 | 4 | < 0.24 | NA | < 0.4 | < 0.4 | < 0.15 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | < 0.17 | NA | < 1.3 | < 1.3 | < 0.28 | 0.6 B |
| Calcium | ug/l | NS | NS | 39900 | NA | 125000 | 144000 | 124000 | 113000 |
| Chromium | ug/l | 70 | 100 | < 0.9 | NA | 2 B | 1.3 B | 0.8 B | < 10 |
| Cobalt | ug/l | NS | NS | < 0.3 | NA | 2.4 B | 2.2 B | 2.9 B | 0.5 B |
| Copper | ug/l | 1,300 | 1300 | < 0.85 | NA | < 2.7 | < 2.7 | 3.5 B | < 2 |
| Iron | ug/l | 300 | NS | < 100 | NA | **24300** | **329** | **401** | **19000** |
| Lead | ug/l | 5 | 15 | < 1.1 | NA | 3 J | < 2.8 | < 1.4 | < 1.7 |
| Magnesium | ug/l | NS | NS | 6020 | NA | 14900 | 17000 | 16300 | 12100 |
| Manganese | ug/l | 50 | NS | 2.1 J | NA | **1470** | **1530** | **1120** | **1330** |
| Mercury | ug/l | 2 | 2 | < 0.088 | NA | < 0.037 | < 0.037 | < 0.15 | < 0.049 |
| Nickel | ug/l | 100 | NS | < 10 | NA | 3.8 B | 6.8 B | 4.8 B | < 10 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 3250 B | NA | 13000 | 14300 | 14000 | 9630 B |
| Selenium | ug/l | 40 | 50 | < 1.5 | NA | < 6.2 | < 6.2 | < 1.6 | < 3.7 |
| Silver | ug/l | 40 | NS | < 0.72 | NA | < 1 | < 1 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 15200 | NA | **117000** | **153000 J** | **343000** | **82300** |
| Thallium | ug/l | 2 [10] | 2 | < 0.17 | NA | < 0.09 | < 0.09 | < 1.3 | < 1.5 |
| Vanadium | ug/l | NS | NS | < 0.43 | NA | < 1.8 | < 1.8 | < 0.43 | < 0.9 |
| Zinc | ug/l | 2000 | NS | 5.6 J | NA | 37.4 | 77.6 | 52.9 | < 20 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-22 | OB-22 | OB-23 | OB-23 | OB-23 | OB-23 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-22(051911) | OB-22 (041912) | OB-23 | OB-23(041107) | OB-23(080502) | OB-23(070809) |
| Sample Date | | | MCLs | 5/19/2011 | 4/19/2012 | 11/28/2006 | 4/11/2007 | 5/2/2008 | 7/8/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | 598000 | 724000 | 977000 | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | < 5000 | < 5000 | < 5000 | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 111000 | NA | 598000 | 725000 | 979000 | 418000 |
| Bromide | ug/l | NS | NS | NA | NA | 290 | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 22800 | NA | 31000 | 46000 | 72600 | 89900 |
| Cyanide | ug/l | 100 | 200 | NA | NA | < 10 | 20 | < 10 | NA |
| Nitrate | ug/l | 10000 | 10000 | NA | NA | 400 | 1300 | < 110 | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | NA | 45 | 160 | 13 | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | NA | 440 | 1500 | < 100 | NA |
| Phosphorus, Total | ug/l | NS | NS | NA | NA | 73 | 2000 | 98 | NA |
| Sulfate | ug/l | 250000 | NS | 17500 | NA | 10500 | 14400 | 35000 | < 10000 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.26 | < 0.2 | < 0.28 | < 0.28 | < 0.3 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.24 | < 0.12 | < 0.28 | < 0.28 | < 0.8 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.23 | < 0.13 | < 0.32 | < 0.32 | < 0.49 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.29 | < 0.16 | < 0.23 | < 0.23 | < 0.2 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.4 | < 0.24 | < 0.33 | < 0.33 | < 0.28 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.56 | < 0.16 | < 0.16 | < 0.16 | < 0.41 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.1* | < 1.2* | < 1.1 * | < 1.1 * | < 0.8* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.39* | < 0.39* | < 0.52 * | < 0.52 * | < 0.45* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.26 | < 0.15 | < 0.2 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.33 | < 0.31 | < 0.29 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.27 | < 0.23 | < 0.2 | < 0.2 | < 0.24 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.25 | < 0.19 | < 0.32 | < 0.32 | < 0.21 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.28 | < 0.22 | < 0.24 | < 0.24 | < 0.17 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 1.6 | < 1.7 | < 2.6 | < 2.6 | < 2.7 |
| 2-Hexanone | ug/l | NS | NS | < 1.4 | < 1.9 | < 1.3 | < 1.3 | < 0.94 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 0.86 | < 0.74 | < 1.1 | < 1.1 | < 1.4 |
| Acetone | ug/l | 6000 | NS | < 2.9 | < 4.4 | < 2.4 | < 2.4 | < 2.9 |
| Benzene | ug/l | 1 | 5 | < 0.23 | < 0.26 | < 0.21 | < 0.21 | < 0.19 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.22 | < 0.18 | < 0.17 | < 0.17 | < 0.15 |
| Bromoform | ug/l | 4 | 80 | < 0.23 | < 0.42 | < 0.54 | < 0.54 | < 0.34 |
| Bromomethane | ug/l | 10 | NS | < 0.3 | < 0.24 | < 0.22 | < 0.22 | < 0.38 |
| Carbon disulfide | ug/l | 700 | NS | < 0.74 | < 0.13 | < 0.21 | < 0.21 | < 0.14 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.26 | < 0.35 | < 0.29 | < 0.29 | < 0.19 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.39 | < 0.15 | < 0.22 | < 0.22 | < 0.19 |
| Chloroethane | ug/l | NS | NS | < 0.37 | < 0.25 | < 0.56 | < 0.56 | < 0.67 |
| Chloroform | ug/l | 70 | 80 | < 0.23 | < 0.14 | < 0.22 | < 0.22 | < 0.25 |
| Chloromethane | ug/l | NS | NS | < 0.29 | < 0.34 | < 0.35 | < 0.35 | < 0.3 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.22 | < 0.24 | < 0.18 | < 0.18 | < 0.27 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.25 | < 0.16 | < 0.15 | < 0.15 | < 0.13 |
| Cyclohexane | ug/l | NS | NS | < 1.9 | < 0.43 | < 0.5 | < 0.5 | < 0.85 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.22 | < 0.16 | < 0.19 | < 0.19 | < 0.28 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.92 | < 0.39 | < 0.75 | < 0.75 | < 1 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.27 | < 0.31 | < 0.2 | < 0.2 | < 0.21 |
| Freon 113 | ug/l | NS | NS | < 0.38 | < 0.66 | < 0.69 | < 0.69 | < 1.2 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.57 | < 0.31 | < 0.2 | < 0.2 | < 0.54 |
| Methyl acetate | ug/l | 7000 | NS | < 1.5 | < 1.3 | < 2.1 | < 2.1 | < 1.6 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.23 | < 0.2 | < 0.31 | 0.64 J | 0.97 J |
| Methylcyclohexane | ug/l | NS | NS | < 0.35 | < 0.16 | < 0.18 | < 0.18 | < 0.5 |
| Methylene chloride | ug/l | 3 | 5 | < 0.3 | < 0.2 | < 0.27 | < 0.27 | < 0.21 |
| o-Xylene | ug/l | NS | NS | NA | NA | < 0.31 | < 0.31 | < 0.2 |
| Styrene | ug/l | 100 | 100 | < 0.58 | < 0.48 | < 0.16 | < 0.16 | < 0.2 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.27 | < 0.24 | < 0.28 | < 0.28 | < 0.28 J |
| Toluene | ug/l | 600 | 1000 | < 0.3 | < 0.27 | < 0.2 | < 0.2 | < 0.21 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.25 | < 0.3 | < 0.42 | < 0.42 | < 0.32 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.21 | < 0.22 | < 0.2 | < 0.2 | < 0.17 |
| Trichloroethene | ug/l | 1 | 5 | < 0.24 | < 0.22 | < 0.29 | < 0.29 | < 0.26 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.54 | < 0.23 | < 0.25 | < 0.25 | < 0.26 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.44 | < 0.22 | < 0.29 | < 0.29 | < 0.22 |
| Xylene, -m,p | ug/l | NS | NS | NA | NA | < 0.42 | < 0.42 | < 0.35 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.25 | < 0.28 | < 0.31 | < 0.31 | < 0.2 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 16.9 J | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.47 | < 0.42 | < 0.33 | < 0.37 | < 0.33 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.5 | < 1.3 | < 1.9 | < 2.2 | < 1.9 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.3 | < 1.2 | < 1.3 | < 1.4 | < 1.3 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.3 | < 1.2 | < 1.6 | < 1.8 | < 1.6 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 | < 1.7 | < 1.6 | < 1.8 | < 1.6 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.81 | < 0.74 | < 0.89 | < 1 | < 0.89 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.24 | < 0.22 | < 0.86 | < 0.97 | < 0.86 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.36 | < 0.33 | < 0.56 | < 0.63 | < 0.56 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.46 | < 0.42 | < 0.98 | < 1.1 | < 0.98 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.2 | < 1.1 | < 0.95 | < 1.1 | < 0.95 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.73 | < 0.66 | < 0.41 | < 0.46 | < 0.41 |
| 2-Methylphenol | ug/l | NS | NS | < 1.2 | < 1.1 | < 1.4 | < 1.5 | < 1.4 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.26 | < 0.24 | < 0.66 | < 0.74 | < 0.66 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.4 | < 1.2 | < 1.8 | < 2 | < 1.8 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.1 | < 1 | < 1.3 | < 1.4 | < 1.3 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 0.33 | < 0.3 | < 1.2 | < 1.4 | < 1.2 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.32 | < 0.29 | < 1.3 | < 1.4 | < 1.3 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.57 | < 0.51 | < 0.72 | < 0.81 | < 0.72 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.39 | < 0.35 | < 0.3 | < 0.34 | < 0.3 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.2 | < 1.1 | < 1.2 | < 1.3 | < 1.2 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.28 | < 0.25 | < 0.4 | < 0.45 | < 0.4 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.39 | < 0.35 | < 0.43 | < 0.48 | < 0.43 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.2 | < 0.18 | < 0.72 | < 0.81 | < 0.72 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.91 | < 0.83 | < 0.84 | < 0.95 | < 0.84 |
| Acetophenone | ug/l | 700 | NS | < 0.44 | < 0.4 | < 0.37 | < 0.42 | < 0.37 |
| Atrazine | ug/l | 3 | 3 | < 0.43 | < 0.39 | < 0.16 | < 0.18 | < 0.16 |
| Benzaldehyde | ug/l | NS | NS | < 0.45 | < 0.4 | < 0.27 | < 0.3 | < 0.27 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.28 | < 0.25 | < 0.59 | < 0.67 | < 0.59 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.27 | < 0.25 | < 0.65 | < 0.73 | < 0.65 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.34 | < 0.31 | < 0.53 | < 0.6 | < 0.53 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.43 | < 0.39 | < 0.74 | < 0.83 | < 0.74 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.36 | < 0.33 | < 0.66 | < 0.74 | < 0.66 |
| Caprolactam | ug/l | NS | NS | < 0.22 | < 0.2 | < 0.32 | < 0.35 | < 0.32 |
| Carbazole | ug/l | NS | NS | < 0.18 | < 0.17 | < 0.36 | < 0.41 | < 0.36 |
| Dibenzofuran | ug/l | NS | NS | < 0.34 | 0.86 J | < 0.34 | < 0.39 | < 0.34 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.18 | < 0.17 | < 0.39 | < 0.44 | < 0.39 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.25 | < 0.23 | < 0.33 | < 0.37 | < 0.33 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.21 | < 0.19 | < 0.59 | < 0.67 | < 0.59 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.44 | < 0.4 | < 0.57 | < 0.64 | < 0.57 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.14 | < 0.13 | < 0.18 | < 0.2 | < 0.18 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.27 | < 0.24 | < 0.41 | < 0.46 | < 0.41 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.23 | < 0.21 | < 0.28 | < 0.32 | < 0.28 |
| Isophrone | ug/l | 40 | NS | < 0.28 | < 0.25 | < 0.59 | < 0.66 | < 0.59 |
| Nitrobenzene | ug/l | 6 | NS | < 0.28 | < 0.25 | < 0.42 | < 0.47 | < 0.42 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.48 | < 0.44 | < 0.47 | < 0.53 | < 0.47 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | 1.1 J | < 0.22 | < 0.52 | < 0.58 | < 0.52 |
| Phenol | ug/l | 2000 | NS | < 0.64 | < 0.58 | < 0.5 | < 0.56 | < 0.5 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 169.2 J | 201.1 J | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | 0.828 | 1.83 | < 0.017 | < 0.019 | < 0.017 |
| Acenaphthylene | ug/l | NS | NS | < 0.043 | < 0.016 | < 0.0095 | < 0.011 | < 0.0095 |
| Anthracene | ug/l | 2000 | NS | < 0.028 | < 0.01 | < 0.021 | < 0.023 | < 0.021 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.026 | < 0.015 | < 0.0068 | < 0.0076 | < 0.0068 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.034 | < 0.0049 | < 0.017 | < 0.019 | < 0.017 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.04 | < 0.016 | < 0.036 | < 0.041 | < 0.036 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.032 | < 0.01 | < 0.018 | < 0.02 | < 0.018 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.031 | < 0.013 | < 0.016 | < 0.018 | < 0.016 |
| Chrysene | ug/l | 5 | NS | < 0.024 | < 0.023 | < 0.017 | < 0.019 | < 0.017 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.025 | < 0.023 | < 0.016 | < 0.018 | < 0.016 |
| Fluoranthene | ug/l | 300 | NS | < 0.027 | < 0.0096 | < 0.009 | < 0.01 | < 0.009 |
| Fluorene | ug/l | 300 | NS | 0.497 | 0.865 | < 0.02 | < 0.023 | < 0.02 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.011 | < 0.008 | < 0.061* | < 0.022* | < 0.02 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.032 | < 0.011 | < 0.011 | < 0.012 | < 0.011 |
| Naphthalene | ug/l | 300 | NS | < 0.02 | 0.207 | < 0.026 | < 0.029 | < 0.026 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.075 | < 0.29 | < 0.4* | < 0.34* | < 0.3 |
| Phenanthrene | ug/l | NS | NS | < 0.04 | 0.268 | < 0.021 | < 0.024 | < 0.021 |
| Pyrene | ug/l | 200 | NS | < 0.024 | < 0.0081 | < 0.014 | < 0.016 | < 0.014 |
| **PCBs** | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.33 | < 0.14 | < 0.11 | < 0.12 | < 0.094 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.45 | < 0.29 | < 0.53* | < 0.59* | < 0.47 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.34 | < 0.41 | < 0.44 | < 0.49 | < 0.39 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.3 | < 0.091 | < 0.18 | < 0.21 | < 0.16 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.31 | < 0.15 | < 0.17 | < 0.19 | < 0.15 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.2 | < 0.15 | < 0.12 | < 0.14 | < 0.11 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.15 | < 0.22 | < 0.13 | < 0.15 | < 0.12 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | < 0.0027 | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | < 0.0019 | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | < 0.0055 | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | < 0.0038 | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | < 0.0029 | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | < 0.0049 | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | < 0.0069 | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | < 0.0035 | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | < 0.0019 | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | < 0.0024 | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | < 0.0036 | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | < 0.0052 | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | < 0.0034 | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | < 0.0072 | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | < 0.0039 | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | < 0.0019 | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | < 0.0029 | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | < 0.0017 | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | < 0.0019 | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | < 0.0076 | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | < 0.11 | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | 127 B | 69 J | 39.7 B | < 23 | < 26 |
| Antimony | ug/l | 6 | 6 | < 2.2 | 2.9 J | < 5 | < 5 | < 5.7 |
| Arsenic | ug/l | 3 [8] | 10 | 2.2 B | < 0.92 | < 1.5 | < 1.5 | 1.9 B |
| Barium | ug/l | 6000 | 2000 | 630 | 494 | 37.5 B | 34.5 B | 37.9 B |
| Beryllium | ug/l | 1 | 4 | < 1 | < 0.24 | < 0.4 | < 0.4 | < 0.15 |
| Cadmium | ug/l | 4 | 5 | 0.4 B | < 0.17 | < 1.3 | < 1.3 | < 0.24 |
| Calcium | ug/l | NS | NS | 137000 | 136000 | 91700 | 97200 | 104000 |
| Chromium | ug/l | 70 | 100 | 2.7 B | < 10 | 1.2 B | < 0.8 | < 0.53 |
| Cobalt | ug/l | NS | NS | 2.5 B | < 50 | < 1.8 | < 1.8 | 2.1 B |
| Copper | ug/l | 1,300 | 1300 | 4.9 J | 2.4 B | < 2.7 | < 2.7 | < 3.3 |
| Iron | ug/l | 300 | NS | **47300** | **47500** | 124 | 129 | < 6.3 |
| Lead | ug/l | 5 | 15 | 2.2 B | **5.5 J** | 2.8 B | < 2.8 | 1.2 BJ |
| Magnesium | ug/l | NS | NS | 14800 | 15600 | 23400 | 25700 | 26100 |
| Manganese | ug/l | 50 | NS | **1550** | **2360** | **487** | **343** | **352** |
| Mercury | ug/l | 2 | 2 | < 0.082 | < 0.088 | < 0.037 | < 0.037 | < 0.15 |
| Nickel | ug/l | 100 | NS | 4.8 B | 4.8 J | < 2.8 | < 2.8 | < 0.73 |
| Potassium | ug/l | NS | NS | 12200 | 10700 | 2370 B | 2410 B | 2450 B |
| Selenium | ug/l | 40 | 50 | 3.6 B | < 1.5 | < 6.2 | < 6.2 | < 0.73 |
| Silver | ug/l | 40 | NS | 2.1 B | 1.1 B | < 1 | < 1 | < 0.83 |
| Sodium | ug/l | 50,000 | NS | **94400** | **63500** | 13700 | 14200 | 14800 |
| Thallium | ug/l | 2 [10] | 2 | < 1.8 | < 0.17 | 0.11 B | < 0.09 | 1.8 B |
| Vanadium | ug/l | NS | NS | < 0.56 | < 0.43 | < 1.8 | < 1.8 | 1.2 B |
| Zinc | ug/l | 2000 | NS | 17 J | 63.9 | < 3.4 | < 3.4 | < 2.7 J |
| **Metals - Dissolved** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 7.8 | < 200 | < 23 | < 23 | < 26 |
| Antimony | ug/l | 6 | 6 | < 2.2 | 2.1 J | < 5 | < 5 | < 5.7 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.4 | < 0.92 | < 1.5 | < 1.5 | < 1.1 |
| Barium | ug/l | 6000 | 2000 | 468 | 378 | 37.4 B | 34.7 B | 37.5 B |
| Beryllium | ug/l | 1 | 4 | < 1 | < 0.24 | < 0.4 | < 0.4 | < 0.15 |
| Cadmium | ug/l | 4 | 5 | < 0.35 | < 0.17 | < 1.3 | < 1.3 | < 0.24 |
| Calcium | ug/l | NS | NS | 132000 | 132000 | 92200 | 96100 | 102000 |
| Chromium | ug/l | 70 | 100 | 1.6 B | < 0.9 | < 0.8 | < 0.8 | < 0.53 |
| Cobalt | ug/l | NS | NS | 1.5 B | < 50 | < 1.8 | < 1.8 | 2.3 B |
| Copper | ug/l | 1,300 | 1300 | < 2.5 | < 0.85 | < 2.7 | < 2.7 | < 3.3 |
| Iron | ug/l | 300 | NS | **22600** | **22200** | 124 | < 25 | < 6.3 |
| Lead | ug/l | 5 | 15 | < 1.9 | < 3 | < 2.8 | < 2.8 | 1.5 BJ |
| Magnesium | ug/l | NS | NS | 14500 | 15200 | 23300 | 25500 | 25500 |
| Manganese | ug/l | 50 | NS | **1500** | **2250** | **487** | **335** | **333** |
| Mercury | ug/l | 2 | 2 | < 0.082 | < 0.088 | < 0.037 | < 0.037 | < 0.15 |
| Nickel | ug/l | 100 | NS | 3.4 B | 3.7 J | < 2.8 | < 2.8 | < 0.73 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 11900 | 10500 | 2270 B | 2420 B | 2400 B |
| Selenium | ug/l | 40 | 50 | < 1.9 | < 1.5 | < 6.2 | < 6.2 | < 0.73 |
| Silver | ug/l | 40 | NS | 1.3 B | < 0.72 | < 1 | < 1 | < 0.83 |
| Sodium | ug/l | 50,000 | NS | **94500** | **61500** | 13400 | 14300 | 14600 |
| Thallium | ug/l | 2 [10] | 2 | < 1.8 | < 0.17 | < 0.09 | < 0.09 | < 1.4 |
| Vanadium | ug/l | NS | NS | < 0.56 | < 0.43 | < 1.8 | < 1.8 | 0.9 B |
| Zinc | ug/l | 2000 | NS | 10.2 J | 14.3 B | < 3.4 | < 3.4 | < 2.7 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-23 | OB-23 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-23(052810) | OB-23(051911) | OB-24 | OB-24(041107) | OB-24(071012) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 11/28/2006 | 4/11/2007 | 10/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | 234000 | 232000 | 265000 |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | < 5000 | < 5000 | < 5000 |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 527000 | 408000 | 234000 | 233000 | 265000 |
| Bromide | ug/l | NS | NS | NA | NA | 380 | NA | NA |
| Chloride | ug/l | 250000 | NS | 81500 | 81300 | 77900 | 86200 | 75000 |
| Cyanide | ug/l | 100 | 200 | NA | NA | < 10 | < 10 | < 10 |
| Nitrate | ug/l | 10000 | 10000 | NA | NA | 450 | 990 | 700 |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | NA | < 10 | < 10 | < 10 |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | NA | 450 | 990 | 700 |
| Phosphorus, Total | ug/l | NS | NS | NA | NA | < 50 | < 50 | < 50 |
| Sulfate | ug/l | 250000 | NS | < 10000 | 10300 | 32500 | 32100 | 27800 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.24 | < 0.24 | < 0.24 | < 0.26 | < 0.26 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.13 | < 0.13 | < 0.13 | < 0.24 | < 0.24 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.17 | < 0.17 | < 0.17 | < 0.23 | < 0.23 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.16 | < 0.16 | < 0.24 | < 0.29 | < 0.29 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.29 | < 0.29 | < 0.29 | < 0.4 | < 0.4 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 1.3 | < 1.3 | < 1.3 | < 0.56 | < 0.56 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 2.4* | < 2.4* | < 1.3* | < 1.1* | < 1.1* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.17* | < 0.17* | < 0.18* | < 0.39* | < 0.39* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.18 | < 0.18 | < 0.18 | < 0.26 | < 0.26 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.35 | < 0.35 | < 0.35 | < 0.33 | < 0.33 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.18 | < 0.18 | < 0.18 | < 0.27 | < 0.27 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.26 | < 0.26 | < 0.26 | < 0.25 | < 0.25 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.32 | < 0.32 | < 0.22 | < 0.28 | < 0.28 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 2.3 | < 2.3 | < 2.3 | < 1.6 | < 1.6 |
| 2-Hexanone | ug/l | NS | NS | < 1.7 | < 1.7 | < 1.7 | < 1.4 | < 1.4 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 1.9 | < 1.9 | < 1.3 | < 0.86 | < 0.86 |
| Acetone | ug/l | 6000 | NS | < 2.1 | < 2.1 | < 2.1 | < 2.9 | < 2.9 |
| Benzene | ug/l | 1 | 5 | < 0.26 | < 0.26 | < 0.26 | < 0.23 | < 0.23 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.14 | < 0.14 | < 0.14 | < 0.22 | < 0.22 |
| Bromoform | ug/l | 4 | 80 | < 0.18 | < 0.18 | < 0.18 | < 0.23 | < 0.23 |
| Bromomethane | ug/l | 10 | NS | < 0.32 | < 0.32 | < 0.32 | < 0.3 | < 0.3 |
| Carbon disulfide | ug/l | 700 | NS | < 0.15 | < 0.15 | < 0.16 | < 0.74 | < 0.74 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.18 | < 0.18 | < 0.18 | < 0.26 | < 0.26 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.14 | < 0.14 | < 0.19 | < 0.39 | < 0.39 |
| Chloroethane | ug/l | NS | NS | < 0.22 | < 0.22 | < 0.22 | < 0.37 | < 0.37 |
| Chloroform | ug/l | 70 | 80 | < 0.16 | < 0.16 | < 0.16 | < 0.23 | < 0.23 |
| Chloromethane | ug/l | NS | NS | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.19 | < 0.19 | < 0.25 | < 0.22 | < 0.22 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.15 | < 0.15 | < 0.18 | < 0.25 | < 0.25 |
| Cyclohexane | ug/l | NS | NS | < 0.85 | < 0.85 | < 0.85 | < 1.9 | < 1.9 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.12 | < 0.12 | < 0.16 | < 0.22 | < 0.22 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.88 | < 0.88 | < 0.88 | < 0.92 | < 0.92 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| Freon 113 | ug/l | NS | NS | < 0.8 | < 0.8 | < 0.8 | < 0.38 | < 0.38 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.15 | < 0.15 | < 0.19 | < 0.57 | < 0.57 |
| Methyl acetate | ug/l | 7000 | NS | < 2.5 | < 2.5 | < 1.7 | < 1.5 | < 1.5 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.14 | 0.27 J | < 0.16 | < 0.23 | 0.3 J |
| Methylcyclohexane | ug/l | NS | NS | < 0.11 | < 0.11 | < 0.11 | < 0.35 | < 0.35 |
| Methylene chloride | ug/l | 3 | 5 | < 0.16 | < 0.16 | < 0.16 | < 0.3 | < 0.3 |
| o-Xylene | ug/l | NS | NS | < 0.45 | < 0.45 | < 0.45 | < 0.25 | < 0.25 |
| Styrene | ug/l | 100 | 100 | < 0.11 | < 0.11 | < 0.17 | < 0.58 | < 0.58 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.29 | < 0.29 | < 0.29 | < 0.27 | < 0.27 |
| Toluene | ug/l | 600 | 1000 | < 0.15 | < 0.15 | < 0.15 | < 0.3 | < 0.3 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.16 | < 0.16 | < 0.16 | < 0.25 | < 0.25 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.11 | < 0.11 | < 0.15 | < 0.21 | < 0.21 |
| Trichloroethene | ug/l | 1 | 5 | < 0.18 | < 0.18 | < 0.18 | < 0.24 | < 0.24 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.25 | < 0.25 | < 0.25 | < 0.54 | < 0.54 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.21 | < 0.21 | < 0.21 | < 0.44 | < 0.44 |
| Xylene, -m,p | ug/l | NS | NS | < 0.39 | < 0.39 | < 0.39 | < 0.25 | < 0.25 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.39 | < 0.39 | < 0.39 | < 0.25 | < 0.25 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.23 | < 0.22 | < 0.58 | < 0.47 | < 0.47 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.2 | < 1.1 | < 2.1 | < 1.5 | < 1.5 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.1 | < 1 | < 1.7 | < 1.4 | < 1.4 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.5 | < 1.4 | < 2 | < 1.4 | < 1.4 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.7 | < 1.7 | < 2.1 | < 1.8 | < 1.9 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 1.2 | < 1.1 | < 4.4 | < 0.82 | < 0.83 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.57 | < 0.54 | < 0.48 | < 0.24 | < 0.25 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.53 | < 0.5 | < 0.63 | < 0.36 | < 0.37 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.21 | < 0.2 | < 0.51 | < 0.46 | < 0.47 |
| 2-Chlorophenol | ug/l | 40 | NS | < 0.92 | < 0.87 | < 1.5 | < 1.2 | < 1.2 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.8 | < 0.76 | < 0.46 | < 0.73 | < 0.74 |
| 2-Methylphenol | ug/l | NS | NS | < 1.1 | < 1 | < 1.4 | < 1.2 | < 1.3 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.52 | < 0.5 | < 0.47 | < 0.26 | < 0.26 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.6 | < 1.5 | < 2 | < 1.4 | < 1.4 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.2 | < 1.1 | < 1.5 | < 1.2 | < 1.2 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 1 | < 0.97 | < 4.8 | < 0.33 | < 0.33 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.34 | < 0.32 | < 0.47 | < 0.32 | < 0.32 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 2.3 | < 2.2 | < 1.2 | < 0.57 | < 0.58 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.39 | < 0.37 | < 0.43 | < 0.39 | < 0.39 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.3 | < 1.2 | < 2.4 | < 1.2 | < 1.2 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.37 | < 0.35 | < 0.35 | < 0.28 | < 0.28 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.31 | < 0.29 | < 0.48 | < 0.39 | < 0.4 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.62 | < 0.59 | < 0.48 | < 0.2 | < 0.2 |
| 4-Nitrophenol | ug/l | NS | NS | < 1.7 | < 1.6 | < 2.4 | < 0.92 | < 0.93 |
| Acetophenone | ug/l | 700 | NS | < 0.38 | < 0.36 | < 0.49 | < 0.44 | < 0.45 |
| Atrazine | ug/l | 3 | 3 | < 0.3 | < 0.28 | < 0.65 | < 0.43 | < 0.44 |
| Benzaldehyde | ug/l | NS | NS | < 0.8 | < 0.76 | < 1.7 | < 0.45 | < 0.45 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.67 | < 0.64 | < 0.44 | < 0.28 | < 0.28 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.33 | < 0.32 | < 0.54 | < 0.28 | < 0.28 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.71 | < 0.67 | < 0.52 | < 0.34 | < 0.35 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.61 | < 0.58 | < 0.57 | < 0.43 | < 0.44 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.92 | < 0.88 | < 0.79 | < 0.36 | < 0.37 |
| Caprolactam | ug/l | NS | NS | < 0.52 | < 0.49 | < 0.66 | < 0.22 | < 0.22 |
| Carbazole | ug/l | NS | NS | < 0.42 | < 0.4 | < 0.47 | < 0.18 | < 0.19 |
| Dibenzofuran | ug/l | NS | NS | < 0.24 | < 0.23 | < 0.51 | < 0.34 | < 0.34 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.36 | < 0.34 | < 0.38 | < 0.18 | < 0.19 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.35 | < 0.34 | < 0.38 | < 0.25 | < 0.25 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.42 | < 0.4 | < 0.53 | < 0.21 | < 0.21 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.5 | < 0.48 | < 0.52 | < 0.44 | < 0.44 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.13 | < 0.13 | < 0.39 | < 0.41 | < 0.42 J |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.11 | < 0.1 | < 4.8 | < 0.75 | < 0.76 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.17 | < 0.16 | < 0.32 | < 0.29 | < 0.3 |
| Isophrone | ug/l | 40 | NS | < 0.51 | < 0.49 | < 0.73 | < 0.28 | < 0.28 |
| Nitrobenzene | ug/l | 6 | NS | < 0.74 | < 0.71 | < 0.69 | < 0.28 | < 0.28 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.4 | < 0.38 | < 0.41 | < 0.49 | < 0.49 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.44 | < 0.41 | < 0.64 | < 0.24 | < 0.24 |
| Phenol | ug/l | 2000 | NS | < 0.72 | < 0.68 | < 1.4 | < 0.64 | < 0.65 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.017 | < 0.016 | < 0.017 | < 0.018 | < 0.033 |
| Acenaphthylene | ug/l | NS | NS | < 0.0074 | < 0.007 | < 0.0074 | < 0.0078 | < 0.044 |
| Anthracene | ug/l | 2000 | NS | < 0.022 | < 0.021 | < 0.022 | < 0.023 | < 0.029 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.035 | < 0.034 | < 0.035 | < 0.037 | < 0.027 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.037 | < 0.036 | < 0.037 | < 0.039 | < 0.035 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.018 | < 0.017 | < 0.018 | < 0.019 | < 0.04 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.012 | < 0.012 | < 0.012 | < 0.013 | < 0.032 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.02 | < 0.019 | < 0.02 | < 0.021 | < 0.032 |
| Chrysene | ug/l | 5 | NS | < 0.019 | < 0.018 | < 0.019 | < 0.02 | < 0.025 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.021 | < 0.02 | < 0.021 | < 0.022 | < 0.025 |
| Fluoranthene | ug/l | 300 | NS | < 0.01 | < 0.0096 | < 0.01 | < 0.011 | < 0.027 |
| Fluorene | ug/l | 300 | NS | < 0.021 | < 0.02 | < 0.021 | < 0.022 | < 0.03 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.01 J | < 0.0099 J | < 0.01 | < 0.011 | < 0.011 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.015 | < 0.014 | < 0.015 | < 0.016 | < 0.033 |
| Naphthalene | ug/l | 300 | NS | < 0.015 | < 0.014 | < 0.015 | < 0.015 | < 0.021 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.23 J | < 0.22 J | < 0.23 | < 0.25 | < 0.25 |
| Phenanthrene | ug/l | NS | NS | < 0.018 | < 0.017 | < 0.018 | < 0.019 | < 0.041 |
| Pyrene | ug/l | 200 | NS | < 0.013 | < 0.012 | < 0.013 | < 0.013 | < 0.025 |
| **PCBs** | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.1 | < 0.096 | < 0.096 | < 0.2 | < 0.3 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.5 | < 0.48 | < 0.48 | < 0.32 | < 0.41 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.41 | < 0.4 | < 0.4 | < 0.22 | < 0.31 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.17 | < 0.17 | < 0.17 | < 0.094 | < 0.27 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.16 | < 0.16 | < 0.16 | < 0.27 | < 0.28 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.12 | < 0.11 | < 0.11 | < 0.12 | < 0.18 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.12 | < 0.12 | < 0.12 | < 0.15 | < 0.14 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 24 | < 24 | **686** | **1020** | **250** |
| Antimony | ug/l | 6 | 6 | < 1.8 | < 1.8 | < 2.5 | < 4 | < 2.9 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.7 | 1.7 B | 2.5 BJ | < 2.4 | < 2.4 |
| Barium | ug/l | 6000 | 2000 | 35 B | 33.7 B | 52.5 BJ | 44.7 B | 38.9 B |
| Beryllium | ug/l | 1 | 4 | < 0.15 | < 0.15 | < 0.15 | < 0.4 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | < 0.28 | < 0.28 | < 0.28 | 0.9 B | < 0.4 |
| Calcium | ug/l | NS | NS | 87900 J | 84800 J | 91400 J | 97600 | 96800 |
| Chromium | ug/l | 70 | 100 | 1.1 B | 2.5 B | < 1.8 | < 10 | < 0.9 |
| Cobalt | ug/l | NS | NS | < 0.51 | < 0.51 | < 0.51 | 0.5 B | < 1.6 |
| Copper | ug/l | 1,300 | 1300 | < 2.5 | < 2.5 | 3.7 B | < 10 | < 1.6 |
| Iron | ug/l | 300 | NS | 223 J | 287 J | **1520 J** | **2130** | **493** |
| Lead | ug/l | 5 | 15 | 1.6 B | 1.5 B | < 1.4 | < 1.7 | < 1.7 |
| Magnesium | ug/l | NS | NS | 21700 J | 21000 J | 20700 | 24200 | 23400 |
| Manganese | ug/l | 50 | NS | **272 J** | **262 J** | **742** | **789** | **341** |
| Mercury | ug/l | 2 | 2 | < 0.15 | < 0.15 | < 0.049 | < 0.049 | < 0.082 |
| Nickel | ug/l | 100 | NS | < 1.2 | 1.5 B | < 1.5 | < 10 | 0.8 B |
| Potassium | ug/l | NS | NS | 2270 B | 2200 B | 3740 B | 2340 B | 2300 B |
| Selenium | ug/l | 40 | 50 | < 1.6 | < 1.6 | < 1.6 | < 3.7 | < 3.7 |
| Silver | ug/l | 40 | NS | < 1 | < 1 | < 1 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 13700 | 13200 | 12200 | 14700 | 14900 |
| Thallium | ug/l | 2 [10] | 2 | < 1.3 | < 1.3 | < 1.3 | < 1.5 | < 1.5 |
| Vanadium | ug/l | NS | NS | 1.2 B | 1 B | 3.3 B | 3.9 BJ | 1.6 B |
| Zinc | ug/l | 2000 | NS | < 4 | < 4 | < 6.5 | < 2.9 | 9.6 B |
| **Metals - Dissolved** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 24 | < 24 | < 24 | 93.9 B | 133 B |
| Antimony | ug/l | 6 | 6 | < 1.8 | < 1.8 | < 2.1 | < 4 | < 2.9 |
| Arsenic | ug/l | 3 [8] | 10 | 1.7 B | < 1.7 | < 1.7 | < 2.4 | < 2.4 |
| Barium | ug/l | 6000 | 2000 | 32.7 B | 33.8 B | 47.2 BJ | 38.2 B | 36 B |
| Beryllium | ug/l | 1 | 4 | < 0.15 | < 0.15 | < 0.15 | < 0.4 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | < 0.28 | < 0.28 | < 0.28 | 0.8 B | < 0.4 |
| Calcium | ug/l | NS | NS | 82700 J | 85400 J | 89400 J | 99300 | 98300 |
| Chromium | ug/l | 70 | 100 | 1.2 B | 1 B | < 0.53 | < 0.9 | < 0.9 |
| Cobalt | ug/l | NS | NS | < 0.51 | < 0.51 | < 0.51 | < 0.4 | < 1.6 |
| Copper | ug/l | 1,300 | 1300 | < 2.5 | < 2.5 | < 2.5 | < 2 | < 1.6 |
| Iron | ug/l | 300 | NS | < 7.4 J | 89.3 BJ | < 17.9 J | < 100 | < 12 |
| Lead | ug/l | 5 | 15 | < 1.4 | < 1.4 | < 1.4 | < 1.7 | < 1.7 |
| Magnesium | ug/l | NS | NS | 20400 J | 21100 J | 20000 | 24100 | 24000 |
| Manganese | ug/l | 50 | NS | **238 J** | **242 J** | **538** | **93** | **147** |
| Mercury | ug/l | 2 | 2 | < 0.15 | < 0.15 | < 0.049 | < 0.049 | < 0.082 |
| Nickel | ug/l | 100 | NS | < 1.2 | < 1.2 | < 1.2 | < 0.6 | < 0.6 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 2180 B | 2190 B | 3610 B | 2140 B | 2280 B |
| Selenium | ug/l | 40 | 50 | 1.7 B | < 1.6 | < 2.1 | < 3.7 | < 3.7 |
| Silver | ug/l | 40 | NS | < 1 | < 1 | < 1 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 13000 | 13400 | 11900 | 14900 | 15300 |
| Thallium | ug/l | 2 [10] | 2 | < 1.3 | < 1.3 | < 1.3 | < 1.5 | < 1.5 |
| Vanadium | ug/l | NS | NS | 0.7 B | 1 B | 0.5 BJ | < 0.9 | < 0.9 |
| Zinc | ug/l | 2000 | NS | < 4 | < 4 | < 4 | < 20 | 9.2 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-24 | OB-24 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | DUP-02(080430) (OB-24) | OB-24(080430) | OB-24(080911) | OB-24(070809) | OB-24(102609) |
| Sample Date | | | MCLs | 4/30/2008 | 4/30/2008 | 9/11/2008 | 7/8/2009 | 10/26/2009 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | 222000 | 226000 | 269000 | NA | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | < 5000 | < 5000 | < 5000 | NA | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 222000 | 226000 | 269000 | 228000 | 216000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 76800 | 77200 | 55700 | 88000 | 86900 |
| Cyanide | ug/l | 100 | 200 | < 10 J | < 10 J | < 10 | NA | NA |
| Nitrate | ug/l | 10000 | 10000 | 680 | 790 | 500 J | NA | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | < 10 | < 10 | < 10 J | NA | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | 680 | 790 | 500 | NA | NA |
| Phosphorus, Total | ug/l | NS | NS | < 50 | < 50 | 110 | NA | NA |
| Sulfate | ug/l | 250000 | NS | 26600 | 26800 | 19900 | 32900 | 32700 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.26 | < 0.2 | < 0.24 | < 0.28 | < 0.28 | < 0.28 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.24 | < 0.12 | < 0.2 | < 0.28 | < 0.28 | < 0.28 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.23 | < 0.13 | < 0.23 | < 0.32 | < 0.32 | < 0.32 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.29 | < 0.16 | < 0.19 | < 0.23 | < 0.23 | < 0.23 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.4 | < 0.24 | < 0.28 | < 0.33 | < 0.33 | < 0.33 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.56 | < 0.16 | < 0.15 | < 0.16 | < 0.16 | < 0.16 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.1* | < 1.2* | < 1.3* | < 1.1 * | < 1.1 * | < 1.1 * |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.39* | < 0.39* | < 0.21* | < 0.52 * | < 0.52 * | < 0.52 * |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.26 | < 0.15 | < 0.18 | < 0.2 | < 0.2 | < 0.2 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.33 | < 0.31 | < 0.18 | < 0.29 | < 0.29 | < 0.29 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.27 | < 0.23 | < 0.22 | < 0.2 | < 0.2 | < 0.2 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.25 | < 0.19 | < 0.29 | < 0.32 | < 0.32 | < 0.32 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.28 | < 0.22 | < 0.26 | < 0.24 | < 0.24 | < 0.24 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 1.6 | < 1.7 | < 2.9 | < 2.6 | < 2.6 | < 2.6 |
| 2-Hexanone | ug/l | NS | NS | < 1.4 | < 1.9 | < 3 | < 1.3 | < 1.3 | < 1.3 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 0.86 | < 0.74 | < 1.2 | < 1.1 | < 1.1 | < 1.1 |
| Acetone | ug/l | 6000 | NS | < 2.9 | < 4.4 | < 7.6 | < 2.4 | < 2.4 | < 2.4 |
| Benzene | ug/l | 1 | 5 | < 0.23 | < 0.26 | < 0.22 | < 0.21 | < 0.21 | < 0.21 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.22 | < 0.18 | < 0.23 | < 0.17 | < 0.17 | < 0.17 |
| Bromoform | ug/l | 4 | 80 | < 0.23 | < 0.42 | < 0.24 | < 0.54 | < 0.54 | < 0.54 |
| Bromomethane | ug/l | 10 | NS | < 0.3 | < 0.24 | < 0.31 | < 0.22 | < 0.22 | < 0.22 |
| Carbon disulfide | ug/l | 700 | NS | < 0.74 | < 0.13 | < 0.18 | < 0.21 | < 0.21 | < 0.21 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.26 | < 0.35 | < 0.19 | < 0.29 | < 0.29 | < 0.29 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.39 | < 0.15 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Chloroethane | ug/l | NS | NS | < 0.37 | < 0.25 | < 0.37 | < 0.56 | < 0.56 | < 0.56 |
| Chloroform | ug/l | 70 | 80 | < 0.23 | < 0.14 | < 0.21 | < 0.22 | < 0.22 | < 0.22 |
| Chloromethane | ug/l | NS | NS | < 0.29 | < 0.34 | < 0.22 | < 0.35 | < 0.35 | < 0.35 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.22 | < 0.24 | < 0.22 | < 0.18 | < 0.18 | < 0.18 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.25 | < 0.16 | < 0.22 | < 0.15 | < 0.15 | < 0.15 |
| Cyclohexane | ug/l | NS | NS | < 1.9 | < 0.43 | < 0.29 | < 0.5 | < 0.5 | < 0.5 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.22 | < 0.16 | < 0.2 | < 0.19 | < 0.19 | < 0.19 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.92 | < 0.39 | < 0.31 | < 0.75 | < 0.75 | < 0.75 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.27 | < 0.31 | < 0.21 | < 0.2 | < 0.2 | < 0.2 |
| Freon 113 | ug/l | NS | NS | < 0.38 | < 0.66 | < 0.49 | < 0.69 | < 0.69 | < 0.69 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.57 | < 0.31 | < 0.19 | < 0.2 | < 0.2 | < 0.2 |
| Methyl acetate | ug/l | 7000 | NS | < 1.5 | < 1.3 | < 2.9 | < 2.1 | < 2.1 | < 2.1 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.23 | < 0.2 | < 0.18 | < 0.31 | < 0.31 | < 0.31 |
| Methylcyclohexane | ug/l | NS | NS | < 0.35 | < 0.16 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| Methylene chloride | ug/l | 3 | 5 | < 0.3 | < 0.2 | < 0.2 | < 0.27 | < 0.27 | < 0.27 |
| o-Xylene | ug/l | NS | NS | NA | NA | NA | < 0.31 | < 0.31 | < 0.31 |
| Styrene | ug/l | 100 | 100 | < 0.58 | < 0.48 | < 0.23 | < 0.16 | < 0.16 | < 0.16 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.27 | < 0.24 | < 0.32 | < 0.28 | < 0.28 | < 0.28 |
| Toluene | ug/l | 600 | 1000 | < 0.3 | < 0.27 | < 0.15 | < 0.2 | < 0.2 | < 0.2 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.25 | < 0.3 | < 0.31 | < 0.42 | < 0.42 | < 0.42 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.21 | < 0.22 | < 0.19 | < 0.2 | < 0.2 | < 0.2 |
| Trichloroethene | ug/l | 1 | 5 | < 0.24 | < 0.22 | < 0.21 | < 0.29 | < 0.29 | < 0.29 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.54 | < 0.23 | < 0.35 | < 0.25 | < 0.25 | < 0.25 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.44 | < 0.22 | < 0.27 | < 0.29 | < 0.29 | < 0.29 |
| Xylene, -m,p | ug/l | NS | NS | NA | NA | NA | < 0.42 | < 0.42 | < 0.42 |
| Xylenes | ug/l | 1,000 | 10000 | < 0.25 | < 0.28 | < 0.17 | < 0.31 | < 0.31 | < 0.31 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.45 | < 0.42 | < 0.31 | < 0.38 | < 0.38 | < 0.33 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.4 | < 1.3 | < 1.6 | < 2.3 | < 2.2 | < 1.9 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.3 | < 1.2 | < 1.3 | < 1.5 | < 1.4 | < 1.3 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.3 | < 1.2 | < 1.2 | < 1.8 | < 1.8 | < 1.6 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 | < 1.7 | < 1.6 | < 1.9 | < 1.9 | < 1.6 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.79 | < 0.74 | < 17 | < 1 | < 1 | < 0.89 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.24 | < 0.22 | < 0.43 | < 1 | < 0.99 | < 0.86 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.35 | < 0.33 | < 0.47 | < 0.66 | < 0.64 | < 0.56 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.45 | < 0.42 | < 0.3 | < 1.2 | < 1.1 | < 0.98 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.2 | < 1.1 | < 0.99 | < 1.1 | < 1.1 | < 0.95 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.71 | < 0.66 | < 0.39 | < 0.48 | < 0.47 | < 0.41 |
| 2-Methylphenol | ug/l | NS | NS | < 1.2 | < 1.1 | < 1.1 | < 1.6 | < 1.6 | < 1.4 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.25 | < 0.24 | < 1.1 | < 0.78 | < 0.76 | < 0.66 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.3 | < 1.2 | < 1.5 | < 2.1 | < 2.1 | < 1.8 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.1 | < 1 | < 0.94 | < 1.5 | < 1.5 | < 1.3 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 0.32 | < 0.3 | < 0.37 | < 1.4 | < 1.4 | < 1.2 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.31 | < 0.29 | < 1.3 | < 1.5 | < 1.4 | < 1.3 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.55 | < 0.51 | < 1 | < 0.85 | < 0.83 | < 0.72 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.38 | < 0.35 | < 0.36 | < 0.35 | < 0.34 | < 0.3 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.1 | < 1.1 | < 1.9 | < 1.4 | < 1.4 | < 1.2 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.27 | < 0.25 | < 0.54 | < 0.47 | < 0.46 | < 0.4 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.38 | < 0.35 | < 0.32 | < 0.51 | < 0.5 | < 0.43 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.19 | < 0.18 | < 1.7 | < 0.85 | < 0.83 | < 0.72 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.89 | < 0.83 | < 5.3 | < 0.99 | < 0.97 | < 0.84 |
| Acetophenone | ug/l | 700 | NS | < 0.43 | < 0.4 | < 0.29 | < 0.44 | < 0.43 | < 0.37 |
| Atrazine | ug/l | 3 | 3 | < 0.42 | < 0.39 | < 0.5 | < 0.19 | < 0.19 | < 0.16 |
| Benzaldehyde | ug/l | NS | NS | < 0.43 | < 0.4 | < 3.3 | < 0.31 | < 0.3 | < 0.27 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.27 | < 0.25 | < 0.29 | < 0.7 | < 0.68 | < 0.59 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.27 | < 0.25 | < 0.31 | < 0.77 | < 0.75 | < 0.65 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.33 | < 0.31 | < 0.31 | < 0.62 | < 0.61 | < 0.53 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.42 | < 0.39 | < 0.46 | < 0.87 | < 0.85 | < 0.74 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.35 | < 0.33 | < 0.6 | < 0.78 | < 0.76 | **3.7** |
| Caprolactam | ug/l | NS | NS | < 0.21 | < 0.2 | < 0.7 | < 0.37 | < 0.36 | < 0.32 |
| Carbazole | ug/l | NS | NS | < 0.18 | < 0.17 | < 0.37 | < 0.43 | < 0.42 | < 0.36 |
| Dibenzofuran | ug/l | NS | NS | < 0.33 | < 0.3 | < 0.27 | < 0.4 | < 0.4 | < 0.34 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.18 | < 0.17 | < 0.33 | < 0.46 | < 0.45 | < 0.39 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.24 | < 0.23 | < 0.29 | < 0.39 | < 0.38 | < 0.33 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.21 | < 0.19 | < 0.57 | < 0.7 | < 0.68 | < 0.59 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.42 | < 0.4 | < 0.31 | < 0.67 | < 0.65 | < 0.57 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.14 | < 0.13 | < 0.52 | < 0.21 | < 0.2 | < 0.18 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.26 | < 0.24 | < 7.3 | < 0.48 | < 0.47 | < 0.41 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.22 | < 0.21 | < 0.56 | < 0.33 | < 0.33 | < 0.28 |
| Isophrone | ug/l | 40 | NS | < 0.27 | < 0.25 | < 0.28 | < 0.69 | < 0.68 | < 0.59 |
| Nitrobenzene | ug/l | 6 | NS | < 0.27 | < 0.25 | < 0.43 | < 0.49 | < 0.48 | < 0.42 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.47 | < 0.44 | < 0.31 | < 0.55 | < 0.54 | < 0.47 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.23 | < 0.22 | < 0.31 | < 0.61 | < 0.59 | < 0.52 |
| Phenol | ug/l | 2000 | NS | < 0.62 | < 0.58 | < 1.3 | < 0.58 | < 0.57 | < 0.5 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.031 | < 0.014 | < 0.014 | < 0.02 | < 0.02 | < 0.017 |
| Acenaphthylene | ug/l | NS | NS | < 0.042 | < 0.016 | < 0.016 | < 0.011 | < 0.011 | < 0.0095 |
| Anthracene | ug/l | 2000 | NS | < 0.028 | < 0.01 | < 0.01 | < 0.025 | < 0.024 | < 0.021 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.025 | < 0.015 | < 0.015 | < 0.008 | < 0.0078 | < 0.0068 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.033 | < 0.0049 | < 0.005 | < 0.02 | < 0.019 | < 0.017 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.038 | < 0.016 | < 0.017 | < 0.043 | < 0.042 | < 0.036 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.031 | < 0.01 | < 0.011 | < 0.021 | < 0.02 | < 0.018 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.03 | < 0.013 | < 0.013 | < 0.018 | < 0.018 | < 0.016 |
| Chrysene | ug/l | 5 | NS | < 0.024 | < 0.023 | < 0.024 | < 0.02 | < 0.019 | < 0.017 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.024 | < 0.023 | < 0.023 | < 0.019 | < 0.019 | < 0.016 |
| Fluoranthene | ug/l | 300 | NS | < 0.026 | < 0.0096 | < 0.0098 | < 0.011 | < 0.01 | < 0.009 |
| Fluorene | ug/l | 300 | NS | < 0.029 | < 0.015 | < 0.015 | < 0.024 | < 0.023 | < 0.02 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.011 | < 0.008 | < 0.0082 | < 0.072 | < 0.07* | < 0.02 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.031 | < 0.011 | < 0.011 | < 0.013 | < 0.013 | < 0.011 |
| Naphthalene | ug/l | 300 | NS | < 0.02 | < 0.016 | < 0.017 | < 0.03 | < 0.03 | < 0.026 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.073 | < 0.29 | < 0.1 J | < 0.47* | < 0.46* | < 0.3 |
| Phenanthrene | ug/l | NS | NS | < 0.039 | < 0.016 | < 0.016 | < 0.025 | < 0.024 | < 0.021 |
| Pyrene | ug/l | 200 | NS | < 0.024 | < 0.0081 | < 0.0083 | < 0.016 | < 0.016 | < 0.014 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.34 | < 0.13 | < 0.13 | < 0.11 | < 0.11 | < 0.1 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.46 | < 0.28 | < 0.27 | < 0.54* | < 0.54* | < 0.52* |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.35 | < 0.4 | < 0.39 | < 0.45 | < 0.45 | < 0.43 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.3 | < 0.09 | < 0.086 | < 0.19 | < 0.19 | < 0.18 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.31 | < 0.15 | < 0.15 | < 0.18 | < 0.18 | < 0.17 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.2 | < 0.15 | < 0.14 | < 0.13 | < 0.13 | < 0.12 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.16 | < 0.22 | < 0.21 | < 0.13 | < 0.13 | < 0.13 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | < 0.003 | < 0.0028 | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | < 0.0021 | < 0.0019 | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | < 0.0062 | < 0.0057 | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | < 0.0042 | < 0.0039 | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | < 0.0033 | < 0.003 | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | < 0.0054 | < 0.0051 | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | < 0.0077 | < 0.0072 | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | < 0.0039 | < 0.0036 | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | < 0.0021 | < 0.002 | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | < 0.0026 | < 0.0025 | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | < 0.0041 | < 0.0038 | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | < 0.0058 | < 0.0054 | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | < 0.0038 | < 0.0035 | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | < 0.0081 | < 0.0075 | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | < 0.0044 | < 0.0041 | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | < 0.0022 | < 0.002 | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | < 0.0032 | < 0.003 | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | < 0.0018 | < 0.0017 | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | < 0.0022 | < 0.002 | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | < 0.0085 | < 0.0079 | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | < 0.12 | < 0.11 | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | 18.8 B | **513** | **216** | **27400 J** | **60500 J** | **21200** |
| Antimony | ug/l | 6 | 6 | < 2.2 | < 1.3 | < 1.4 | < 5 | < 5 | < 5 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.4 | < 0.92 | < 0.97 | **9.1 J** | **23.1 J** | **7.1** |
| Barium | ug/l | 6000 | 2000 | 37.5 B | 46.1 B | 40.2 B | 147 BJ | 298 J | 1260 |
| Beryllium | ug/l | 1 | 4 | < 1 | < 0.24 | < 0.44 | **1.2 J** | **2.5 J** | **3.7** |
| Cadmium | ug/l | 4 | 5 | < 0.35 | < 0.17 | < 3 | < 1.3 | < 1.3 | **29.8** |
| Calcium | ug/l | NS | NS | 93900 | 97000 | 98300 | 32300 J | 36400 J | 149000 |
| Chromium | ug/l | 70 | 100 | 1.4 B | < 0.9 | < 0.91 | 48.2 J | **85.2 J** | 8.2 B |
| Cobalt | ug/l | NS | NS | < 0.65 | < 50 | < 0.59 | 21 B | 49 B | 53.3 |
| Copper | ug/l | 1,300 | 1300 | < 2.5 | < 0.85 | < 10 | 123 J | 196 J | 1070 |
| Iron | ug/l | 300 | NS | 77.5 B | **1110** | **464** | **45800 J** | **107000 J** | **2280** |
| Lead | ug/l | 5 | 15 | < 1.9 | 4.2 J | < 1.7 | **31.5 J** | **59.3 J** | **594** |
| Magnesium | ug/l | NS | NS | 23500 | 25000 | 24700 | 16900 J | 26900 J | 18900 |
| Manganese | ug/l | 50 | NS | **310** | **1450** | **628** | **3290 J** | **5450 J** | **8270** |
| Mercury | ug/l | 2 | 2 | < 0.082 | 0.095 B | < 0.075 | 0.044 B | 0.15 B | **2.1** |
| Nickel | ug/l | 100 | NS | 1 B | < 10 | < 10 | 50.5 J | **108 J** | 48.2 |
| Potassium | ug/l | NS | NS | 2150 J | 2220 B | 2150 B | 6280 J | 8940 J | 14100 |
| Selenium | ug/l | 40 | 50 | 2.8 B | < 1.5 | < 10 | < 6.2 | < 6.2 | < 6.2 |
| Silver | ug/l | 40 | NS | < 0.53 | < 0.72 | 1.6 J | < 1 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 15300 | 15400 | 16500 | 25800 | 25800 | 29800 |
| Thallium | ug/l | 2 [10] | 2 | < 1.8 | < 0.17 | < 1.7 | 0.41 B | 0.69 B | < 0.09 |
| Vanadium | ug/l | NS | NS | 0.7 B | 2.5 J | < 50 | 46.5 BJ | 102 J | 25.1 B |
| Zinc | ug/l | 2000 | NS | < 1.4 | 2.9 J | < 2.8 | 530 J | 465 J | 862 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | < 7.8 | < 200 | < 16 | < 23 | < 23 | 25.3 B |
| Antimony | ug/l | 6 | 6 | < 2.2 | < 1.3 | < 1.4 | < 5 | < 5 | < 5 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.4 | < 0.92 | < 0.97 | < 1.5 | < 1.5 | < 1.5 |
| Barium | ug/l | 6000 | 2000 | 36.2 B | 39.1 B | 35.9 B | 10.8 B | 10.4 B | 9.9 B |
| Beryllium | ug/l | 1 | 4 | < 1 | < 0.24 | < 0.44 | < 0.4 | < 0.4 | < 0.4 |
| Cadmium | ug/l | 4 | 5 | < 0.35 | < 0.17 | < 3 | < 1.3 | < 1.3 | < 1.3 |
| Calcium | ug/l | NS | NS | 93800 | 97700 | 95600 | 30000 J | 31000 J | 32300 |
| Chromium | ug/l | 70 | 100 | 1.1 B | < 0.9 | < 0.91 | 1.2 B | 1.1 B | < 0.8 |
| Cobalt | ug/l | NS | NS | < 0.65 | < 0.3 | < 0.59 | < 1.8 | < 1.8 | < 1.8 |
| Copper | ug/l | 1,300 | 1300 | < 2.5 | < 0.85 | < 10 | < 2.7 | < 2.7 | < 2.7 |
| Iron | ug/l | 300 | NS | < 18 | < 100 | < 24 | 81.5 BJ | 113 J | 43.4 B |
| Lead | ug/l | 5 | 15 | < 1.9 | < 3 | < 1.7 | < 2.8 | < 2.8 | < 2.8 |
| Magnesium | ug/l | NS | NS | 23800 | 25000 | 24200 | 10100 J | 10400 J | 8200 |
| Manganese | ug/l | 50 | NS | **93.5** | 46 | **69.7** | **1530** | **1650** | **247** |
| Mercury | ug/l | 2 | 2 | < 0.082 | < 0.088 | < 0.075 | < 0.037 | < 0.037 | < 0.037 |
| Nickel | ug/l | 100 | NS | 0.9 B | < 10 | < 10 | < 2.8 | 3.2 B | 3.5 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 2130 B | 2200 B | 2120 B | 2220 BJ | 2110 BJ | 2980 B |
| Selenium | ug/l | 40 | 50 | 3 B | < 1.5 | < 10 | < 6.2 | < 6.2 | < 6.2 |
| Silver | ug/l | 40 | NS | < 0.53 | < 0.72 | 1.7 J | < 1 | < 1 | < 1 |
| Sodium | ug/l | 50,000 | NS | 15100 | 15500 | 16700 | 27000 | 26800 | 32300 J |
| Thallium | ug/l | 2 [10] | 2 | < 1.8 | < 0.17 | < 1.7 | 0.24 B | 0.2 B | < 0.09 |
| Vanadium | ug/l | NS | NS | < 50 | < 50 | < 0.77 | < 1.8 | < 1.8 | < 1.8 |
| Zinc | ug/l | 2000 | NS | < 1.4 | 5.1 J | < 20 | 6.9 B | 6.2 B | 7.8 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**



| Location ID | | | | OB-24 | OB-24 | OB-24 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-24(052810) | OB-24(051911) | OB-24(041812) | OB-25 | REP-061130 | OB-25(041207) |
| Sample Date | | | MCLs | 5/28/2010 | 5/19/2011 | 4/18/2012 | 11/30/2006 | 11/30/2006 | 4/12/2007 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | NA | NA | NA | 117000 |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | NA | NA | NA | < 5000 |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 213000 | 215000 | 241000 | NA | NA | 117000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | 230 J | < 150 J | NA |
| Chloride | ug/l | 250000 | NS | 85400 | 88100 | 89300 | NA | NA | 50700 |
| Cyanide | ug/l | 100 | 200 | NA | NA | NA | < 10 | < 10 | < 10 |
| Nitrate | ug/l | 10000 | 10000 | NA | NA | NA | < 110 | < 110 | 880 |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | NA | NA | < 10 | < 10 | < 10 |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | NA | NA | < 100 | < 100 | 880 |
| Phosphorus, Total | ug/l | NS | NS | NA | NA | NA | 530 J | 970 J | 21400 |
| Sulfate | ug/l | 250000 | NS | 31900 | 30000 | 31700 | NA | NA | 45400 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.3 | < 0.24 | < 0.24 | < 0.26 | < 0.26 | < 0.26 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.8 | < 0.13 | < 0.13 | < 0.24 | < 0.24 | < 0.24 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.49 | < 0.17 | < 0.17 | < 0.23 | < 0.23 | < 0.23 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.2 | < 0.16 | < 0.24 | < 0.29 | < 0.29 | < 0.29 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.28 | < 0.29 | < 0.29 | < 0.4 | < 0.4 | < 0.4 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.41 | < 1.3 | < 1.3 | < 0.56 | < 0.56 | < 0.56 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 0.8* | < 2.4* | < 1.3* | < 1.1* | < 1.1* | < 1.1* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.45* | < 0.17* | < 0.18* | < 0.39* | < 0.39* | < 0.39* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.2 | < 0.18 | < 0.18 | < 0.26 | < 0.26 | < 0.26 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.29 | < 0.35 | < 0.35 | < 0.33 | < 0.33 | < 0.33 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.24 | < 0.18 | < 0.18 | < 0.27 | < 0.27 | < 0.27 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.21 | < 0.26 | < 0.26 | < 0.25 | < 0.25 | < 0.25 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.17 | < 0.32 | < 0.22 | < 0.28 | < 0.28 | < 0.28 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 2.7 | < 2.3 | < 2.3 | < 1.6 | < 1.6 | < 1.6 |
| 2-Hexanone | ug/l | NS | NS | < 0.94 | < 1.7 | < 1.7 | < 1.4 | < 1.4 | < 1.4 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 1.4 | < 1.9 | < 1.3 | < 0.86 | < 0.86 | < 0.86 |
| Acetone | ug/l | 6000 | NS | < 2.9 | < 2.1 | < 2.1 | < 2.9 | < 2.9 | < 2.9 |
| Benzene | ug/l | 1 | 5 | < 0.19 | < 0.26 | < 0.26 | < 0.23 | < 0.23 | < 0.23 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.15 | < 0.14 | < 0.14 | < 0.22 | < 0.22 | < 0.22 |
| Bromoform | ug/l | 4 | 80 | < 0.34 | < 0.18 | < 0.18 | < 0.23 | < 0.23 | < 0.23 |
| Bromomethane | ug/l | 10 | NS | < 0.38 | < 0.32 | < 0.32 | < 0.3 | < 0.3 | < 0.3 |
| Carbon disulfide | ug/l | 700 | NS | < 0.14 | < 0.15 | < 0.16 | < 0.74 | < 0.74 | < 0.74 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.19 | < 0.18 | < 0.18 | < 0.26 | < 0.26 | < 0.26 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.19 | < 0.14 | < 0.19 | < 0.39 | < 0.39 | < 0.39 |
| Chloroethane | ug/l | NS | NS | < 0.67 | < 0.22 | < 0.22 | < 0.37 | < 0.37 | < 0.37 |
| Chloroform | ug/l | 70 | 80 | < 0.25 | < 0.16 | < 0.16 | < 0.23 | < 0.23 | < 0.23 |
| Chloromethane | ug/l | NS | NS | < 0.3 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.27 | < 0.19 | < 0.25 | < 0.22 | < 0.22 | < 0.22 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.13 | < 0.15 | < 0.18 | < 0.25 | < 0.25 | < 0.25 |
| Cyclohexane | ug/l | NS | NS | < 0.85 | < 0.85 | < 0.85 | < 1.9 | < 1.9 | < 1.9 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.28 | < 0.12 | < 0.16 | < 0.22 | < 0.22 | < 0.22 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 1 | < 0.88 | < 0.88 | < 0.92 | < 0.92 | < 0.92 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.21 | < 0.27 | < 0.27 | < 0.27 | < 0.27 | < 0.27 |
| Freon 113 | ug/l | NS | NS | < 1.2 | < 0.8 | < 0.8 | < 0.38 | < 0.38 | < 0.38 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.54 | < 0.15 | < 0.19 | < 0.57 | < 0.57 | < 0.57 |
| Methyl acetate | ug/l | 7000 | NS | < 1.6 | < 2.5 | < 1.7 | < 1.5 | < 1.5 | < 1.5 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.2 | 0.25 J | < 0.16 | **171** | < 0.23 | < 0.23 |
| Methylcyclohexane | ug/l | NS | NS | < 0.5 | < 0.11 | < 0.11 | < 0.35 | < 0.35 | < 0.35 |
| Methylene chloride | ug/l | 3 | 5 | < 0.21 | < 0.16 | < 0.16 | < 0.3 | < 0.3 | < 0.3 |
| o-Xylene | ug/l | NS | NS | < 0.2 | < 0.45 | < 0.45 | < 0.25 | < 0.25 | NA |
| Styrene | ug/l | 100 | 100 | < 0.2 | < 0.11 | < 0.17 | < 0.58 | < 0.58 | < 0.58 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.28 J | < 0.29 | < 0.29 | < 0.27 | < 0.27 | < 0.27 |
| Toluene | ug/l | 600 | 1000 | < 0.21 | < 0.15 | < 0.15 | < 0.3 | 0.72 J | < 0.3 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.32 | < 0.16 | < 0.16 | < 0.25 | < 0.25 | < 0.25 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.17 | < 0.11 | < 0.15 | < 0.21 | < 0.21 | < 0.21 |
| Trichloroethene | ug/l | 1 | 5 | < 0.26 | < 0.18 | < 0.18 | < 0.24 | < 0.24 | < 0.24 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.26 | < 0.25 | < 0.25 | < 0.54 | < 0.54 | < 0.54 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.22 | < 0.21 | < 0.21 | < 0.44 | < 0.44 | < 0.44 |
| Xylene, -m,p | ug/l | NS | NS | < 0.35 | < 0.39 | < 0.39 | < 0.25 | < 0.25 | NA |
| Xylenes | ug/l | 1,000 | 10000 | < 0.2 | < 0.39 | < 0.39 | < 0.25 | < 0.25 | < 0.25 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.36 | < 0.23 | < 0.58 | < 0.47 | < 0.47 | < 0.49 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 2.1 | < 1.2 | < 2.1 | < 1.5 | < 1.5 | < 1.5 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.4 | < 1.1 | < 1.7 | < 1.4 | < 1.4 | < 1.4 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.7 | < 1.5 | < 2 | < 1.4 | < 1.4 | < 1.4 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 | < 1.7 | < 2.1 | < 1.8 | < 1.9 | < 1.9 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.99 | < 1.2 | < 4.4 | < 0.82 | < 0.83 | < 0.86 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.96 | < 0.57 | < 0.48 | < 0.24 | < 0.25 J | < 0.26 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.62 | < 0.53 | < 0.63 | < 0.36 | < 0.37 | < 0.38 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 1.1 | < 0.21 | < 0.51 | < 0.46 | < 0.47 | < 0.48 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.1 | < 0.92 | < 1.5 | < 1.2 | < 1.2 | < 1.2 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.45 | < 0.8 | < 0.46 | < 0.73 | < 0.74 | < 0.77 |
| 2-Methylphenol | ug/l | NS | NS | < 1.5 | < 1.1 | < 1.4 | < 1.2 | < 1.3 | < 1.3 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.74 | < 0.52 | < 0.47 | < 0.26 | < 0.26 | < 0.27 |
| 2-Nitrophenol | ug/l | NS | NS | < 2 | < 1.6 | < 2 | < 1.4 | < 1.4 | < 1.4 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.4 | < 1.2 | < 1.5 | < 1.2 | < 1.2 | < 1.2 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 1.4 | < 1 | < 4.8 | < 0.33 | < 0.33 | < 0.34 |
| 3-Nitroaniline | ug/l | NS | NS | < 1.4 | < 0.34 | < 0.47 | < 0.32 | < 0.32 | < 0.33 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.8 | < 2.3 | < 1.2 | < 0.57 | < 0.58 | < 0.6 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.33 | < 0.39 | < 0.43 | < 0.39 | < 0.39 | < 0.41 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.3 | < 1.3 | < 2.4 | < 1.2 | < 1.2 | < 1.2 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.44 | < 0.37 | < 0.35 | < 0.28 | < 0.28 | < 0.29 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.48 | < 0.31 | < 0.48 | < 0.39 | < 0.4 | < 0.41 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.8 | < 0.62 | < 0.48 | < 0.2 | < 0.2 | < 0.21 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.94 | < 1.7 | < 2.4 | < 0.92 | < 0.93 | < 0.96 |
| Acetophenone | ug/l | 700 | NS | < 0.42 | < 0.38 | < 0.49 | < 0.44 | < 0.45 | < 0.46 |
| Atrazine | ug/l | 3 | 3 | < 0.18 | < 0.3 | < 0.65 | < 0.43 | < 0.44 | < 0.45 |
| Benzaldehyde | ug/l | NS | NS | < 0.29 | < 0.8 | < 1.7 | < 0.45 | < 0.45 | < 0.47 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.66 | < 0.67 | < 0.44 | < 0.28 | < 0.28 | < 0.29 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.73 | < 0.33 | < 0.54 | < 0.28 | < 0.28 | < 0.29 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.59 | < 0.71 | < 0.52 | < 0.34 | < 0.35 | < 0.36 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.82 | < 0.61 | < 0.57 | < 0.43 | < 0.44 | < 0.45 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.73 | < 0.92 J | < 0.79 | < 0.36 | < 0.37 | < 0.38 |
| Caprolactam | ug/l | NS | NS | < 0.35 | < 0.52 | < 0.66 | < 0.22 | < 0.22 | < 0.23 |
| Carbazole | ug/l | NS | NS | < 0.4 | < 0.42 | < 0.47 | < 0.18 | < 0.19 | < 0.19 |
| Dibenzofuran | ug/l | NS | NS | < 0.38 | < 0.24 | < 0.51 | < 0.34 | < 0.34 | < 0.35 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.43 | < 0.36 | < 0.38 | < 0.18 | < 0.19 | < 0.19 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.36 | < 0.35 | < 0.38 | < 0.25 | < 0.25 | < 0.26 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.66 | < 0.42 | < 0.53 | < 0.21 | < 0.21 | < 0.22 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.63 | < 0.5 | < 0.52 | < 0.44 | < 0.44 | < 0.46 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.19 | < 0.13 | < 0.39 | < 0.41 | < 0.42 J | < 0.15 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.45 | < 0.11 | < 4.8 | < 0.75 | < 0.76 | < 0.28 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.31 | < 0.17 | < 0.32 | < 0.29 | < 0.3 | < 0.24 |
| Isophrone | ug/l | 40 | NS | < 0.65 | < 0.51 | < 0.73 | < 0.28 | < 0.28 | < 0.29 |
| Nitrobenzene | ug/l | 6 | NS | < 0.47 | < 0.74 | < 0.69 | < 0.28 | < 0.28 | < 0.29 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.52 | < 0.4 | < 0.41 | < 0.49 | < 0.49 | < 0.51 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.57 | < 0.44 | < 0.64 | < 0.24 | < 0.24 | < 0.25 |
| Phenol | ug/l | 2000 | NS | < 0.55 | < 0.72 | < 1.4 | < 0.64 | < 0.65 | < 0.67 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 11 J | 0 | 0 | 0 | 82.8 J | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.019 | < 0.017 | < 0.017 | < 0.018 | < 0.033 | < 0.034 |
| Acenaphthylene | ug/l | NS | NS | < 0.011 | < 0.0074 | < 0.0074 | < 0.0078 | < 0.044 | < 0.046 |
| Anthracene | ug/l | 2000 | NS | < 0.023 | < 0.022 | < 0.022 | < 0.023 | < 0.029 | < 0.03 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.0076 | < 0.035 | < 0.035 | < 0.037 | < 0.027 | < 0.028 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.019 | < 0.037 | < 0.037 | < 0.039 | < 0.035 | < 0.036 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.04 | < 0.018 | < 0.018 | < 0.019 | < 0.04 | < 0.042 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.02 | < 0.012 | < 0.012 | < 0.013 | < 0.032 | < 0.033 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.017 | < 0.02 | < 0.02 | < 0.021 | < 0.032 | < 0.033 |
| Chrysene | ug/l | 5 | NS | < 0.019 | < 0.019 | < 0.019 | < 0.02 | < 0.025 | < 0.026 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.018 | < 0.021 | < 0.021 | < 0.022 | < 0.025 | < 0.026 |
| Fluoranthene | ug/l | 300 | NS | < 0.01 | < 0.01 | < 0.01 | < 0.011 | < 0.027 | < 0.028 |
| Fluorene | ug/l | 300 | NS | < 0.022 | < 0.021 | < 0.021 | < 0.022 | < 0.03 | < 0.031 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.022* | < 0.01 | < 0.01 | < 0.011 | < 0.011 | < 0.012 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.012 | < 0.015 | < 0.015 | < 0.016 | < 0.033 | < 0.034 |
| Naphthalene | ug/l | 300 | NS | < 0.029 | < 0.015 | < 0.015 | < 0.015 | < 0.021 | < 0.022 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.33* | < 0.23 | < 0.23 | < 0.25 | < 0.25 | < 0.079 |
| Phenanthrene | ug/l | NS | NS | < 0.023 | < 0.018 | < 0.018 | < 0.019 | < 0.041 | < 0.042 |
| Pyrene | ug/l | 200 | NS | < 0.016 | < 0.013 | < 0.013 | < 0.013 | < 0.025 | < 0.026 |
| **PCBs** | | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.11 | < 0.1 | < 0.1 | < 0.25 | < 0.35 | < 0.34 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.53* | < 0.51* | < 0.51* | < 0.4 | < 0.48 | < 0.47 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.44 | < 0.42 | < 0.42 | < 0.27 | < 0.36 | < 0.35 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.18 | < 0.18 | < 0.18 | < 0.12 | < 0.32 | < 0.31 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.17 | < 0.16 | < 0.16 | < 0.33 | < 0.33 | < 0.32 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.12 | < 0.12 | < 0.12 | < 0.15 | < 0.21 | < 0.2 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.13 | < 0.13 | < 0.13 | < 0.19 | < 0.16 | < 0.16 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | **1440** | **8080** | **43100** | **17700** | **3440** | **5520** |
| Antimony | ug/l | 6 | 6 | < 5.7 | < 1.8 | 3.1 B | < 4 | < 2.9 | < 2.2 |
| Arsenic | ug/l | 3 [8] | 10 | 1.1 B | 2.1 B | **19.8** | **8.4 J** | < 2.4 | 1.7 B |
| Barium | ug/l | 6000 | 2000 | 21.2 B | 60.6 B | 232 | 108 B | 35.3 B | 113 J |
| Beryllium | ug/l | 1 | 4 | < 0.15 | 0.4 B | **1.4** | **3.3 J** | < 0.4 | < 1 |
| Cadmium | ug/l | 4 | 5 | < 0.24 | < 0.28 | 2.1 BJ | < 0.4 | < 0.4 | < 3 |
| Calcium | ug/l | NS | NS | 23300 | 50400 | 48700 | 45200 | 36600 | 50700 |
| Chromium | ug/l | 70 | 100 | < 0.53 | 9.4 B | 51.1 | 24.1 | 4.6 B | 7.5 B |
| Cobalt | ug/l | NS | NS | 1.6 B | 5.2 B | 34.6 B | 12.5 B | 3 B | 10.9 B |
| Copper | ug/l | 1,300 | 1300 | 26.9 | 43.4 | 124 | 57.4 | 95.9 | 95 |
| Iron | ug/l | 300 | NS | **942** | **11000** | **69500** | **28300** | **5180** | **7880** |
| Lead | ug/l | 5 | 15 | 3.1 | **13.8** | **45.7** | **19.9** | 4.3 | **53.6** |
| Magnesium | ug/l | NS | NS | 4430 B | 11300 | 20900 | 13300 | 7640 | 12100 |
| Manganese | ug/l | 50 | NS | 23.6 | **321** | **2110** | **735** | **137** | **1080** |
| Mercury | ug/l | 2 | 2 | < 0.15 | < 0.15 | 0.15 B | 0.071 B | < 0.082 | < 0.082 |
| Nickel | ug/l | 100 | NS | 3.8 B | 12.8 B | 72.2 | 29 | 6.5 B | 14.3 |
| Potassium | ug/l | NS | NS | 6370 BJ | 8200 B | 11000 | 8490 B | 6790 B | 6920 B |
| Selenium | ug/l | 40 | 50 | < 0.73 | < 1.6 | 4.5 B | < 3.7 | < 3.7 | 3.3 B |
| Silver | ug/l | 40 | NS | < 0.83 | < 1 | < 1 | 4.9 B | < 1 | < 0.53 |
| Sodium | ug/l | 50,000 | NS | 25100 J | 43300 | 37400 J | 42800 | 37500 | 45600 J |
| Thallium | ug/l | 2 [10] | 2 | < 1.4 | < 1.3 | < 1.3 | < 1.5 | < 1.5 | < 1.8 |
| Vanadium | ug/l | NS | NS | 1.7 B | 13 B | 77.8 | 30.2 B | 6.4 B | 14 B |
| Zinc | ug/l | 2000 | NS | < 2.7 | 61.4 | 262 | 112 | 24.8 | 123 |
| **Metals - Dissolved** | | | | | | | | | |
| Aluminum | ug/l | 200 | NS | **207** | < 24 | 32.3 B | < 26 | 104 B | 104 B |
| Antimony | ug/l | 6 | 6 | < 5.7 | < 1.8 | < 1.8 | < 4 | < 2.9 | < 2.2 |
| Arsenic | ug/l | 3 [8] | 10 | < 1.1 | < 1.7 | < 1.7 | < 2.4 | < 2.4 | < 1.4 |
| Barium | ug/l | 6000 | 2000 | 17.3 B | 25.6 B | 17.9 B | 20.1 B | 17.7 B | 24.4 J |
| Beryllium | ug/l | 1 | 4 | < 0.15 | < 0.15 | < 0.15 | < 1 | < 0.4 | < 0.24 |
| Cadmium | ug/l | 4 | 5 | < 0.24 | < 0.28 | 0.4 B | < 0.4 | < 0.4 | < 0.35 |
| Calcium | ug/l | NS | NS | 25100 | 53700 | 45800 | 47400 | 38200 | 49400 |
| Chromium | ug/l | 70 | 100 | < 0.53 | 1.2 B | < 0.53 | < 10 | < 0.9 | < 0.59 |
| Cobalt | ug/l | NS | NS | 1.3 B | < 0.51 | < 0.51 | < 50 | < 1.6 | < 0.65 |
| Copper | ug/l | 1,300 | 1300 | 11.6 B | 5.1 B | 5 B | 4.5 BJ | 6.1 B | 5 B |
| Iron | ug/l | 300 | NS | < 6.3 | 51.3 B | 8.1 B | < 100 | 55 B | 121 |
| Lead | ug/l | 5 | 15 | 1.5 B | < 1.4 | < 1.4 | < 1.7 | 2 B | < 1.9 |
| Magnesium | ug/l | NS | NS | 4550 B | 9940 | 9760 | 10000 | 7090 | 9870 |
| Manganese | ug/l | 50 | NS | 9.1 B | 3.8 B | **79.4** | 28.5 | 2.8 B | 4.9 J |
| Mercury | ug/l | 2 | 2 | < 0.15 | < 0.15 | < 0.049 | < 0.049 | < 0.082 | < 0.082 |
| Nickel | ug/l | 100 | NS | 2.3 B | 2.5 B | 2 B | < 10 | 1.7 B | 1.3 B |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 7050 BJ | 8080 B | 4130 B | 6220 BJ | 6530 B | 6820 B |
| Selenium | ug/l | 40 | 50 | < 0.73 | < 1.6 | 2.7 BJ | < 3.7 | < 3.7 | 2.7 B |
| Silver | ug/l | 40 | NS | < 0.83 | < 1 | < 1 | < 1 | < 1 | < 0.53 |
| Sodium | ug/l | 50,000 | NS | 28000 J | 46500 | 40700 J | 48200 | 40000 | **51000 J** |
| Thallium | ug/l | 2 [10] | 2 | < 1.4 | < 1.3 | < 1.3 | < 1.5 | < 1.5 | < 1.8 |
| Vanadium | ug/l | NS | NS | 0.6 B | < 0.43 | < 0.43 | < 0.9 | < 0.9 | < 0.56 |
| Zinc | ug/l | 2000 | NS | < 2.7 | 10.1 B | < 4 | 8.3 BJ | 39.1 | < 20 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 | OB-25 |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25(071012) | OB-25(080429) | OB-25(080918) | OB-25(070609) | OB-25(102609) | OB-25(060110) |
| Sample Date | | | MCLs | 10/12/2007 | 4/29/2008 | 9/18/2008 | 7/6/2009 | 10/26/2009 | 6/1/2010 |
| Validation Status | Units | | | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | 96400 | 134000 | 139000 | NA | NA | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | < 5000 | < 5000 | < 5000 | NA | NA | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 96500 | 136000 | 139000 | 151000 | 108000 | 129000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 18000 | 94200 | 58800 | 74100 | 61900 | 101000 |
| Cyanide | ug/l | 100 | 200 | < 10 | < 10 | < 10 J | NA | NA | NA |
| Nitrate | ug/l | 10000 | 10000 | 780 | 250 | 750 | NA | NA | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | < 10 | < 10 | < 10 | NA | NA | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | 780 | 250 | 750 | NA | NA | NA |
| Phosphorus, Total | ug/l | NS | NS | 69 | 66 | 89 | NA | NA | NA |
| Sulfate | ug/l | 250000 | NS | 30000 | 25200 | 28700 | 23500 | 24700 | 19000 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **VOC** | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 30 | 200 | < 0.2 | < 0.24 | < 0.26 | < 0.2 | < 0.24 |
| 1,1,2,2-Tetrachloroethane | ug/l | 1 | NS | < 0.12 | < 0.2 | < 0.24 | < 0.12 | < 0.2 |
| 1,1,2-Trichloroethane | ug/l | 3 | 5 | < 0.13 | < 0.23 | < 0.23 | < 0.13 | < 0.23 |
| 1,1-Dichloroethane | ug/l | 50 | NS | < 0.16 | < 0.19 | < 0.29 | < 0.16 | < 0.19 |
| 1,1-Dichloroethene | ug/l | 1 | 7 | < 0.24 | < 0.28 | < 0.4 | < 0.24 | < 0.28 |
| 1,2,4-Trichlorobenzene | ug/l | 9 | 70 | < 0.16 | < 0.15 | < 0.56 | < 0.16 | < 0.15 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | 0.02 [1] | 0.2 | < 1.2* | < 1.3* | < 1.1* | < 1.2* | < 1.3* |
| 1,2-Dibromoethane | ug/l | 0.03 [0.5] | 0.05 | < 0.39* | < 0.21* | < 0.39* | < 0.39* | < 0.21* |
| 1,2-Dichlorobenzene | ug/l | 600 | 600 | < 0.15 | < 0.18 | < 0.26 | < 0.15 | < 0.18 |
| 1,2-Dichloroethane | ug/l | 2 | 5 | < 0.31 | < 0.18 | < 0.33 | < 0.31 | < 0.18 |
| 1,2-Dichloropropane | ug/l | 1 | 5 | < 0.23 | < 0.22 | < 0.27 | < 0.23 | < 0.22 |
| 1,3-Dichlorobenzene | ug/l | 600 | NS | < 0.19 | < 0.29 | < 0.25 | < 0.19 | < 0.29 |
| 1,4-Dichlorobenzene | ug/l | 75 | 75 | < 0.22 | < 0.26 | < 0.28 | < 0.22 | < 0.26 |
| 2-Butanone (MEK) | ug/l | 300 | NS | < 1.7 | < 2.9 | < 1.6 | < 1.7 | < 2.9 |
| 2-Hexanone | ug/l | NS | NS | < 1.9 | < 3 | < 1.4 | < 1.9 | < 3 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | NS | < 0.74 | < 1.2 | < 0.86 | < 0.74 | < 1.2 |
| Acetone | ug/l | 6000 | NS | < 4.4 | < 7.6 | < 2.9 | < 4.4 | < 7.6 |
| Benzene | ug/l | 1 | 5 | < 0.26 | < 0.22 | < 0.23 | < 0.26 | < 0.22 |
| Bromodichloromethane | ug/l | 1 | 80 | < 0.18 | < 0.23 | < 0.22 | < 0.18 | < 0.23 |
| Bromoform | ug/l | 4 | 80 | < 0.42 | < 0.24 | < 0.23 | < 0.42 | < 0.24 |
| Bromomethane | ug/l | 10 | NS | < 0.24 | < 0.31 | < 0.3 | < 0.24 | < 0.31 |
| Carbon disulfide | ug/l | 700 | NS | < 0.13 | < 0.18 | < 0.74 | < 0.13 | < 0.18 |
| Carbon tetrachloride | ug/l | 1 | 5 | < 0.35 | < 0.19 | < 0.26 | < 0.35 | < 0.19 |
| Chlorobenzene | ug/l | 50 | 100 | < 0.15 | < 0.22 | < 0.39 | < 0.15 | < 0.22 |
| Chloroethane | ug/l | NS | NS | < 0.25 | < 0.37 | < 0.37 | < 0.25 | < 0.37 |
| Chloroform | ug/l | 70 | 80 | < 0.14 | < 0.21 | < 0.23 | < 0.14 | < 0.21 |
| Chloromethane | ug/l | NS | NS | < 0.34 | < 0.22 | < 0.29 | < 0.34 | < 0.22 |
| cis-1,2-Dichloroethene | ug/l | 70 | 70 | < 0.24 | < 0.22 | < 0.22 | < 0.24 | < 0.22 |
| cis-1,3-Dichloropropene | ug/l | NS | NS | < 0.16 | < 0.22 | < 0.25 | < 0.16 | < 0.22 |
| Cyclohexane | ug/l | NS | NS | < 0.43 | < 0.29 | < 1.9 | < 0.43 | < 0.29 |
| Dibromochloromethane | ug/l | 1 | 80 | < 0.16 | < 0.2 | < 0.22 | < 0.16 | < 0.2 |
| Dichlorodifluoromethane | ug/l | 1,000 | NS | < 0.39 | < 0.31 | < 0.92 | < 0.39 | < 0.31 |
| Ethylbenzene | ug/l | 700 | 700 | < 0.31 | < 0.21 | < 0.27 | < 0.31 | < 0.21 |
| Freon 113 | ug/l | NS | NS | < 0.66 | < 0.49 | < 0.38 | < 0.66 | < 0.49 |
| Isopropylbenzene | ug/l | 700 | NS | < 0.31 | < 0.19 | < 0.57 | < 0.31 | < 0.19 |
| Methyl acetate | ug/l | 7000 | NS | < 1.3 | < 2.9 | < 1.5 | < 1.3 | < 2.9 |
| Methyl tert butyl ether | ug/l | 70 | NS | < 0.2 | < 0.18 | < 0.23 | < 0.2 | < 0.18 |
| Methylcyclohexane | ug/l | NS | NS | < 0.16 | < 0.18 | < 0.35 | < 0.16 | < 0.18 |
| Methylene chloride | ug/l | 3 | 5 | < 0.2 | < 0.2 | < 0.3 | < 0.2 | < 0.2 |
| o-Xylene | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Styrene | ug/l | 100 | 100 | < 0.48 | < 0.23 | < 0.58 | < 0.48 | < 0.23 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Tetrachloroethene | ug/l | 1 | 5 | < 0.24 | < 0.32 | < 0.27 | < 0.24 | < 0.32 |
| Toluene | ug/l | 600 | 1000 | < 0.27 | < 0.15 | < 0.3 | < 0.27 | < 0.15 |
| Trans-1,2-dichloroethene | ug/l | 100 | 100 | < 0.3 | < 0.31 | < 0.25 | < 0.3 | < 0.31 |
| trans-1,3-Dichloropropene | ug/l | NS | NS | < 0.22 | < 0.19 | < 0.21 | < 0.22 | < 0.19 |
| Trichloroethene | ug/l | 1 | 5 | < 0.22 | < 0.21 | < 0.24 | < 0.22 | < 0.21 |
| Trichlorofluoromethane | ug/l | 2000 | NS | < 0.23 | < 0.35 | < 0.54 | < 0.23 | < 0.35 |
| Vinyl Chloride | ug/l | 1 | 2 | < 0.22 | < 0.27 | < 0.44 | < 0.22 | < 0.27 |
| Xylene, -m,p | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Xylenes | ug/l | 1,000 | 10000 | < 0.28 | < 0.17 | < 0.25 | < 0.28 | < 0.17 |
| Total TIC, Volatile | ug/l | NS | NS | 0 | 0 | 0 | 0 | 0 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC** | | | | | | | | |
| 1,1'-Biphenyl | ug/l | 400 | NS | < 0.47 | < 0.31 | < 0.47 | < 0.42 | < 0.31 |
| 2,4,5-Trichlorophenol | ug/l | 700 | NS | < 1.5 | < 1.6 | < 1.5 | < 1.3 | < 1.6 |
| 2,4,6-Trichlorophenol | ug/l | 20 | NS | < 1.4 | < 1.3 | < 1.4 | < 1.2 | < 1.3 |
| 2,4-Dichlorophenol | ug/l | 20 | NS | < 1.4 | < 1.2 | < 1.4 | < 1.2 | < 1.2 |
| 2,4-Dimethylphenol | ug/l | 100 | NS | < 1.8 | < 1.6 | < 1.9 | < 1.7 | < 1.6 |
| 2,4-Dinitrophenol | ug/l | 40 | NS | < 0.82 | < 17 | < 0.83 | < 0.74 | < 17 |
| 2,4-Dinitrotoluene | ug/l | NS | NS | < 0.24 | < 0.44 | < 0.25 | < 0.22 | < 0.44 |
| 2,6-Dinitrotoluene | ug/l | NS | NS | < 0.36 | < 0.48 | < 0.37 | < 0.33 | < 0.48 |
| 2-Chloronaphthalene | ug/l | 600 | NS | < 0.46 | < 0.31 | < 0.47 | < 0.42 | < 0.31 |
| 2-Chlorophenol | ug/l | 40 | NS | < 1.2 | < 1 | < 1.2 | < 1.1 | < 1 |
| 2-Methylnaphthalene | ug/l | NS | NS | < 0.73 | < 0.4 | < 0.74 | < 0.66 | < 0.4 |
| 2-Methylphenol | ug/l | NS | NS | < 1.2 | < 1.1 | < 1.3 | < 1.1 | < 1.1 |
| 2-Nitroaniline | ug/l | NS | NS | < 0.26 | < 1.2 | < 0.26 | < 0.24 | < 1.1 |
| 2-Nitrophenol | ug/l | NS | NS | < 1.4 | < 1.6 | < 1.4 | < 1.2 | < 1.5 |
| 3&4-Methylphenol | ug/l | NS | NS | < 1.2 | < 0.96 | < 1.2 | < 1 | < 0.95 |
| 3,3'-Dichlorobenzidine | ug/l | 30 | NS | < 0.33 | < 0.37 | < 0.33 | < 0.3 | < 0.37 |
| 3-Nitroaniline | ug/l | NS | NS | < 0.32 | < 1.3 | < 0.32 | < 0.29 | < 1.3 |
| 4,6-Dinitro-2-methylphenol | ug/l | NS | NS | < 0.57 | < 1 | < 0.58 | < 0.51 | < 1 |
| 4-Bromophenyl phenyl ether | ug/l | NS | NS | < 0.39 | < 0.37 | < 0.39 | < 0.35 | < 0.37 |
| 4-Chloro-3-Methylphenol | ug/l | NS | NS | < 1.2 | < 1.9 | < 1.2 | < 1.1 | < 1.9 |
| 4-Chloroaniline | ug/l | 30 | NS | < 0.28 | < 0.55 | < 0.28 | < 0.25 | < 0.54 |
| 4-Chlorophenyl phenyl ether | ug/l | NS | NS | < 0.39 | < 0.32 | < 0.4 | < 0.35 | < 0.32 |
| 4-Nitroaniline | ug/l | NS | NS | < 0.2 | < 1.7 | < 0.2 | < 0.18 | < 1.7 |
| 4-Nitrophenol | ug/l | NS | NS | < 0.92 | < 5.4 | < 0.93 J | < 0.83 | < 5.4 |
| Acetophenone | ug/l | 700 | NS | < 0.44 | < 0.3 | < 0.45 | < 0.4 | < 0.29 |
| Atrazine | ug/l | 3 | 3 | < 0.43 | < 0.51 | < 0.44 | < 0.39 | < 0.5 |
| Benzaldehyde | ug/l | NS | NS | < 0.45 | < 3.4 | < 0.45 | < 0.4 | < 3.4 |
| Benzyl butyl phthalate | ug/l | 100 | NS | < 0.28 | < 0.3 | < 0.28 | < 0.25 | < 0.3 |
| bis(2-Chloroethoxy)methane | ug/l | NS | NS | < 0.28 | < 0.32 | < 0.28 | < 0.25 | < 0.32 |
| bis(2-Chloroethyl)ether | ug/l | 7 | NS | < 0.34 | < 0.32 | < 0.35 | < 0.31 | < 0.32 |
| bis(2-Chloroisopropyl)ether | ug/l | 300 | NS | < 0.43 | < 0.47 | < 0.44 | < 0.39 | < 0.47 |
| bis(2-Ethylhexyl)phthalate | ug/l | 3 | 6 | < 0.36 | < 0.61 | < 0.37 | < 0.33 | < 0.6 |
| Caprolactam | ug/l | NS | NS | < 0.22 | < 0.71 | < 0.22 | < 0.2 | < 0.71 |
| Carbazole | ug/l | NS | NS | < 0.18 | < 0.37 | < 0.19 | < 0.17 | < 0.37 |
| Dibenzofuran | ug/l | NS | NS | < 0.34 | < 0.27 | < 0.34 | < 0.3 | < 0.27 |
| Diethyl phthalate | ug/l | 6000 | NS | < 0.18 | < 0.34 | < 0.19 | < 0.17 | < 0.34 |
| Dimethyl phthalate | ug/l | NS | NS | < 0.25 | < 0.29 | < 0.25 | < 0.23 | < 0.29 |
| di-n-butyl phthalate | ug/l | 700 | NS | < 0.21 | < 0.58 | < 0.21 | < 0.19 | < 0.57 |
| di-n-octylphthalate | ug/l | 100 | NS | < 0.44 | < 0.32 | < 0.44 | < 0.4 | < 0.32 |
| Hexachlorobutadiene | ug/l | 1 | NS | < 0.14 | < 0.53 | < 0.14 | < 0.13 | < 0.53 |
| Hexachlorocyclopentadiene | ug/l | 40 | 50 | < 0.27 | < 7.4 | < 0.27 | < 0.24 | < 7.3 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Hexachloroethane | ug/l | 7 | NS | < 0.23 | < 0.57 | < 0.23 | < 0.21 | < 0.57 |
| Isophrone | ug/l | 40 | NS | < 0.28 | < 0.28 | < 0.28 | < 0.25 | < 0.28 |
| Nitrobenzene | ug/l | 6 | NS | < 0.28 | < 0.43 | < 0.28 | < 0.25 | < 0.43 |
| N-Nitroso-di-n-Propylamine | ug/l | 10 | NS | < 0.49 | < 0.31 | < 0.49 | < 0.44 | < 0.31 |
| N-Nitrosodiphenylamine | ug/l | 10 | NS | < 0.24 | < 0.32 | < 0.24 | < 0.22 | < 0.31 |
| Phenol | ug/l | 2000 | NS | < 0.64 | < 1.3 | < 0.65 | < 0.58 | < 1.3 |
| Total TIC, Semi-Volatile | ug/l | NS | NS | 0 | 0 J | 14.7 J | 8.5 J | 39 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **SVOC BY SIM** | | | | | | | | |
| Acenaphthene | ug/l | 400 | NS | < 0.015 | < 0.014 | < 0.033 | < 0.014 | < 0.014 |
| Acenaphthylene | ug/l | NS | NS | < 0.018 | < 0.017 | < 0.044 | < 0.016 | < 0.017 |
| Anthracene | ug/l | 2000 | NS | < 0.011 | < 0.01 | < 0.029 | < 0.01 | < 0.01 |
| Benzo(a)anthracene | ug/l | 0.1 [0.2] | NS | < 0.017 | < 0.016 | < 0.027 | < 0.015 | < 0.016 |
| Benzo(a)pyrene | ug/l | 0.1 [0.2] | 0.2 | < 0.0054 | < 0.0051 | < 0.035 | < 0.0049 | < 0.0051 |
| Benzo(b)fluoranthene | ug/l | 0.2 [10] | NS | < 0.018 | < 0.017 | < 0.04 | < 0.016 | < 0.017 |
| Benzo(g,h,i)perylene | ug/l | NS | NS | < 0.011 | < 0.011 | < 0.032 | < 0.01 | < 0.011 |
| Benzo(k)fluoranthene | ug/l | 0.5 | NS | < 0.014 | < 0.013 | < 0.032 | < 0.013 | < 0.013 |
| Chrysene | ug/l | 5 | NS | < 0.026 | < 0.024 | < 0.025 | < 0.023 | < 0.024 |
| Dibenzo(a,h)anthracene | ug/l | 0.3 [0.5] | NS | < 0.025 | < 0.023 | < 0.025 | < 0.023 | < 0.023 |
| Fluoranthene | ug/l | 300 | NS | < 0.011 | < 0.0099 | < 0.027 | < 0.0096 | < 0.0099 |
| Fluorene | ug/l | 300 | NS | < 0.017 | < 0.015 | < 0.03 | < 0.015 | < 0.015 |
| Hexachlorobenzene | ug/l | 0.02 [10] | 1 | < 0.0089 | < 0.0083 | < 0.011 | < 0.008 | < 0.0082 |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.2 [10] | NS | < 0.012 | < 0.011 | < 0.033 | < 0.011 | < 0.011 |
| Naphthalene | ug/l | 300 | NS | < 0.018 | < 0.017 | < 0.021 | < 0.016 | < 0.017 |
| Pentachlorophenol | ug/l | 0.3 [1] | 1 | < 0.32* | < 0.1 J | < 0.076 | < 0.29 | < 0.1 J |
| Phenanthrene | ug/l | NS | NS | < 0.017 | < 0.016 | < 0.041 | < 0.016 | < 0.016 |
| Pyrene | ug/l | 200 | NS | < 0.009 | < 0.0084 | < 0.025 | < 0.0081 | < 0.0084 |
| **PCBs** | | | | | | | | |
| PCB 1016 | ug/l | 0.5 | 0.5 | < 0.13 | < 0.14 | < 0.33 | < 0.14 | < 0.13 |
| PCB 1221 | ug/l | 0.5 | 0.5 | < 0.29 | < 0.29 | < 0.45 | < 0.3 | < 0.28 |
| PCB 1232 | ug/l | 0.5 | 0.5 | < 0.41 | < 0.41 | < 0.34 | < 0.42 | < 0.4 |
| PCB 1242 | ug/l | 0.5 | 0.5 | < 0.091 | < 0.091 | < 0.3 | < 0.095 | < 0.09 |
| PCB 1248 | ug/l | 0.5 | 0.5 | < 0.15 | < 0.15 | < 0.31 | < 0.16 | < 0.15 |
| PCB 1254 | ug/l | 0.5 | 0.5 | < 0.15 | < 0.15 | < 0.2 | < 0.15 | < 0.15 |
| PCB 1260 | ug/l | 0.5 | 0.5 | < 0.22 | < 0.22 | < 0.15 | < 0.23 | < 0.22 |
| Total PCBs | ug/l | 0.5 | 0.5 | 0 | 0 | 0 | 0 | 0 |
| **Pesticides/Herbicides** | | | | | | | | |
| 4,4-DDD | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| 4,4-DDE | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| 4,4-DDT | ug/l | 0.1 | NS | NA | NA | NA | NA | NA |
| Aldrin | ug/l | 0.04 | NS | NA | NA | NA | NA | NA |
| alpha-BHC | ug/l | 0.02 | NS | NA | NA | NA | NA | NA |
| alpha-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA |
| beta-BHC | ug/l | 0.04 | NS | NA | NA | NA | NA | NA |
| delta-BHC | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Dieldrin | ug/l | 0.03 | NS | NA | NA | NA | NA | NA |
| Endosulfan I (alpha) | ug/l | 40 | NS | NA | NA | NA | NA | NA |
| Endosulfan II (beta) | ug/l | 40 | NS | NA | NA | NA | NA | NA |
| Endosulfan sulfate | ug/l | 40 | NS | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Endrin | ug/l | 2 | 2 | NA | NA | NA | NA | NA |
| Endrin Aldehyde | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Endrin ketone | ug/l | NS | NS | NA | NA | NA | NA | NA |
| gamma-Chlordane | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Heptachlor | ug/l | 0.05 | 0.4 | NA | NA | NA | NA | NA |
| Heptachlor epoxide | ug/l | 0.2 | 0.2 | NA | NA | NA | NA | NA |
| Lindane | ug/l | 0.03 | 0.2 | NA | NA | NA | NA | NA |
| Methoxychlor | ug/l | 40 | 40 | NA | NA | NA | NA | NA |
| Toxaphene | ug/l | 2 | 3 | NA | NA | NA | NA | NA |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Metals - Total** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | **1770** | **5640** | **721** | **25300** | **581** |
| Antimony | ug/l | 6 | 6 | < 1.3 | < 6 | < 2.2 | < 1.3 | < 1.4 |
| Arsenic | ug/l | 3 [8] | 10 | < 0.92 | 2.1 J | < 1.4 | **9.8** | < 0.97 |
| Barium | ug/l | 6000 | 2000 | 29.9 B | 51.9 B | 50.2 B | 154 B | 58.7 B |
| Beryllium | ug/l | 1 | 4 | < 0.24 | < 0.44 | < 0.24 | < 1 | < 1 |
| Cadmium | ug/l | 4 | 5 | < 0.17 | < 3 | < 0.35 | < 3 | < 3 |
| Calcium | ug/l | NS | NS | 36800 | 39900 | 118000 | 124000 | 143000 |
| Chromium | ug/l | 70 | 100 | 1.6 B | 6.9 J | 2.1 B | 36.6 | < 0.91 |
| Cobalt | ug/l | NS | NS | 0.7 B | 2.9 J | 1.2 B | 17.4 B | < 50 |
| Copper | ug/l | 1,300 | 1300 | 11.5 | 32.9 | 5 B | 52.4 | < 10 |
| Iron | ug/l | 300 | NS | **2410** | **7710** | **1260** | **40300** | **1020** |
| Lead | ug/l | 5 | 15 | 4.2 | **17.2** | < 1.9 | **24.4** | < 1.7 |
| Magnesium | ug/l | NS | NS | 7700 | 9730 | 25500 | 34300 | 31300 |
| Manganese | ug/l | 50 | NS | **65.5** | **213** | **3190** | **3680** | **3960** |
| Mercury | ug/l | 2 | 2 | < 0.088 | < 0.075 | < 0.082 | 0.16 B | < 0.075 |
| Nickel | ug/l | 100 | NS | 3.9 B | 8.5 J | 3.3 B | 45.2 | 1.6 J |
| Potassium | ug/l | NS | NS | 5730 B | 6650 B | 3150 B | 6940 B | 3740 B |
| Selenium | ug/l | 40 | 50 | < 1.5 | < 2.4 | 2.1 B | < 1.5 | 8.5 B |
| Silver | ug/l | 40 | NS | < 0.72 | 1.4 B | < 0.53 | 1.3 B | 6.6 B |
| Sodium | ug/l | 50,000 | NS | 41100 | **54200** | 19400 | 19300 | 19800 |
| Thallium | ug/l | 2 [10] | 2 | < 0.17 | < 1.7 | < 1.8 | < 0.17 | < 1.7 |
| Vanadium | ug/l | NS | NS | 2.6 B | 12.1 B | 1.6 B | 43.6 B | 3 J |
| Zinc | ug/l | 2000 | NS | 19.6 B | 56.2 | < 20 | 101 | < 20 |
| **Metals - Dissolved** | | | | | | | | |
| Aluminum | ug/l | 200 | NS | 34.1 B | < 200 | 26.1 J | < 200 | 54.5 J |
| Antimony | ug/l | 6 | 6 | 1.5 B | < 6 | < 2.2 | < 1.3 | < 1.4 |
| Arsenic | ug/l | 3 [8] | 10 | < 0.92 | < 0.97 | < 1.4 | < 0.92 | < 0.97 |
| Barium | ug/l | 6000 | 2000 | 22.5 B | 21.9 B | 41.6 B | 48.5 B | 55.2 B |
| Beryllium | ug/l | 1 | 4 | < 0.24 | < 0.44 | < 1 | < 0.24 | < 1 |
| Cadmium | ug/l | 4 | 5 | < 0.17 | < 0.24 | < 0.35 | < 0.17 | < 3 |
| Calcium | ug/l | NS | NS | 40400 | 40800 | 117000 | 126000 | 144000 |
| Chromium | ug/l | 70 | 100 | < 0.9 | < 0.91 | 1.2 B | < 0.9 | < 0.91 |
| Cobalt | ug/l | NS | NS | < 0.3 | < 0.59 | < 0.65 | < 50 | < 50 |
| Copper | ug/l | 1,300 | 1300 | 5.3 B | < 10 | < 2.5 | < 0.85 | < 10 |
| Iron | ug/l | 300 | NS | 45.4 B | < 100 | 28.1 J | < 100 | < 24 |
| Lead | ug/l | 5 | 15 | < 0.94 | < 1.7 | < 1.9 | 4 J | < 1.7 |
| Magnesium | ug/l | NS | NS | 7960 | 8380 | 25800 | 28200 | 31300 |
| Manganese | ug/l | 50 | NS | 2.6 B | 15.8 | **3090** | **3070** | **3830** |
| Mercury | ug/l | 2 | 2 | < 0.088 | < 0.075 | < 0.082 | < 0.088 | < 0.075 |
| Nickel | ug/l | 100 | NS | 1 B | < 10 | 2.8 B | 2.9 J | 1 J |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| Potassium | ug/l | NS | NS | 5980 B | 5300 B | 3040 B | 3290 B | 3650 B |
| Selenium | ug/l | 40 | 50 | < 1.5 | < 2.4 | 2.4 B | < 1.5 | 8.8 B |
| Silver | ug/l | 40 | NS | < 0.72 | < 0.85 | 1 B | < 0.72 | 6.3 B |
| Sodium | ug/l | 50,000 | NS | 45400 | **57700** | 19500 | 20100 | 19900 |
| Thallium | ug/l | 2 [10] | 2 | < 0.17 | < 1.7 | < 1.8 | < 0.17 | < 1.7 |
| Vanadium | ug/l | NS | NS | < 0.43 | < 0.77 | < 0.56 | < 0.43 | < 50 |
| Zinc | ug/l | 2000 | NS | 19.6 B | 5.3 J | < 20 | 13 B | < 20 |

**Table 7: Summary of 2006 through 2012 Groundwater Sampling Results, O'Connor Disposal Area**
**Ringwood Mines/Landfill Site, Ringwood, New Jersey**

| Location ID | | | | OB-25 | OB-25 | OB-28 | OB-28 | OB-28 |
|---|---|---|---|---|---|---|---|---|
| Sample ID | | GWQS[1] | EPA | OB-25 (052011) | OB-25 (042012) | OB-28(052710) | OB-28(051911) | OB-28(041712) |
| Sample Date | | | MCLs | 5/20/2011 | 4/20/2012 | 5/27/2010 | 5/19/2011 | 4/17/2012 |
| Validation Status | Units | | | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Alkalinity, Carbonate | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | NS | 124000 | 128000 | 342000 | 329000 | 360000 |
| Bromide | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Chloride | ug/l | 250000 | NS | 68800 | 94900 | 71200 | 82500 | 93200 |
| Cyanide | ug/l | 100 | 200 | NA | NA | NA | NA | NA |
| Nitrate | ug/l | 10000 | 10000 | NA | NA | NA | NA | NA |
| Nitrogen, Nitrite | ug/l | 1,000 | 1,000 | NA | NA | NA | NA | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Phosphorus, Total | ug/l | NS | NS | NA | NA | NA | NA | NA |
| Sulfate | ug/l | 250000 | NS | 13000 | 14500 | 29600 | 29800 | 31000 |

**Table 8. Summary of Geochemical Results, 2006 through 2011, Ringwood Mines/Landfill Site, Ringwood, New Jersey.**

| Well ID | Turbidity (NTUs) (Sept-2006) | Turbidity (NTUs) (Apr-2007) | Turbidity (NTUs) (Apr-2008) | Turbidity (NTUs) (Sep-2008) | Turbidity (NTUs) (Jul-2009) | Turbidity (NTUs) (Oct-2009) | Turbidity (NTUs) (May-2010) | Turbidity (NTUs) (May-2011) | REDOX (mV) (Sept-2006) | REDOX (mV) (Apr-2007) | REDOX (mV) (Apr-2008) | REDOX (mV) (Sep-2008) | REDOX (mV) (Jul-2009) | REDOX (mV) (Oct-2009) | REDOX (mV) (May-2010) | REDOX (mV) (May-2011) | pH (SI Units) (Sept-2006) | pH (SI Units) (Apr-2007) | pH (SI Units) (Apr-2008) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OB-14A | 4.82 | 5.0 | 8.8 | 1.39 | 1.10 | 10.55 | 0.93 | 63.7 | -62 | -98.3 | -79.6 | -20.3 | -27.3 | -20.3 | 78.5 | -71 | 6.35 | 6.30 | 6.21 |
| OB-14B | 1.8 | 3.0 | 14.7 | 12.3 | 15.9 | 1.2 | 1.78 | 29.1 | -30.8 | -12.9 | 6.8 | -4.6 | 44.2 | 16.4 | -17.9 | -7 | 6.75 | 6.69 | 6.76 |
| OB-16 | 0.8 | 2.8 | 0.0 | 4.27 | 1.07 | 1.67 | 6.85 | 15.8 | -44.7 | -20.6 | -66.1 | -41.6 | -33.4 | -39.8 | -92.7 | 77 | 6.59 | 6.63 | 6.39 |
| OB-17 | 6.2 | 9.0 | 0.8 | 1.64 | 10 | 12.3 | 7.45 | 0.0 | 18.2 | 114.1 | 45.4 | 368.6 | 17 | 37.3 | 4.8 | 35 | 6.39 | 6.44 | 6.19 |
| OB-18 | 0.36 | 1.0 | 0.41 | 3.59 | 17.7 | 3.57 | 3.53 | 0.0 | 57.6 | 150.3 | 53.2 | 195.4 | 216.7 | 38.3 | 106.2 | 204 | 6.74 | 6.88 | 6.67 |
| OB-22 | NR | NR | 63 | Dry | 222 | NC | 21.5 | 98 | -129 | 184.4 | 225.3 | Dry | 347.4 | NC | 203.3 | 98.2 | 6.3 | 6.15 | 5.99 |
| OB-23 | 8.24 | NC | 8.7 | Dry | 19.8 | NC | 4.57 | 0.0 | -62.7 | NC | -60 | Dry | -35.3 | NC | -25.7 | -85 | 6.44 | NC | 6.62 |
| OB-24 | 3.97 | 5.1 | 5.3 | 33.9 | 9.8 | 6.4 | 5.75 | 30.9 | 143.5 | 90 | 45.5 | 244.4 | 401.4 | 117.4 | 131.5 | 85 | 7.09 | 7.24 | 7.07 |
| OB-25 | >999 | NC | 550.0 | 300 | 284 | 450 | 797 | 0.0 | 191.7 | NC | 204.3 | 119.7 | 411.8 | 201.7 | 166.5 | 170 | 6.00 | NC | 7.13 |

| Well ID | pH (SI Units) (Sep-2008) | pH (SI Units) (Jul-2009) | pH (SI Units) (Oct-2009) | pH (SI Units) (May-2010) | pH (SI Units) (May-2011) | Temp (ºC) (Sept-2006) | Temp (ºC) (Apr-2007) | Temp (ºC) (Apr-2008) | Temp (ºC) (Sep-2008) | Temp (ºC) (Jul-2009) | Temp (ºC) (Oct-2009) | Temp (ºC) (May-2010) | Temp (ºC) (May-2011) | Depth to Water (Sept-2006) | Depth to Water (Apr-2007) | Depth to Water (Apr-2008) | Depth to Water (Sep-2008) | Depth to Water (Jul-2009) | Depth to Water (Oct-2009) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OB-14A | 5.64 | 5.49 | 6.13 | 6.1 | 6.35 | 16.23 | 12.9 | 13.96 | 15.27 | 13.97 | 13.8 | 12.59 | 12.33 | 11.54 | 10.39 | 11.57 | 11.9 | 9.98 | 11.64 |
| OB-14B | 6.3 | 6.65 | 6.93 | 6.62 | 6.69 | 14.83 | 14.00 | 14.01 | 14.29 | 14.59 | 13.16 | 13.61 | 13.97 | 13.37 | 12.57 | 13.5 | 14.12 | 12.22 | 13.99 |
| OB-16 | 6.21 | 6.69 | 6.36 | 6.46 | 5.39 | 15.02 | 8.65 | 10.5 | 15.43 | 13.21 | 12.87 | 12.07 | 12.02 | 6.39 | 5.68 | 6.12 | 6.51 | 14.63 | 6.62 |
| OB-17 | 6.01 | 6.52 | 6.49 | 6.37 | 6.12 | 15.01 | 6.45 | 9.44 | 15.92 | 12.81 | 12.59 | 11.18 | 11.85 | 7.11 | 5.78 | 5.89 | 5.81 | 5.21 | 6.48 |
| OB-18 | 5.31 | 6.65 | 6.94 | 6.94 | 5.84 | 14.45 | 6.65 | 8.9 | 13.87 | 11.84 | 12.3 | 10.19 | 8.69 | 7.66 | 8.1 | 7.42 | 7.07 | 4.68 | 6.34 |
| OB-22 | Dry | 6.12 | NC | 5.83 | 6.38 | 11.82 | 7.94 | 9.87 | Dry | 15.12 | NC | 13.5 | 16.69 | 19 | 19.04 | 14.29 | Dry | 12.77 | NC |
| OB-23 | Dry | 6.34 | NC | 5.69 | 6.28 | 14.7 | NC | 12.75 | Dry | 14.92 | NC | 14.43 | 12.7 | 18.58 | NC | 18.65 | Dry | 17.04 | NC |
| OB-24 | 5.28 | 6.57 | 6.91 | 6.92 | 7.05 | 11.64 | 7.76 | 9.08 | 15.49 | 13.32 | 14.03 | 10.95 | 11.73 | 4.9 | 4.92 | 5.17 | 5.31 | NA | 5.68 |
| OB-25 | 6.75 | 6.26 | 6.91 | 6.6 | 6.95 | 12.6 | NC | 8.7 | 16.67 | 14.43 | 13.04 | 13.69 | 13.94 | 17.05 | NC | 12.55 | 15.41 | 16.07 | 11.65 |

| Well ID | Depth to Water (May-2010) | Depth to Water (May-2011) | Conductivity (µmhos/cm) (Sept-2006) | Conductivity (µmhos/cm) (Apr-2007) | Conductivity (µmhos/cm) (Apr-2008) | Conductivity (µmhos/cm) (Sep-2008) | Conductivity (µmhos/cm) (Jul-2009) | Conductivity (µmhos/cm) (Oct-2009) | Conductivity (µmhos/cm) (May-2010) | Conductivity (µmhos/cm) (May-2011) | Diss. Oxygen (Sept-2006) | Diss. Oxygen (Apr-2007) | Diss. Oxygen (Apr-2008) | Diss. Oxygen (Sep-2008) | Diss. Oxygen (Jul-2009) | Diss. Oxygen (Oct-2009) | Diss. Oxygen (May-2010) | Diss. Oxygen (May-2011) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OB-14A | 11.02 | 9.31 | 0.962 | 0.938 | 0.964 | 0.86 | 0.715 | 0.676 | 0.693 | 0.781 | 0.69 | 0.41 | 0.35 | 0.89 | 0.44 | 0.73 | 0.35 | 5.34 |
| OB-14B | 13.48 | 11.86 | 0.871 | 0.954 | 0.852 | 0.807 | 0.762 | 0.646 | 0.709 | 0.911 | 0.23 | 0.28 | 0.24 | 0.37 | 0.45 | 0.24 | 0.31 | 0.47 |
| OB-16 | 6.26 | 5.25 | 0.955 | 0.985 | 0.914 | 0.960 | 0.795 | 0.762 | 0.768 | 0.997 | 0.82 | 0.32 | 0.21 | 0.38 | 0.47 | 0.92 | 0.16 | 0.73 |
| OB-17 | 6.57 | 3.98 | 0.612 | 0.656 | 0.575 | 0.181 | 0.571 | 0.564 | 0.521 | 0.192 | 0.66 | 0.50 | 0.57 | 1.04 | 0.61 | 0.33 | 0.18 | 0.91 |
| OB-18 | 7.86 | 5.54 | 0.262 | 0.357 | 0.296 | 0.276 | 0.241 | 0.244 | 0.231 | 0.605 | 2.99 | 2.39 | 1.7 | 2.48 | 0.65 | 3.24 | 2.45 | 0.92 |
| OB-22 | 13.5 | 11.3 | 0.423 | 0.313 | 0.345 | Dry | 0.266 | NC | 0.237 | 0.536 | 5.1 | 2.99 | 8.57 | Dry | 4.47 | NC | 6.41 | 4.99 |
| OB-23 | 19.71 | 16 | | | | Dry | 0.969 | NC | 0.897 | 1.18 | 0.27 | NC | 0.46 | Dry | 1.02 | NC | 0.42 | 0.69 |
| OB-24 | 6.48 | 4.56 | | | | 0.738 | 0.588 | 0.574 | 0.477 | 0.744 | 0.25 | 0.25 | 0.27 | 0.87 | 0.35 | 0.4 | 0.27 | 0.99 |
| OB-25 | 13.75 | 11.3 | 376 | NC | 0.623 | 0.587 | 0.484 | 0.387 | 0.539 | 0.505 | 4.64 | NC | 10.49 | 7.42 | 7.2 | 6.25 | 4.27 | 8.09 |

NR = No reading because of instrument malfunction
NC = Data not collected at time sample collected

Table 9: Summary of 2012 Surface Water Sampling Results,
Ringwood Mines/Landfill Site, Ringwood, New Jersey



| Location ID | | | SW-PAB-00 | SW-PAB-01 | SW-PAB-01A | SW-PAB-02 | SW-PAB-03 | SW-PAB-04 | FB | FB | TB | TB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | SWQS[1] | SW-PAB-00 | SW-PAB-01 | SW-PAB-01A | SW-PAB-02 | SW-PAB-03 | SW-PAB-04 | FB (05012) | FB(050212) | TRIP BLANK(5/1/2012) | TRIP BLANK (5/2/2012) |
| Sample Date | | | 5/4/2012 | 5/3/2012 | 5/2/2012 | 5/2/2012 | 5/2/2012 | 5/1/2012 | 5/1/2012 | 5/2/2012 | 5/1/2012 | 5/2/2012 |
| Validation Status | Units | | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **VOCs** | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | ug/l | 120 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 |
| 1,1,2,2-Tetrachloroethane | ug/l | 4.7 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| 1,1,2-Trichloroethane | ug/l | 13 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| 1,1-Dichloroethane | ug/l | NS | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 |
| 1,1-Dichloroethene | ug/l | 4.7 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 | < 0.28 |
| 1,2,4-Trichlorobenzene | ug/l | 21 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 |
| 1,2-Dibromo-3-Chloropropane (DBCP) | ug/l | NS | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.3 |
| 1,2-Dibromoethane | ug/l | NS | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| 1,2-Dichlorobenzene | ug/l | 2000 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| 1,2-Dichloroethane | ug/l | 0.29 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| 1,2-Dichloropropane | ug/l | 0.5 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| 1,3-Dichlorobenzene | ug/l | 2200 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| 1,4-Dichlorobenzene | ug/l | 550 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 | < 0.26 |
| 2-Butanone (MEK) | ug/l | NS | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 |
| 2-Hexanone | ug/l | NS | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 | < 3 |
| 4-methyl-2-pentanone (MIBK) | ug/l | NS | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.2 |
| Acetone | ug/l | NS | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 | < 5 |
| Benzene | ug/l | 0.15 | < 0.22* | < 0.22* | < 0.22* | < 0.22* | < 0.22* | < 0.22* | < 0.22* | < 0.22* | < 0.22* | < 0.22* |
| Bromodichloromethane | ug/l | 0.55 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| Bromoform | ug/l | 4.3 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 |
| Bromomethane | ug/l | 47 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Carbon disulfide | ug/l | NS | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| Carbon tetrachloride | ug/l | 0.33 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 |
| Chlorobenzene | ug/l | 210 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Chloroethane | ug/l | NS | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 | < 0.37 |
| Chloroform | ug/l | 68 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Chloromethane | ug/l | NS | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| cis-1,2-Dichloroethene | ug/l | NS | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| cis-1,3-Dichloropropene | ug/l | 0.34 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 | < 0.22 |
| Cyclohexane | ug/l | NS | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 | < 0.29 |
| Dibromochloromethane | ug/l | 0.4 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Dichlorodifluoromethane | ug/l | NS | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| Ethylbenzene | ug/l | 530 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Freon 113 | ug/l | NS | < 0.49 | < 0.49 | < 0.49 | < 0.49 | < 0.49 | < 0.49 | < 0.49 | < 0.49 | < 0.49 | < 0.49 |
| Isopropylbenzene | ug/l | NS | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 |
| Methyl acetate | ug/l | NS | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 | < 2.9 |
| Methyl tert butyl ether | ug/l | 70 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| Methylcyclohexane | ug/l | NS | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 | < 0.18 |
| Methylene chloride | ug/l | 2.5 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 | < 0.2 |
| Styrene | ug/l | NS | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 | < 0.23 |
| Tetrachloroethene | ug/l | 0.34 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 | < 0.32 |
| Toluene | ug/l | 1300 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 | < 0.15 |
| Trans-1,2-dichloroethene | ug/l | 590 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 | < 0.31 |
| trans-1,3-Dichloropropene | ug/l | 0.34 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 | < 0.19 |
| Trichloroethene | ug/l | 1 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 | < 0.21 |
| Trichlorofluoromethane | ug/l | NS | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 | < 0.35 |
| Vinyl Chloride | ug/l | 0.082 | < 0.27* | < 0.27* | < 0.27* | < 0.27* | < 0.27* | < 0.27* | < 0.27* | < 0.27* | < 0.27* | < 0.27* |
| Xylenes | ug/l | NS | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 | < 0.17 |
| Total TIC, Volatile | ug/l | NS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Location ID | | | SW-PAB-00 | SW-PAB-01 | SW-PAB-01A | SW-PAB-02 | SW-PAB-03 | SW-PAB-04 | FB | FB | TB | TB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | SWQS[1] | SW-PAB-00 | SW-PAB-01 | SW-PAB-01A | SW-PAB-02 | SW-PAB-03 | SW-PAB-04 | FB (05012) | FB(050212) | TRIP BLANK(5/1/2012) | TRIP BLANK (5/2/2012) |
| Sample Date | | | 5/4/2012 | 5/3/2012 | 5/2/2012 | 5/2/2012 | 5/2/2012 | 5/1/2012 | 5/1/2012 | 5/2/2012 | 5/1/2012 | 5/2/2012 |
| Validation Status | Units | | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOCs** | | | | | | | | | | | | |
| 1,1'-Biphenyl | ug/l | NS | < 0.32 | < 0.3 | < 0.31 | < 0.3 | < 0.33 | < 0.31 | < 0.33 | < 0.32 | NA | NA |
| 2,4,5-Trichlorophenol | ug/l | 1800 | < 1.6 | < 1.6 | < 1.6 | < 1.6 | < 1.7 | < 1.6 | < 1.7 | < 1.6 | NA | NA |
| 2,4,6-Trichlorophenol | ug/l | 0.58 | < 1.4* | < 1.3* | < 1.3* | < 1.3* | < 1.4* | < 1.3* | < 1.4* | < 1.4* | NA | NA |
| 2,4-Dichlorophenol | ug/l | 77 | < 1.2 | < 1.2 | < 1.2 | < 1.2 | < 1.3 | < 1.2 | < 1.2 | < 1.2 | NA | NA |
| 2,4-Dimethylphenol | ug/l | 380 | < 1.6 | < 1.5 | < 1.6 | < 1.5 | < 1.7 | < 1.6 | < 1.6 | < 1.6 | NA | NA |
| 2,4-Dinitrophenol | ug/l | 69 | < 17 | < 17 | < 17 | < 17 | < 18 | < 17 | < 18 | < 17 | NA | NA |
| 2,4-Dinitrotoluene | ug/l | 0.11 | < 0.45* | < 0.43* | < 0.43* | < 0.43* | < 0.46* | < 0.43* | < 0.46* | < 0.45* | NA | NA |
| 2,6-Dinitrotoluene | ug/l | NS | < 0.49 | < 0.46 | < 0.47 | < 0.46 | < 0.5 | < 0.47 | < 0.5 | < 0.49 | NA | NA |
| 2-Chloronaphthalene | ug/l | 1000 | < 0.31 | < 0.3 | < 0.3 | < 0.3 | < 0.32 | < 0.3 | < 0.32 | < 0.31 | NA | NA |
| 2-Chlorophenol | ug/l | 81 | < 1 | < 0.97 | < 0.99 | < 0.97 | < 1.1 | < 0.99 | < 1 | < 1 | NA | NA |
| 2-Methylnaphthalene | ug/l | NS | < 0.4 | < 0.38 | < 0.39 | < 0.38 | < 0.42 | < 0.39 | < 0.41 | < 0.4 | NA | NA |
| 2-Methylphenol | ug/l | NS | < 1.1 | < 1 | < 1.1 | < 1 | < 1.1 | < 1.1 | < 1.1 | < 1.1 | NA | NA |
| 2-Nitroaniline | ug/l | NS | < 1.2 | < 1.1 | < 1.1 | < 1.1 | < 1.2 | < 1.1 | < 1.2 | < 1.2 | NA | NA |
| 2-Nitrophenol | ug/l | NS | < 1.6 | < 1.5 | < 1.5 | < 1.5 | < 1.6 | < 1.5 | < 1.6 | < 1.6 | NA | NA |
| 3&4-Methylphenol | ug/l | NS | < 0.97 | < 0.93 | < 0.94 | < 0.93 | < 1 | < 0.94 | < 0.99 | < 0.97 | NA | NA |
| 3,3'-Dichlorobenzidine | ug/l | 0.021 | < 0.38* | < 0.36* | < 0.37* | < 0.36* | < 0.39* | < 0.37* | < 0.39* | < 0.38* | NA | NA |
| 3-Nitroaniline | ug/l | NS | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.4 | < 1.3 | < 1.4 | < 1.3 | NA | NA |
| 4,6-Dinitro-2-methylphenol | ug/l | 13 | < 1 | < 0.99 | < 1 | < 0.99 | < 1.1 | < 1 | < 1.1 | < 1 | NA | NA |
| 4-Bromophenyl phenyl ether | ug/l | NS | < 0.38 | < 0.36 | < 0.36 | < 0.36 | < 0.39 | < 0.36 | < 0.38 | < 0.38 | NA | NA |
| 4-Chloro-3-Methylphenol | ug/l | NS | < 1.9 | < 1.8 | < 1.9 | < 1.8 | < 2 | < 1.9 | < 2 | < 1.9 | NA | NA |
| 4-Chloroaniline | ug/l | NS | < 0.56 | < 0.53 | < 0.54 | < 0.53 | < 0.57 | < 0.54 | < 0.57 | < 0.56 | NA | NA |
| 4-Chlorophenyl phenyl ether | ug/l | NS | < 0.33 | < 0.31 | < 0.32 | < 0.31 | < 0.34 | < 0.32 | < 0.34 | < 0.33 | NA | NA |
| 4-Nitroaniline | ug/l | NS | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.8 | < 1.7 | < 1.8 | < 1.7 | NA | NA |
| 4-Nitrophenol | ug/l | NS | < 5.5 | < 5.2 | < 5.3 | < 5.2 | < 5.7 | < 5.3 | < 5.6 | < 5.5 | NA | NA |
| Acetophenone | ug/l | NS | < 0.3 | < 0.29 | < 0.29 | < 0.29 | < 0.31 | < 0.29 | < 0.31 | < 0.3 | NA | NA |
| Atrazine | ug/l | NS | < 0.51 | < 0.49 | < 0.5 | < 0.49 | < 0.53 | < 0.5 | < 0.52 | < 0.51 | NA | NA |
| Benzaldehyde | ug/l | NS | < 3.4 | < 3.3 | < 3.3 | < 3.3 | < 3.5 | < 3.3 | < 3.5 | < 3.4 | NA | NA |
| Benzyl butyl phthalate | ug/l | 150 | < 0.3 | < 0.29 | < 0.29 | < 0.29 | < 0.31 | < 0.29 | < 0.31 | < 0.3 | NA | NA |
| bis(2-Chloroethoxy)methane | ug/l | NS | < 0.32 | < 0.31 | < 0.31 | < 0.31 | < 0.33 | < 0.31 | < 0.33 | < 0.32 | NA | NA |
| bis(2-Chloroethyl)ether | ug/l | 0.03 | < 0.32* | < 0.31* | < 0.31* | < 0.31* | < 0.33* | < 0.31* | < 0.33* | < 0.32* | NA | NA |
| bis(2-Chloroisopropyl)ether | ug/l | 1400 | < 0.48 | < 0.45 | < 0.46 | < 0.45 | < 0.49 | < 0.46 | < 0.49 | < 0.48 | NA | NA |
| bis(2-Ethylhexyl)phthalate | ug/l | 1.2 | < 0.62 | < 0.59 | < 0.6 | < 0.59 | < 0.64 | < 0.6 | **1.3 J** | < 0.62 | NA | NA |
| Caprolactam | ug/l | NS | < 0.73 | < 0.69 | < 0.7 | < 0.69 | < 0.75 | < 0.7 | < 0.74 | < 0.73 | NA | NA |
| Carbazole | ug/l | NS | < 0.38 | < 0.36 | < 0.37 | < 0.36 | < 0.39 | < 0.37 | < 0.39 | < 0.38 | NA | NA |
| Dibenzofuran | ug/l | NS | < 0.28 | < 0.27 | < 0.27 | < 0.27 | < 0.29 | < 0.27 | < 0.28 | < 0.28 | NA | NA |
| Diethyl phthalate | ug/l | 17000 | < 0.34 | < 0.33 | < 0.33 | < 0.33 | < 0.36 | < 0.33 | < 0.35 | < 0.34 | NA | NA |
| Dimethyl phthalate | ug/l | NS | < 0.3 | < 0.28 | < 0.29 | < 0.28 | < 0.31 | < 0.29 | < 0.3 | < 0.3 | NA | NA |
| di-n-butyl phthalate | ug/l | 2000 | < 0.58 | < 0.56 | < 0.57 | < 0.56 | < 0.6 | < 0.57 | < 0.6 | < 0.58 | NA | NA |
| di-n-octylphthalate | ug/l | NS | < 0.32 | < 0.31 | < 0.31 | < 0.31 | < 0.33 | < 0.31 | < 0.33 | < 0.32 | NA | NA |
| Hexachlorobutadiene | ug/l | 0.44 | < 0.54* | < 0.51* | < 0.52* | < 0.51* | < 0.56* | < 0.52* | < 0.55* | < 0.54* | NA | NA |
| Hexachlorocyclopentadiene | ug/l | 40 | < 7.5 | < 7.1 | < 7.3 | < 7.1 | < 7.7 | < 7.3 | < 7.6 | < 7.5 | NA | NA |
| Hexachloroethane | ug/l | 1.4 | < 0.58 | < 0.55 | < 0.56 | < 0.55 | < 0.6 | < 0.56 | < 0.59 | < 0.58 | NA | NA |
| Isophrone | ug/l | 35 | < 0.29 | < 0.27 | < 0.28 | < 0.27 | < 0.3 | < 0.28 | < 0.29 | < 0.29 | NA | NA |
| Nitrobenzene | ug/l | 17 | < 0.44 | < 0.42 | < 0.43 | < 0.42 | < 0.46 | < 0.43 | < 0.45 | < 0.44 | NA | NA |
| N-Nitroso-di-n-Propylamine | ug/l | 0.005 | < 0.32* | < 0.3* | < 0.31* | < 0.3* | < 0.33* | < 0.31* | < 0.32* | < 0.32* | NA | NA |
| N-Nitrosodiphenylamine | ug/l | 3.3 | < 0.32 | < 0.31 | < 0.31 | < 0.31 | < 0.33 | < 0.31 | < 0.33 | < 0.32 | NA | NA |
| Phenol | ug/l | 10000 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | < 1.4 | < 1.3 | < 1.4 | < 1.3 | NA | NA |
| Total TIC, Semi-Volatile | ug/l | NS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA |

| Location ID | | | SW-PAB-00 | SW-PAB-01 | SW-PAB-01A | SW-PAB-02 | SW-PAB-03 | SW-PAB-04 | FB | FB | TB | TB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | SWQS[1] | SW-PAB-00 | SW-PAB-01 | SW-PAB-01A | SW-PAB-02 | SW-PAB-03 | SW-PAB-04 | FB (05012) | FB(050212) | TRIP BLANK(5/1/2012) | TRIP BLANK (5/2/2012) |
| Sample Date | | | 5/4/2012 | 5/3/2012 | 5/2/2012 | 5/2/2012 | 5/2/2012 | 5/1/2012 | 5/1/2012 | 5/2/2012 | 5/1/2012 | 5/2/2012 |
| Validation Status | Units | | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **SVOCs SIM** | | | | | | | | | | | | |
| Acenaphthene | ug/l | 670 | < 0.014 | < 0.014 | < 0.014 | < 0.014 | < 0.015 | < 0.014 | < 0.015 | < 0.014 | NA | NA |
| Acenaphthylene | ug/l | NS | < 0.017 | < 0.016 | < 0.016 | < 0.016 | < 0.018 | < 0.016 | < 0.017 | < 0.017 | NA | NA |
| Anthracene | ug/l | 8300 | < 0.011 | < 0.01 | < 0.01 | < 0.01 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | NA | NA |
| Benzo(a)anthracene | ug/l | 0.038 | < 0.016 | < 0.015 | < 0.015 | < 0.015 | < 0.016 | < 0.015 | < 0.016 | < 0.016 | NA | NA |
| Benzo(a)pyrene | ug/l | 0.0038 | < 0.0052* | < 0.0049* | < 0.005* | < 0.0049* | < 0.0053* | < 0.005* | < 0.0053* | < 0.0052* | NA | NA |
| Benzo(b)fluoranthene | ug/l | 0.038 | < 0.017 | < 0.016 | < 0.017 | < 0.016 | < 0.018 | < 0.017 | < 0.018 | < 0.017 | NA | NA |
| Benzo(g,h,i)perylene | ug/l | NS | < 0.011 | < 0.01 | < 0.011 | < 0.01 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | NA | NA |
| Benzo(k)fluoranthene | ug/l | 0.38 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | NA | NA |
| Chrysene | ug/l | 3.8 | < 0.024 | < 0.023 | < 0.024 | < 0.023 | < 0.025 | < 0.024 | < 0.025 | < 0.024 | NA | NA |
| Dibenzo(a,h)anthracene | ug/l | 0.0038 | < 0.024* | < 0.023* | < 0.023* | < 0.023* | < 0.024* | < 0.023* | < 0.024* | < 0.024* | NA | NA |
| Fluoranthene | ug/l | 130 | < 0.01 | < 0.0096 | < 0.0098 | < 0.0096 | < 0.01 | < 0.0098 | < 0.01 | < 0.01 | NA | NA |
| Fluorene | ug/l | 1100 | < 0.016 | < 0.015 | < 0.015 | < 0.015 | < 0.016 | < 0.015 | < 0.016 | < 0.016 | NA | NA |
| Hexachlorobenzene | ug/l | 0.00028 | < 0.0084* | < 0.008* | < 0.0082* | < 0.008* | < 0.0087* | < 0.0082* | < 0.0086* | < 0.0084* | NA | NA |
| Indeno(1,2,3-cd)pyrene | ug/l | 0.038 | < 0.011 | < 0.011 | < 0.011 | < 0.011 | < 0.012 | < 0.011 | < 0.011 | < 0.011 | NA | NA |
| Naphthalene | ug/l | NS | < 0.017 | < 0.016 | < 0.017 | < 0.016 | < 0.018 | < 0.017 | < 0.017 | < 0.017 | NA | NA |
| Pentachlorophenol | ug/l | 0.27 | < 0.11 J | < 0.1 J | < 0.1 J | < 0.1 J | < 0.11 J | < 0.1 J | < 0.11 J | < 0.11 J | NA | NA |
| Phenanthrene | ug/l | NS | < 0.017 | < 0.016 | < 0.016 | < 0.016 | < 0.017 | < 0.016 | < 0.017 | < 0.017 | NA | NA |
| Pyrene | ug/l | 830 | < 0.0085 | < 0.0081 | < 0.0083 | < 0.0081 | < 0.0088 | < 0.0083 | < 0.0087 | < 0.0085 | NA | NA |
| **PCBs** | | | | | | | | | | | | |
| PCB 1016 | ug/l | NS | < 0.013 | < 0.014 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | < 0.013 | NA | NA |
| PCB 1221 | ug/l | NS | < 0.028 | < 0.029 | < 0.029 | < 0.028 | < 0.028 | < 0.027 | < 0.027 | < 0.028 | NA | NA |
| PCB 1232 | ug/l | NS | < 0.04 | < 0.041 | < 0.041 | < 0.04 | < 0.04 | < 0.039 | < 0.039 | < 0.04 | NA | NA |
| PCB 1242 | ug/l | NS | < 0.0089 | < 0.0091 | < 0.0091 | < 0.009 | < 0.009 | < 0.0087 | < 0.0087 | < 0.009 | NA | NA |
| PCB 1248 | ug/l | NS | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | NA | NA |
| PCB 1254 | ug/l | NS | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.015 | < 0.014 | < 0.014 | < 0.015 | NA | NA |
| PCB 1260 | ug/l | NS | < 0.022 | < 0.022 | < 0.022 | < 0.022 | < 0.022 | < 0.021 | < 0.021 | < 0.022 | NA | NA |
| Total PCBs | ug/l | 0.000064 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA |
| **Metals - Total** | | | | | | | | | | | | |
| Aluminum | ug/l | NS | 293 J | 139 B | 50.1 J | 30.1 J | 54.2 J | < 200 | 19.8 B | < 16 | NA | NA |
| Antimony | ug/l | 5.6 | < 1 | < 1 | < 1 | < 1 | < 1 | < 0.36 | < 0.36 | 0.43 B | NA | NA |
| Arsenic | ug/l | 0.017 | < 1* | < 1* | **0.72 J** | < 1* | < 1* | < 1* | **0.26 B** | **0.2 B** | NA | NA |
| Barium | ug/l | 2000 | < 200 | 19.4 B | 27 B | 28.7 B | 23.9 B | 16.2 B | < 0.66 | < 0.66 | NA | NA |
| Beryllium | ug/l | 6 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | < 0.44 | NA | NA |
| Cadmium | ug/l | 3.4 | < 3 | < 3 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | < 0.24 | NA | NA |
| Calcium | ug/l | NS | < 5000 | 5430 | 8530 | 10400 | 13000 | 11200 J | < 39 J | < 39 | NA | NA |
| Chromium | ug/l | 92 | < 0.91 | < 0.91 | < 0.91 | < 0.91 | < 0.91 | < 0.91 | < 0.91 | < 0.91 | NA | NA |
| Cobalt | ug/l | NS | < 0.59 | < 0.59 | < 0.59 | < 0.59 | < 0.59 | < 0.59 | < 0.59 | < 0.59 | NA | NA |
| Copper | ug/l | 1300 | < 10 | < 10 | < 10 | < 10 | < 1.3 | < 1.3 | < 1.3 | < 1.3 | NA | NA |
| Iron | ug/l | NS | 406 | 2400 | 2150 | 1480 | 1560 | 913 J | 40.5 J | < 24 | NA | NA |
| Lead | ug/l | 5 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | < 1.7 | NA | NA |
| Magnesium | ug/l | NS | 1290 B | 1390 B | 1860 B | 2160 B | 2580 B | 2360 B | < 16 | < 16 | NA | NA |
| Manganese | ug/l | NS | 29.7 | 74 | 187 | 221 | 214 | 54.3 | 0.6 B | < 0.12 | NA | NA |
| Mercury | ug/l | 0.05 | 0.0051 | 0.0038 J | 0.0023 | 0.002 | 0.0016 | 0.0022 | < 0.075* | < 0.075* | NA | NA |
| Nickel | ug/l | 500 | < 0.94 | < 0.94 | < 0.94 | < 0.94 | < 10 | < 0.94 | < 0.94 | < 0.94 | NA | NA |
| Potassium | ug/l | NS | < 10000 | 405 B | 517 B | 655 B | 806 B | 887 B | < 62 | < 62 | NA | NA |
| Selenium | ug/l | 170 | < 2.4 | < 10 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | < 2.4 | NA | NA |
| Silver | ug/l | 170 | < 0.85 | < 0.85 | < 0.85 | < 0.85 | < 0.85 | < 0.85 | < 0.85 | < 0.85 | NA | NA |
| Sodium | ug/l | NS | < 10000 | 2220 B | 2450 B | 3560 B | 3890 B | 3790 B | < 13 | < 13 | NA | NA |
| Thallium | ug/l | 0.24 | < 0.25* | < 0.25* | < 0.25* | < 0.25* | < 0.25* | < 0.25* | **0.36 B** | **0.35 B** | NA | NA |
| Vanadium | ug/l | NS | < 0.77 | < 0.77 | < 0.77 | < 0.77 | < 0.77 | < 0.77 | < 0.77 | < 0.77 | NA | NA |
| Zinc | ug/l | 7400 | < 20 | < 2.8 | 3.6 J | < 20 | < 2.8 | < 2.8 | 4.3 B | < 2.8 | NA | NA |

| Location ID | | | SW-PAB-00 | SW-PAB-01 | SW-PAB-01A | SW-PAB-02 | SW-PAB-03 | SW-PAB-04 | FB | FB | TB | TB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample ID | | SWQS[1] | SW-PAB-00 | SW-PAB-01 | SW-PAB-01A | SW-PAB-02 | SW-PAB-03 | SW-PAB-04 | FB (05012) | FB(050212) | TRIP BLANK(5/1/2012) | TRIP BLANK (5/2/2012) |
| Sample Date | | | 5/4/2012 | 5/3/2012 | 5/2/2012 | 5/2/2012 | 5/2/2012 | 5/1/2012 | 5/1/2012 | 5/2/2012 | 5/1/2012 | 5/2/2012 |
| Validation Status | Units | | Final | Final | Final | Final | Final | Final | Final | Final | Final | Final |
| **Other** | | | | | | | | | | | | |
| Alkalinity, Bicarbonate | ug/l | NS | 17300 | 21800 | 34400 | 40100 | NA | NA | < 5000 | < 5000 | NA | NA |
| Alkalinity, Carbonate | ug/l | NS | < 5000 | < 5000 | < 5000 | < 5000 | NA | NA | < 5000 | < 5000 | NA | NA |
| Alkalinity, total (as CaCO3) | ug/l | NS | 17400 | 21800 | 34400 | 40200 | 45400 | 41900 | < 5000 | < 5000 | NA | NA |
| BOD, 5 Day | ug/l | NS | < 3300 | < 2000 | < 3400 | < 3400 | < 3400 | < 3400 | < 2000 | < 2000 | NA | NA |
| Carbon dioxide | ug/l | NS | 202 | 1190 | 577 | 628 | NA | NA | 106 | < 1.8 | NA | NA |
| Chloride | ug/l | 250000 | < 2000 | < 2000 | < 2000 | 3000 | 3400 | 3200 | < 2000 | < 2000 | NA | NA |
| COD | ug/l | NS | < 20000 | < 20000 | < 20000 | < 20000 | < 20000 | < 20000 | < 20000 | < 20000 | NA | NA |
| Fluoride | ug/l | NS | < 200 | < 200 | < 200 | < 200 | NA | NA | < 200 | < 200 | NA | NA |
| Hardness, Total | ug/l | NS | 14900 | 18600 | 44600 | 65100 | 46500 | 33500 | < 4000 | < 4000 | NA | NA |
| Methane | ug/l | NS | < 0.022 | 91.2 | 14.2 | 10.4 | NA | NA | < 0.022 | 0.27 | NA | NA |
| Nitrate | ug/l | 10000 | < 110 | < 110 | < 110 | < 110 | < 110 | < 110 | < 110 | < 110 | NA | NA |
| Nitrogen, Nitrate + Nitrite | ug/l | NS | < 100 | < 100 | < 100 | < 100 | < 100 | < 100 | < 100 | < 100 | NA | NA |
| Nitrogen, Nitrite | ug/l | NS | < 10 J | < 10 J | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | NA | NA |
| pH | SU | NS | 6.84 | 6.39 | 6.86 | 6.8 | 6.75 | 6.78 | 6.3 | 6.38 | NA | NA |
| Phosphorus, Total | ug/l | NS | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | NA | NA |
| Radon (pCi/l) | pCi/l | NS | < 34 | 47 LT | < 42 | < 42 | NA | NA | NA | NA | NA | NA |
| Radon (pCi/l) Replicate | pCi/l | NS | < 35 | 45 LT | < 42 | 60 | NA | NA | NA | NA | NA | NA |
| Sulfate | ug/l | NS | < 10000 | < 10000 | < 10000 | < 10000 | < 10000 | < 10000 | < 10000 | < 10000 | NA | NA |
| Total organic carbon | ug/l | NS | 3100 | 2100 | 1600 | 1600 | 2300 | 2300 | < 1000 | < 1000 | NA | NA |
| Total Dissolved Solids | ug/l | NS | 18000 | 47000 | 53000 | 61000 | 56000 | 52000 | < 10000 | < 10000 | NA | NA |

Results are presented in microgram per liter (ug/L).

| | |
|---|---|
| < | Not detected. |
| NA | Not analyzed. |
| NS | No standard. |
| B | Organic: analyte found in associated method blank. |
| B | Inorganic: estimated result is between the detection limit and quantification limit. |
| J | Estimated result. |
| SVOC | Semi-volatile organic compound. |
| VOC | Volatile organic compound. |
| PCBs | Polychlorinated biphenyls. |
| [1] | Surface Water Quality Standards , FW2 as specified in (N.J.A.C). 7:9B, Amended January 18, 2011 |
| **Bold** | Value is above the Surface Water Quality Standard (SWQS) |
| * | Detection limit is above the SWQS standard. |

**Table 10**
**Summary of Stream Gauge Measurements, June - August 2012**

**Site-Wide Groundwater Remedial Investigation Report**
**Ringwood Mines/Landfill Superfund Site**
**Ringwood, New Jersey**

| Stream Gauge | Date Collected | Gauge Reading (ft) | Measuring Point Elevation Correction (ft amsl) | Surface-Water Elevation (ft amsl) |
|---|---|---|---|---|
| SW/SD-11 | 6/26/2012 | 1.30 | 526.78 | 528.08 |
| | 6/29/2012 | 1.24 | 526.78 | 528.02 |
| | 7/3/2012 | 1.10 | 526.78 | 527.88 |
| | 7/5/2012 | 1.09 | 526.78 | 527.87 |
| | 7/10/2012 | 0.99 | 526.78 | 527.77 |
| | 7/12/2012 | 1.10 | 526.78 | 527.88 |
| | 7/17/2012 | 1.03 | 526.78 | 527.81 |
| | 7/20/2012 | 1.64 | 526.78 | 528.42 |
| | 7/24/2012 | 1.18 | 526.78 | 527.96 |
| | 7/27/2012 | 1.21 | 526.78 | 527.99 |
| | 7/31/2012 | 1.19 | 526.78 | 527.97 |
| | 8/3/2012 | 1.11 | 526.78 | 527.89 |
| | 8/6/2012 | 1.20 | 526.78 | 527.98 |
| | 8/8/2012 | 1.07 | 526.78 | 527.85 |
| SW/SD-PAB-01 | 6/26/2012 | 0.17 | 513.25 | 513.42 |
| | 6/29/2012 | 0.17 | 513.25 | 513.42 |
| | 7/3/2012 | 0.06 | 513.25 | 513.31 |
| | 7/5/2012 | 0.06 | 513.25 | 513.31 |
| | 7/10/2012 | -0.04 | 513.25 | 513.21 |
| | 7/12/2012 | 0.02 | 513.25 | 513.27 |
| | 7/17/2012 | -0.14 | 513.25 | 513.11 |
| | 7/20/2012 | 0.30 | 513.25 | 513.55 |
| | 7/24/2012 | 0.11 | 513.25 | 513.36 |
| | 7/27/2012 | 0.11 | 513.25 | 513.36 |
| | 7/31/2012 | 0.16 | 513.25 | 513.41 |
| | 8/3/2012 | 0.22 | 513.25 | 513.47 |
| | 8/6/2012 | 0.15 | 513.25 | 513.40 |
| | 8/8/2012 | 0.14 | 513.25 | 513.39 |
| SW/SD-12/PAB-01A | 6/26/2012 | 0.23 | 493.80 | 494.03 |
| | 6/29/2012 | 0.18 | 493.80 | 493.98 |
| | 7/3/2012 | 0.11 | 493.80 | 493.91 |
| | 7/5/2012 | 0.11 | 493.80 | 493.91 |
| | 7/10/2012 | 0.07 | 493.80 | 493.87 |
| | 7/12/2012 | 0.09 | 493.80 | 493.89 |
| | 7/17/2012 | 0.08 | 493.80 | 493.88 |
| | 7/20/2012 | 0.37 | 493.80 | 494.17 |
| | 7/24/2012 | 0.13 | 493.80 | 493.93 |
| | 7/27/2012 | 0.16 | 493.80 | 493.96 |
| | 7/31/2012 | 0.17 | 493.80 | 493.97 |
| | 8/3/2012 | 0.12 | 493.80 | 493.92 |
| | 8/6/2012 | 0.16 | 493.80 | 493.96 |
| | 8/8/2012 | 0.11 | 493.80 | 493.91 |
| SW/SD-8/PAB-00 | 6/26/2012 | 0.50 | 551.12 | 551.62 |
| | 6/29/2012 | 0.40 | 551.12 | 551.52 |
| | 7/3/2012 | 0.12 | 551.12 | 551.24 |
| | 7/5/2012 | 0.01 | 551.12 | 551.13 |
| | 7/10/2012 | -0.04 | 551.12 | 551.08 |
| | 7/12/2012 | 0.06 | 551.12 | 551.18 |
| | 7/17/2012 | -0.04 | 551.12 | 551.08 |
| | 7/20/2012 | 0.77 | 551.12 | 551.89 |
| | 7/24/2012 | 0.20 | 551.12 | 551.32 |
| | 7/27/2012 | 0.33 | 551.12 | 551.45 |
| | 7/31/2012 | 0.24 | 551.12 | 551.36 |
| | 8/3/2012 | 0.08 | 551.12 | 551.20 |
| | 8/6/2012 | 0.27 | 551.12 | 551.39 |
| | 8/8/2012 | -0.04 | 551.12 | 551.08 |



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**Table 10**
**Summary of Stream Gauge Measurements, June - August 2012**

**Site-Wide Groundwater Remedial Investigation Report**
**Ringwood Mines/Landfill Superfund Site**
**Ringwood, New Jersey**

| Stream Gauge | Date Collected | Gauge Reading (ft) | Measuring Point Elevation Correction (ft amsl) | Surface-Water Elevation (ft amsl) |
|---|---|---|---|---|
| SW/SD-PAB-02 | 6/26/2012 | 1.00 | 488.97 | 489.97 |
| | 6/29/2012 | 0.78 | 488.97 | 489.75 |
| | 7/3/2012 | 0.51 | 488.97 | 489.48 |
| | 7/5/2012 | 0.49 | 488.97 | 489.46 |
| | 7/10/2012 | 0.66 | 488.97 | 489.63 |
| | 7/12/2012 | 0.32 | 488.97 | 489.29 |
| | 7/17/2012 | 0.65 | 488.97 | 489.62 |
| | 7/20/2012 | 0.48 | 488.97 | 489.45 |
| | 7/24/2012 | 0.55 | 488.97 | 489.52 |
| | 7/27/2012 | 0.52 | 488.97 | 489.49 |
| | 7/31/2012 | 0.79 | 488.97 | 489.76 |
| | 8/3/2012 | 0.69 | 488.97 | 489.66 |
| | 8/6/2012 | 0.67 | 488.97 | 489.64 |
| | 8/8/2012 | 0.56 | 488.97 | 489.53 |
| SW/SD-3 | 6/26/2012 | 0.68 | 415.48 | 416.16 |
| | 6/29/2012 | 0.52 | 415.48 | 416.00 |
| | 7/3/2012 | 0.37 | 415.48 | 415.85 |
| | 7/5/2012 | 0.41 | 415.48 | 415.89 |
| | 7/10/2012 | 0.19 | 415.48 | 415.67 |
| | 7/12/2012 | 0.26 | 415.48 | 415.74 |
| | 7/17/2012 | 0.35 | 415.48 | 415.83 |
| | 7/20/2012 | 0.67 | 415.48 | 416.15 |
| | 7/24/2012 | 0.43 | 415.48 | 415.91 |
| | 7/27/2012 | 0.53 | 415.48 | 416.01 |
| | 7/31/2012 | 0.69 | 415.48 | 416.17 |
| | 8/3/2012 | 0.51 | 415.48 | 415.99 |
| | 8/6/2012 | 0.44 | 415.48 | 415.92 |
| | 8/8/2012 | 0.39 | 415.48 | 415.87 |
| SW/SD-7-PMB-02 | 6/26/2012 | 0.74 | 456.85 | 457.59 |
| | 6/29/2012 | 0.74 | 456.85 | 457.59 |
| | 7/3/2012 | 0.69 | 456.85 | 457.54 |
| | 7/5/2012 | 0.69 | 456.85 | 457.54 |
| | 7/10/2012 | 0.66 | 456.85 | 457.51 |
| | 7/12/2012 | 0.68 | 456.85 | 457.53 |
| | 7/17/2012 | 0.65 | 456.85 | 457.50 |
| | 7/20/2012 | 0.82 | 456.85 | 457.67 |
| | 7/24/2012 | 0.68 | 456.85 | 457.53 |
| | 7/27/2012 | 0.71 | 456.85 | 457.56 |
| | 7/31/2012 | 0.60 | 456.85 | 457.45 |
| | 8/3/2012 | 0.57 | 456.85 | 457.42 |
| | 8/6/2012 | 0.58 | 456.85 | 457.43 |
| | 8/8/2012 | 0.56 | 456.85 | 457.41 |
| SW/SD-MRB-01 | 6/26/2012 | 1.29 | 475.91 | 477.20 |
| | 6/29/2012 | 1.18 | 475.91 | 477.09 |
| | 7/3/2012 | 1.10 | 475.91 | 477.01 |
| | 7/5/2012 | 1.07 | 475.91 | 476.98 |
| | 7/10/2012 | 0.57 | 475.91 | 476.48 |
| | 7/12/2012 | 0.81 | 475.91 | 476.72 |
| | 7/17/2012 | 0.81 | 475.91 | 476.72 |
| | 7/20/2012 | 0.88 | 475.91 | 476.79 |
| | 7/24/2012 | 0.85 | 475.91 | 476.76 |
| | 7/27/2012 | 1.19 | 475.91 | 477.10 |
| | 7/31/2012 | 1.16 | 475.91 | 477.07 |
| | 8/3/2012 | 1.00 | 475.91 | 476.91 |
| | 8/6/2012 | 0.95 | 475.91 | 476.86 |
| | 8/8/2012 | 0.9 | 475.91 | 476.81 |



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**Table 10**
**Summary of Stream Gauge Measurements, June - August 2012**

**Site-Wide Groundwater Remedial Investigation Report**
**Ringwood Mines/Landfill Superfund Site**
**Ringwood, New Jersey**

| Stream Gauge | Date Collected | Gauge Reading (ft) | Measuring Point Elevation Correction (ft amsl) | Surface-Water Elevation (ft amsl) |
|---|---|---|---|---|
| Peters Mine Pond | 6/26/2012 | 2.42 | 517.94 | 520.36 |
| | 6/29/2012 | 2.38 | 517.94 | 520.32 |
| | 7/3/2012 | 2.32 | 517.94 | 520.26 |
| | 7/5/2012 | 2.28 | 517.94 | 520.22 |
| | 7/10/2012 | 2.19 | 517.94 | 520.13 |
| | 7/12/2012 | 2.20 | 517.94 | 520.14 |
| | 7/17/2012 | 2.18 | 517.94 | 520.12 |
| | 7/20/2012 | 2.27 | 517.94 | 520.21 |
| | 7/24/2012 | 2.27 | 517.94 | 520.21 |
| | 7/27/2012 | 2.27 | 517.94 | 520.21 |
| | 7/31/2012 | 2.38 | 517.94 | 520.32 |
| | 8/3/2012 | 2.31 | 517.94 | 520.25 |
| | 8/6/2012 | 2.29 | 517.94 | 520.23 |
| | 8/8/2012 | 2.26 | 517.94 | 520.20 |

**Notes:**
ft = feet
ft amsl = feet above mean sea level

| | | |
|---|---|---|
| Rain Gauge | 6/26/2012 | 0.1 in |
| | 6/29/2012 | 0.8 in |
| | 7/3/2012 | 0.0 in |
| | 7/5/2012 | 0.05 in |
| | 7/10/2012 | 0.0 in |
| | 7/12/2012 | 0.5 in |
| | 7/17/2012 | 0.3 in |
| | 7/20/2012 | 1.6 in |
| | 7/24/2012 | 0.4 in |
| | 7/27/2012 | 0.4 in |
| | 7/31/2012 | 1.9 in |
| | 8/3/2012 | 0.0 in |
| | 8/6/2012 | 0.4 in |
| | 8/8/2012 | 0.0 in |


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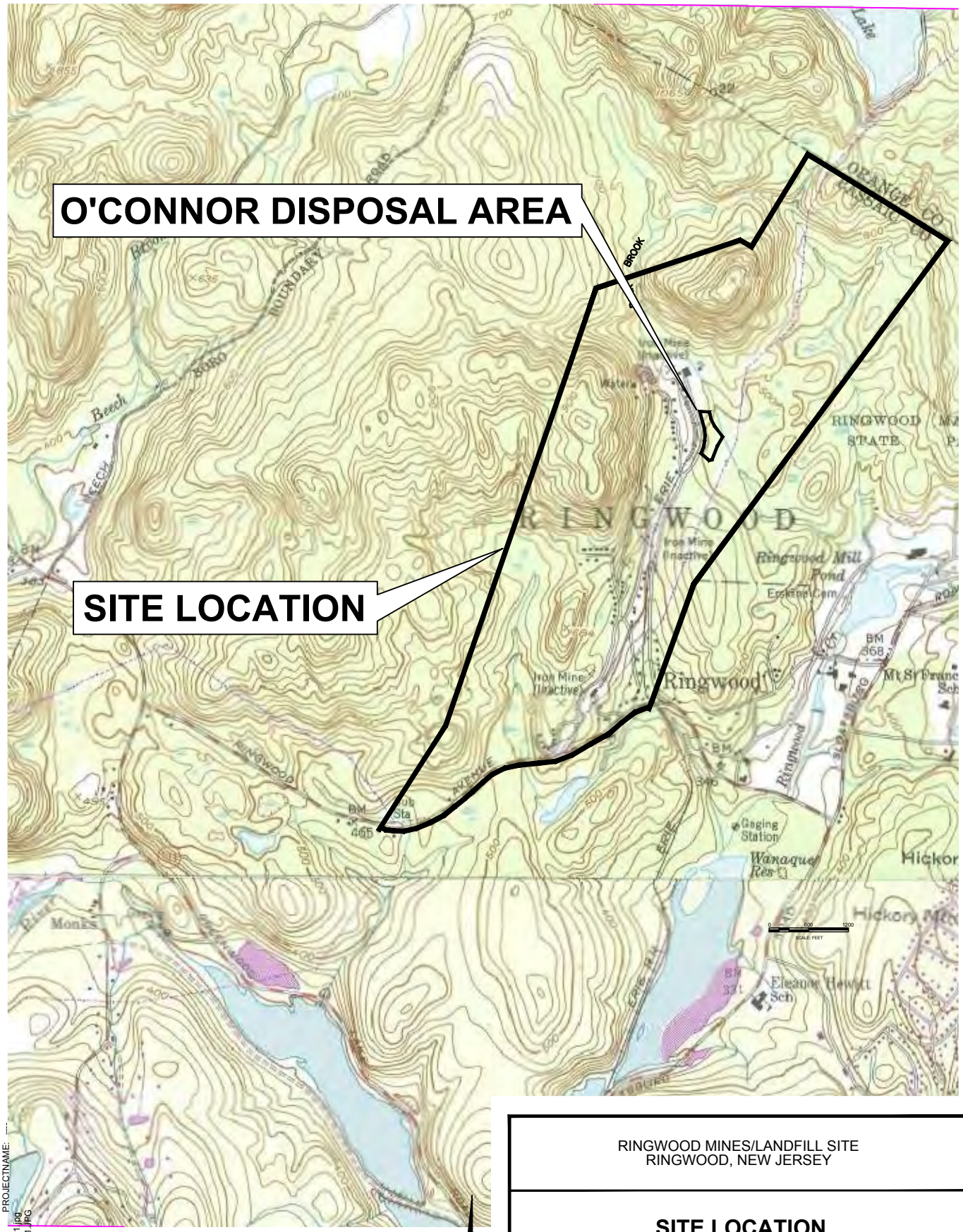



REFERENCE: GREENWOOD LAKE, NY–NJ, USGS QUADRANGLE, 7.5 MINUTE SERIES, 1954.

0 2000
SCALE IN FEET

RINGWOOD MINES/LANDFILL SITE
RINGWOOD, NEW JERSEY

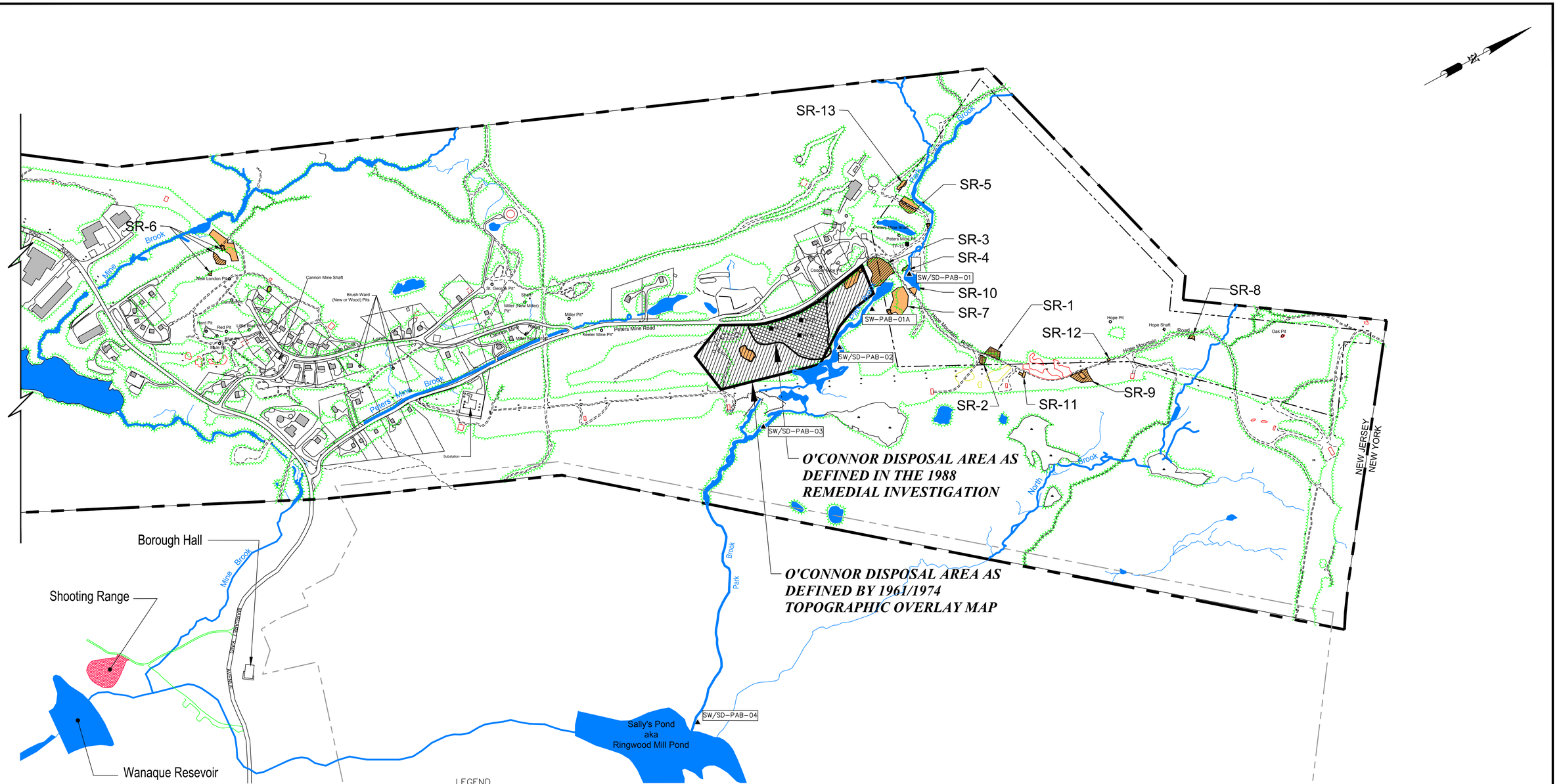
## SITE LOCATION

ARCADIS

FIGURE
1

R2-0004680

CITY:MAHWAH DIV/GROUP:ENVCAD DB:JG LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Newtown\ACTN\00060400350\00022\FIG 1 - SITE LOCATION MAP.dwg LAYOUT: 1 SAVED: 12/23/2011 12:17 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/23/2011 5:04 PM BY: WASILEWSKI, MATT
XREFS: IMAGES: PROJECTNAME: ---
00604X01.jpg
Ring0001.JPG
site-1.tif
site-2.tif




LEGEND

- TREELINE
- TRAILS
- ROADWAYS
- SURFACE WATER
- RINGWOOD STATE PARK BOUNDARY
- BUILDINGS
- TRANSMISSION LINE TOWER
- UTILITY POLE
- FORMER TEST PIT LOCATION
- FORMER MINE PIT
- FORMER MINE SHAFT ENTRANCE
- PAINT SLUDGE REMOVAL AREA
- SW/SD-PAB-01 ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM PARK BROOK

**DRAFT**

0 400 800 1200
SCALE IN FEET

RINGWOOD MINE/LANDFILL SITE
RINGWOOD , NEW JERSEY

# O'CONNOR DISPOSAL AREA SITE LOCATION

ARCADIS

FIGURE 2

R2-0004681

Key: CITY=office_location DIV/GROUP=div_or_group DB=drawn_by LD=lead_drafter PIC=Principal_in_Charge PM=Project_Manager TM=Task_Manager/Requestor LYR=layer_settings(turn all on, then turn all REF off)
CITY: (MAHWAH) SYRACUSE, NY GROUP: ENVCAD DB: (J. G ONZALEZ), P. LISTER LD: (J. G ONZALEZ) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Fairlawn\ACTIN\J000604\0035\0002\2012\04\FIG 02-OCDA AREA SITE LOCATION - MK_R1.dwg LAYOUT: 2 SAVED: 4/18/2012 4:21 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 4/18/2012 4:21 PM BY: GONZALEZ, JAMES
XREFS: IMAGES: PROJECTNAME: ----

| Sample ID: | OC-SS-15 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 4,660 |
| Arsenic | 4.4 |
| Barium | 452 |
| Lead | 67.7 |
| Manganese | 208 J |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-11 |
|---|---|
| Date: | 11/21/2008 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 11,100 |
| Arsenic | 2.3 |
| Barium | 42.9 |
| Lead | 13.6 |
| Manganese | 506 J |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-10 |
|---|---|
| Date: | 11/21/2007 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | 80.1 |
| Metals (mg/kg) | |
| Aluminum | 10,400 |
| Arsenic | 4.5 |
| Barium | 70 |
| Cadmium | 3.4 |
| Lead | 108 |
| Manganese | 482 J |
| PCBs (total) (mg/kg) | **0.2321** |

| Sample ID: | OC-SS-14 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | MT |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 5,740 |
| Arsenic | **37.8** |
| Barium | 37.3 |
| Copper | **24.2 B** |
| Lead | 17.5 B |
| Manganese | 397 J |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-13 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 14,600 |
| Arsenic | ND |
| Barium | 96 |
| Cadmium | **5.3 B** |
| Copper | **30.1 B** |
| Lead | **155** |
| Manganese | **677 J** |
| Mercury | 0.11 |
| Nickel | **23.8 B** |
| Zinc | **352** |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-12 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | MT |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 6,210 |
| Arsenic | **45 B** |
| Barium | 32.1 |
| Beryllium | 0.73 B |
| Lead | 28.1 B |
| Manganese | 302 J |
| Mercury | 1.1 |
| Vanadium | **132 BJ** |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-01 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Native |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 15,900 |
| Arsenic | 5.8 |
| Barium | 64.5 |
| Beryllium | 0.69 |
| Lead | 26.5 |
| Manganese | 1,760 J |
| Mercury | 0.17 |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-03 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 15,500 |
| Arsenic | 3.7 |
| Barium | 50.1 |
| Beryllium | 0.56 B |
| Lead | 11.2 |
| Manganese | 460 J |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-02 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Native |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 11,500 |
| Arsenic | 6.2 |
| Barium | 37.5 |
| Lead | 45.2 |
| Manganese | 449 J |
| Mercury | 0.13 |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-4 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 9,000 |
| Arsenic | 5.3 |
| Barium | 60.7 |
| Lead | 26.5 |
| Manganese | 461 J |
| PCBs (total) (mg/kg) | **0.287** |

| Sample ID: | OC-SS-5 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 4,230 |
| Arsenic | **47.5 B** |
| Barium | 14.5 |
| Lead | ND |
| Manganese | 304 J |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-06 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | MT |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 7,420 |
| Arsenic | **51.1 B** |
| Barium | 40.5 |
| Lead | ND |
| Manganese | 397 J |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-7 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 10,200 |
| Arsenic | 4.4 |
| Barium | 48.2 |
| Lead | 17.7 |
| Manganese | 562 J |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-8 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Fill |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 9,740 |
| Arsenic | 4.5 |
| Barium | 44.7 |
| Cadmium | 1.2 |
| Lead | 100 |
| Manganese | 504 J |
| PCBs (total) (mg/kg) | ND |

| Sample ID: | OC-SS-9 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | MT |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 4,050 |
| Arsenic | **42.4 B** |
| Barium | 23.4 |
| Lead | ND |
| Manganese | 312 J |
| PCBs (total) (mg/kg) | ND |

## LEGEND:

- 529.02 EXISTING SPOT ELEVATION
- 530 EXISTING ELEVATION CONTOUR
- CENTERLINE OF STREAM AS FIELD SURVEYED BY GEOD
- OVERHEAD UTILITY LINES
- TRAIL
- WETLAND BOUNDARY (TRIDENT)
- O'CONNOR INVESTIGATION AREA
- LIMIT OF O'CONNOR SURVEY AREA
- SURFACE SAMPLE LOCATION

0 60 120 180
SCALE IN FEET

CONSTITUENT

| Sample ID: | OC-SS-01 |
|---|---|
| Date: | 11/21/2006 |
| Depth: | 0-6" |
| Material Sampled: | Native |
| VOCs (mg/kg) | ND |
| SVOCs (mg/kg) | NE |
| TPH (mg/kg) | ND |
| Metals (mg/kg) | |
| Aluminum | 15,900 |
| Arsenic | 5.8 |
| Barium | 64.5 |
| Beryllium | 0.69 |
| Lead | 26.5 |
| Manganese | 1,760 J |
| Mercury | 0.17 |
| PCBs (total) (mg/kg) | ND |

SAMPLE INTERVAL (FEET BELOW GROUND SURFACE)
MT = MINE TAILINGS
VOCs = VOLATILE ORGANIC COMPOUNDS
SVOCs = SEMI-VOLATILE ORGANIC COMPOUNDS
TPH = TOTAL PETROLEUM HYDROCARBONS
PCB's = POLYCHLORINATED BIPHENYLS

| | |
|---|---|
| B | INORGANIC B: RESULT IS BETWEEN THE DETECTION LIMIT AND QUANTIFICATION LIMIT. |
| J | ESTIMATED RESULT |
| ND | NOT DETECTED ABOVE LABORATORY DETECTION LIMIT |
| NE | NOT ESTABLISHED |
| NS | NO STANDARD |
| mg/kg | MILLIGRAMS PER KILOGRAM (PARTS PER MILLION) |
| **BOLD** | CONTAMINANT DETECTED AT LEVELS GREATER THAN THE NJDEP UNRESTRICTED USE OR IMPACT TO GROUNDWATER CRITERIA |
| ***ITALICS/BOLD*** | VALUE IS ABOVE THE LOWEST EFFECT LEVEL (LEL) |
| (yellow) | VALUE IS ABOVE THE SEVERE EFFECT LEVEL (SEL) |
| (white box) | VALUE IS ABOVE THE IMPACT TO GROUNDWATER SOIL CLEANUP CRITERIA THRESHOLD VALUE |
| (grey box) | VALUE IS ABOVE THE CALCULATED IMPACT TO GROUNDWATER SOIL STANDARD. |

| Constituent | NJDEP Soil Cleanup Criteria | | | |
|---|---|---|---|---|
| | Freshwater Sediment Screen Guidelines | Residential Direct Contact Soil Remediation Standard | Default Impact to Groundwater Soil Screening Level | Calculated Impact to Groundwater Soil Standard |
| Metals (mg/kg) | | | | |
| Arsenic | 20 | 20 | NS | 19 |
| Beryllium | 2 | 2 | NS | .5 |
| Lead | 400 | 600 | NS | 59 |
| Antimony | 14 | 340 | NS | 6 |

## NOTES:

1. WETLAND BOUNDARY ESTABLISHED BY TRIDENT ENVIRONMENTAL CONSULTANTS (2005).
2. WHEN A DUPLICATE SAMPLE ANALYSIS WAS PERFORMED, THE DATA REPORTED ON THE DRAWING IS THE GREATER OF THE TWO ANALYTICAL RESULTS.
3. EXISTING CONTOURS DEPICT TOPOGRAPHY PRIOR TO REMOVAL ACTIVITIES.
4. SAMPLE DEPTHS ARE APPROXIMATE.
5. PCBs RESULTS ARE REPORTED AS TOTAL PCBs.

FORMER O'CONNOR DISPOSAL AREA
RINGWOOD MINES/LANDFILL SITE
RINGWOOD, NEW JERSEY
**REMEDIAL INVESTIGATION REPORT**

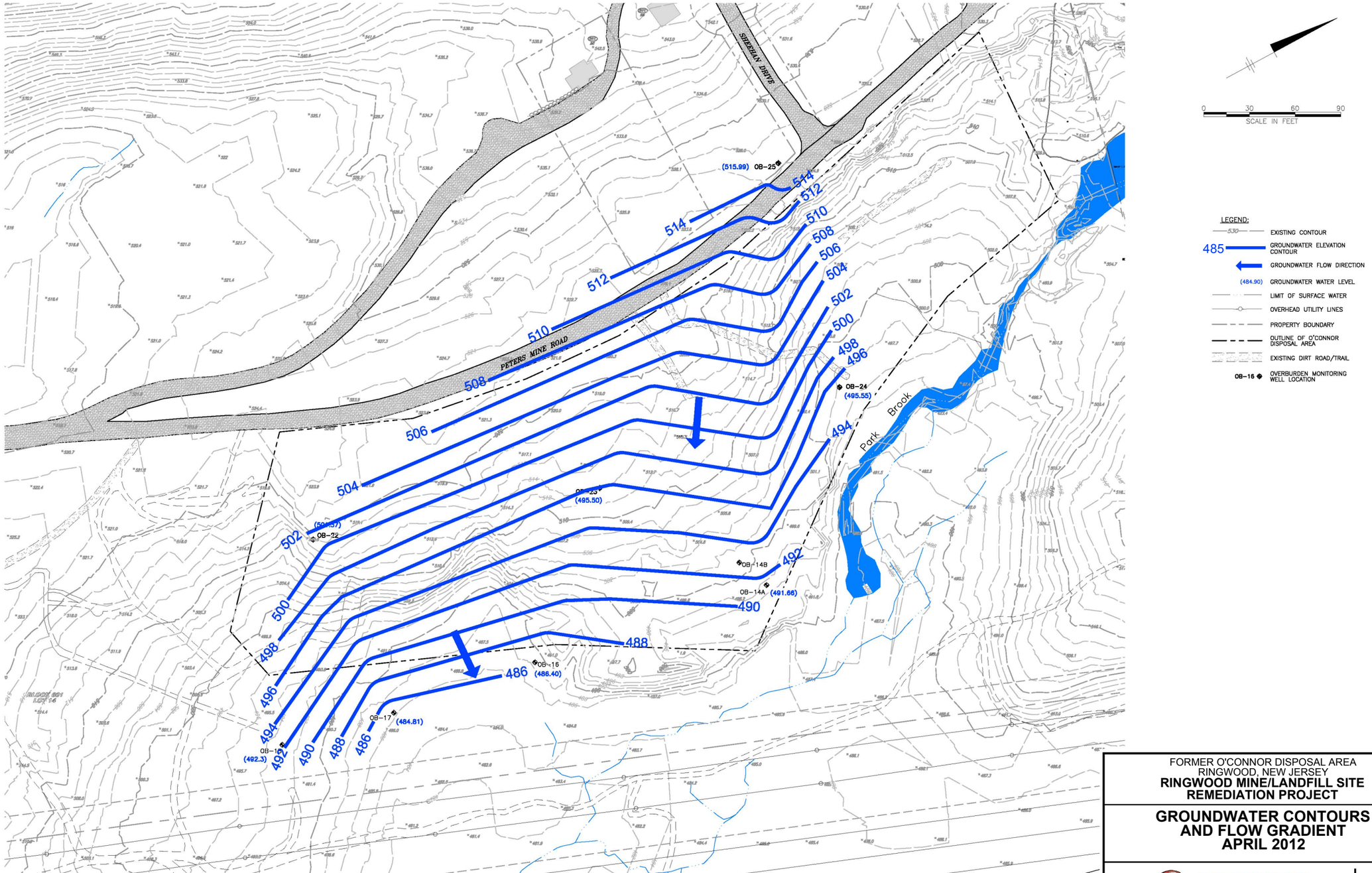
# SURFACE SOIL SAMPLE ANALYTICAL RESULTS SUMMARY

# DRAFT

ARCADIS

FIGURE
3

CITY:(NEWTOWN, PA) SYRACUSE, NY DIV/GROUP: ENV/IM-DV DB:(M. WASILEWSKI), P. LISTER PM/TM/TR: J. ROCKLIN LYR: ON=*;OFF=REF, (FRZ)
G:\ENVCAD\SYRACUSE\RETURN-TO\Newtown-PA\NJ000604\0035\00022\DWG\FIG 03-OCDA Surface Soil Sample Analytical Results.dwg LAYOUT: 3 SAVED: 12/28/2011 4:09 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 12/28/2011 4:09 PM BY: LISTER, PAUL
IMAGES: PROJECTNAME: ----




FORMER O'CONNOR DISPOSAL AREA
RINGWOOD, NEW JERSEY
**RINGWOOD MINE/LANDFILL SITE REMEDIATION PROJECT**

**GROUNDWATER CONTOURS AND FLOW GRADIENT APRIL 2012**

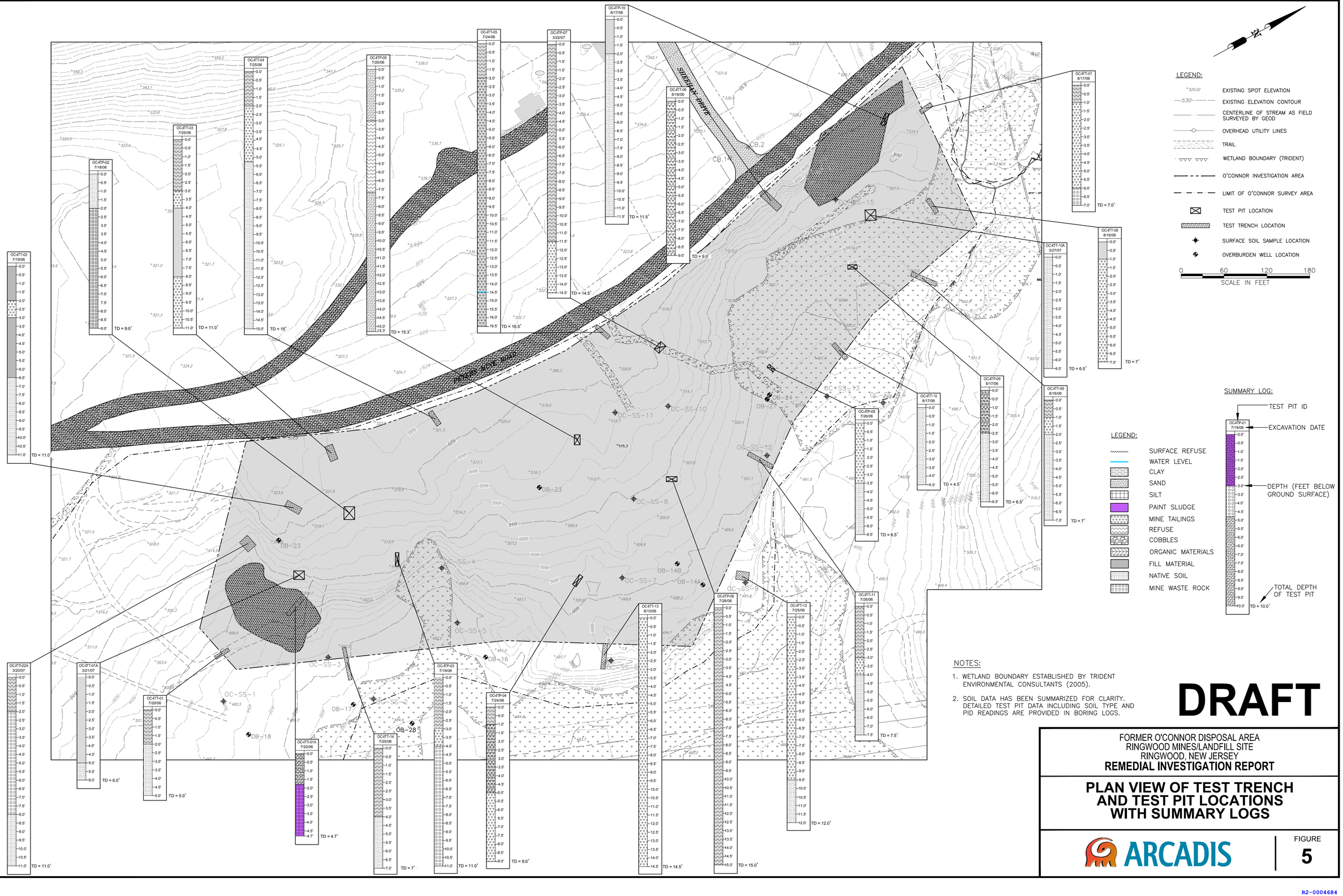
ARCADIS

FIGURE
**4**

CITY:MAHWAH DIV/GROUP:ENVIRONMENTAL DB:J.GONZALEZ LD:J.SEIER PIC:M.MOHIUDDIN PM:E.ZIMMERMAN TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Fairlawn\ACT\NJ00604\2013\00022\2013-06\OCDA RIR\FIG 04- GW ELEVATION CONTOURS - 04-2012 - OCDA.dwg LAYOUT: 4 SAVED: 6/10/2013 12:05 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS-MAHWAH.CTB PLOTTED: 6/10/2013 12:05 PM BY: GONZALEZ, JAMES
XREFS: OCDA-AR-00 IMAGES: PROJECTNAME: ----

R2-0004683

CITY:(Req'd) DIV/GROUP:(Req'd) DB:(Req'd) LD:(Opt) PIC:(Opt) PM:(Req'd) TM:(Opt) LYR:(Opt)ON=*OFF=*REF*
G:\ENV\CAD\Newtown\ACTRETURN-TO\Fairlawn-NJ\NJ000604\2013000222\FIG 05-OCDA Plan View Of TTs & TPs Logs.dwg LAYOUT: 5 SAVED: 12/30/2011 2:08 PM ACADVER: 18.1S (LMS TECH)
IMAGES: PROJECTNAME: ----




NOTES:

1. WETLAND BOUNDARY ESTABLISHED BY TRIDENT ENVIRONMENTAL CONSULTANTS (2005).
2. SOIL DATA HAS BEEN SUMMARIZED FOR CLARITY. DETAILED TEST PIT DATA INCLUDING SOIL TYPE AND PID READINGS ARE PROVIDED IN BORING LOGS.

**DRAFT**

FORMER O'CONNOR DISPOSAL AREA
RINGWOOD MINES/LANDFILL SITE
RINGWOOD, NEW JERSEY
**REMEDIAL INVESTIGATION REPORT**

# PLAN VIEW OF TEST TRENCH AND TEST PIT LOCATIONS WITH SUMMARY LOGS

ARCADIS

FIGURE
**5**

R2-0004684

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Fairlawn\ACT\NJ000604\2013\00022\2013-06\OCDA RIR\FIG 06- SW and Sed Samp Locations.dwg LAYOUT: 6 SAVED: 6/10/2013 11:53 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 6/10/2013 11:54 AM BY: GONZALEZ, JAMES

XREFS: IMAGES: j3a1.sid j3a2.sid j3a5.sid j3a6.sid PROJECTNAME: ----

Ringwood State Park Boundary

SR-9

SR-11

SR-13

SR-4

SR-1

SR-5

SR-2

SR-10

SR-7

SR-3

O'Connor Disposal Area

Former Ringwood Realty Corp. Property

Peters Mine Pit

Peters Mine Shaft

Peters Mine Area

Cooper Mine Pit

Keeler Mine Pit*

Miller Pit*

Shaft*

Miller (New Miller) Pit*

Miller Mine Shaft

SW/SD-PAB-01

SW-PAB-01A

SW/SD-PAB-02

SW/SD-PAB-03

SW/SD-PAB-04

Hope Mountain Road

Peters Mine Road

Miller Road

Park Brook

North Brook

LEGEND

SW/SD-PAB-01 ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM PARK BROOK

Cannon ○ ABANDONED MINE PIT

Cannon Mine Shaft ◪ ABANDONED MINE SHAFT ENTRANCE

PAINT SLUDGE REMOVAL AREA

N

W E

S

0 200' 400'

GRAPHIC SCALE

RINGWOOD MINE/LANDFILL SITE
RINGWOOD, NEW JERSEY

# SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS

ARCADIS

FIGURE 6

R2-0004685

LEGEND:

- EXISTING SPOT ELEVATION
- EXISTING ELEVATION CONTOUR
- CENTERLINE OF STREAM AS FIELD SURVEYED BY GEOD
- OVERHEAD UTILITY LINES
- TRAIL
- WETLAND BOUNDARY (TRIDENT)
- O'CONNOR INVESTIGATION AREA
- LIMIT OF O'CONNOR SURVEY AREA
- TEST PIT LOCATION
- TEST TRENCH LOCATION
- SURFACE SOIL SAMPLE LOCATION
- OVERBURDEN WELL LOCATION
- FILL SAMPLE LOCATION
- BASE SAMPLE LOCATION
- REVISED PAINT SLUDGE LOCATION
- HISTORIC PAINT SLUDGE LOCATION

0 60 120 180
SCALE IN FEET

NOTES:

1. WETLAND BOUNDARY ESTABLISHED BY TRIDENT ENVIRONMENTAL CONSULTANTS (2005).
2. SOIL DATA HAS BEEN SUMMARIZED FOR CLARITY. DETAILED TEST PIT DATA INCLUDING SOIL TYPE AND PID READINGS ARE PROVIDED IN BORING LOGS.

# DRAFT

FORMER O'CONNOR DISPOSAL AREA
RINGWOOD MINES/LANDFILL SITE
RINGWOOD, NEW JERSEY
**REMEDIAL INVESTIGATION REPORT**

## PLAN VIEW OF TEST TRENCH AND TEST PIT LOCATIONS WITH SUMMARY LOGS

ARCADIS

FIGURE
7

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Newtown\ACT\RETURN-TO\Fairlawn-NJ\NJ000604\2013\00022\FIG 07-OCDA Test Trenches.dwg LAYOUT: 7 SAVED: 6/10/2013 10:59 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 6/10/2013 11:05 AM BY: WASILEWSKI, MATT
IMAGES: PROJECTNAME: ----

R2-0004686

| OB-25 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Nov | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 10-Jun | 11-May | 12-Apr |
| ftbgs | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct |
| (msl) | (521-501) | (521-501) | (521-501) | (521-501) | (521-501) | (521-501) | (521-501) | (521-501) | (521-501) | (521-501) |
| Metals : | | | | | | | | | | |
| Aluminum | 60500 | 212000 | 1440 | 8080 | 43100 | 17700 | 3440 | 5520 | 1770 | 5640 |
| Arsenic | 23.1 | 7.1 | 1.1 | 2.1 | 19.8 | 8.4 | <2.4 | 1.7 | <0.92 | 2.1 |
| Beryllium | 2.5 | 3.7 | < 0.15 | 0.4 | 1.4 | 3.3 | <0.4 | 0.5 | <0.24 | < 0.44 |
| Cadmium | < 1.3 | 29.8 | < 0.24 | <0.28 | 2.1 | <0.4 | <0.4 | 0.8 | <0.17 | < 3 |
| Chromium | 85.2 | 53.3 | 3 | 9.4 | 51.1 | 24.1 | 4.6 | 7.5 | 1.6 | 6.9 |
| Iron | 107000 | 2280 | 942 | 11000 | 69500 | 28300 | 5180 | 7880 | 2410 | 7710 |
| Lead | 59.3 | 594 | 3.1 | 13.8 | 45.7 | 19.9 | 4.3 | 53.6 | 4.2 | 17.2 |
| Manganese | 5450 | 8270 | 23.6 | 321 | 2110 | 735 | 137 | 1080 | 65.5 | 213 |
| Nickel | 108 | 48.2 | 3.8 | 12.8 | 72.2 | 29 | 6.5 | 14.3 | 3.9 | 8.5 |
| Mercury | 0.15 | 2.1 | < 0.15 | <0.15 | 0.15 | 0.071 | <0.082 | <0.082 | <0.088 | < 0.075 |
| VOCs and SVOCs: | | | | | | | | | | |
| Benzene | < 0.21 | < 0.21 | < 0.19 | <0.26 | <0.26 | <0.23 | <0.23 | <0.23 | <0.26 | < 0.22 |
| Methyl tert butyl ether | < 0.78 | 3.7 | < 0.73 | | | 171 | <0.23 | <0.23 | <0.2 | < 0.18 |
| bis(2-Ethylhexyl)phthalate | ND | ND | ND | 1.1 | <0.79 | <0.36 | <0.37 | <0.38 | <0.36 | < 0.61 |
| PCBs: | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| OB-24 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Nov | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 10-May | 11-May | 12-Apr |
| ftbgs | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May |
| (msl) | (493-483) | (493-483) | (493-483) | (493-483) | (493-483) | (493-483) | (493-483) | (493-483) | (493-483) | (493-483) |
| Metals : | | | | | | | | | | |
| Aluminum | | | | | 686 | 1020 | 250 | 18.8 | 513 | 216 |
| Arsenic | <1.5 | < 1.5 | 1.9 | 1.7 | 2.5 | <2.4 | <2.4 | <1.4 | <0.92 | < 0.97 |
| Iron | | | | | 1520 | 2130 | 493 | 77.5 | 1110 | 464 |
| Lead | 2.8 | < 2.8 | 1.2 | 1.5 | <1.4 | <1.7 | <1.7 | <1.9 | 4.2 | < 1.7 |
| Manganese | 487 | 343 | 352 | 262 | 742 | 789 | 341 | 310 | 1450 | 628 |
| VOCs and SVOCs: | | | | | | | | | | |
| Benzene | < 0.21 | < 0.21 | < 0.19 | <0.26 | <0.26 | <0.23 | <0.23 | <0.23 | <0.26 | < 0.22 |
| bis(2-Ethylhexyl)phthalate | < 0.66 | < 0.74 | < 0.66 | <0.88 | <0.79 | <0.36 | <0.37 | <0.35 | <0.33 | < 0.6 |
| PCBs: | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| OB-14B | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Sep | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 11-May | 12-Apr |
| ftbgs | 25-35 | 25-35 | 25-35 | 25-35 | 25-35 | 25-35 | 25-35 | 25-35 | 25-35 |
| (msl) | (478-468) | (478-468) | (478-468) | (478-468) | (478-468) | (478-468) | (478-468) | (478-468) | (478-468) |
| Metals: | | | | | | | | | |
| Aluminum | | | | | | | | 860 | 164 |
| Arsenic | < 1.5 | < 1.5 | 2.8 | 2.1 | 2 | <2.4 | <2.4 | 1.6 | < 3 |
| Beryllium | | | | | 2.6 | 1.1 | <0.4 | <0.24 | < 0.44 |
| Iron | 949 | 962 | 642 | 890 | 516 | 1040 | 719 | 1740 | 865 |
| Lead | < 2.6 | < 2.8 | 1.1 | 3.2 | <1.41.4 | <1.7 | <1.7 | 4.8 | <1.7 |
| Manganese | 1900 | 2040 | 1500 | 1740 | 1560 | 2100 | 1630 | 2100 | 2110 |
| VOCs and SVOCs: | | | | | | | | | |
| Benzene | < 0.21 | < 0.21 | <0.19 | <0.26 | <0.26 | <0.23 | <0.23 | <0.26 | < 0.22 |
| bis(2-Ethylhexyl)phthalate | < 0.73 | < 0.76 | <0.79 | <0.92 | <0.79 | <0.33 | <0.33 | <0.33 | < 0.63 |
| PCBs: | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| OB-23 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Nov | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 10-May | 11-May | 12-Apr |
| ftbgs | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct |
| (msl) | (502-492) | (502-492) | (502-492) | (502-492) | (502-492) | (502-492) | (502-492) | (502-492) | (502-492) | (502-492) |
| Metals : | | | | | | | | | | |
| Arsenic | 1.8 | < 1.5 | DRY | <1.7 | DRY | <2.4 | DRY | 2.2 | <0.92 | DRY |
| Iron | 24600 | 14100 | DRY | 7760 | DRY | 42300 | DRY | 47300 | 47500 | DRY |
| Lead | < 2.8 | 24.1 | DRY | 2.5 | DRY | 7.5 | DRY | 2.2 | 5.5 | DRY |
| Manganese | 1450 | 1650 | DRY | 1130 | DRY | 1400 | DRY | 1550 | 2360 | DRY |
| Sodium | 121000 | 170000 | DRY | 368000 | DRY | 86900 | DRY | 94400 | 63500 | DRY |
| VOCs and SVOCs: | | | | | | | | | | |
| benzene | < 0.21 | < 0.21 | DRY | <.26 | DRY | <0.23 | DRY | <0.23 | <0.26 | DRY |
| bis(2-Ethylhexyl)phthalate | < 0.74 | 6.6 | DRY | <.95 | DRY | 1.1 | DRY | <0.36 | <0.33 | DRY |
| PCBs: | ND | ND | DRY | ND | DRY | ND | DRY | ND | ND | DRY |

| OB-22 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Nov | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 10-May | 11-May | 12-Apr |
| ftbgs | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct |
| (msl) | (505-495) | (505-495) | (505-495) | (505-495) | (505-495) | (505-495) | (505-495) | (505-495) | (505-495) | (505-495) |
| Metals : | | | | | | | | | | |
| Aluminum | 21600 | 13200 | DRY | 1560 | DRY | 2280 | DRY | 577 | | DRY |
| Arsenic | 9.5 | 5.2 | DRY | <1.7 | DRY | <2.4 | DRY | <1.4 | <0.92 | DRY |
| Iron | 35200 | 19900 | DRY | 1600 | DRY | 2960 | DRY | 709 | 696 | DRY |
| Lead | 19.5 | 9.1 | DRY | 2.3 | DRY | <1.7 | DRY | <1.9 | <0.94 | DRY |
| Manganese | 2060 | 805 | DRY | 39.4 | DRY | 64.2 | DRY | 10 | 15.4 | DRY |
| VOCs and SVOCs: | | | | | | | | | | |
| Benzene | < 0.21 | < 0.21 | DRY | <.26 | DRY | <0.23 | DRY | <0.23 | <0.26 | DRY |
| bis(2-Ethylhexyl)phthalate | < 0.77 | < 0.73 | DRY | <.99 | DRY | <0.37 | DRY | <0.33 | 1.4 | DRY |
| PCBs: | ND | ND | DRY | ND | DRY | ND | DRY | ND | ND | DRY |

| SW-PAB-01A | | |
|---|---|---|
| Date | 11-Jun | 12-Apr |
| VOCs (mg/kg) | ND | ND |
| SVOCs (mg/kg) | ND | ND |
| PCBs (mg/kg) | ND | ND |
| Arsenic (ug/L) | Below SWQS | 0.72 |
| Other Metals (mg/kg) | Below SWQS | Below SWQS |

| SW-PAB-02 | | | |
|---|---|---|---|
| Date | 5-Nov | 11-Jun | 12-Apr |
| VOCs (mg/kg) | ND | ND | ND |
| SVOCs (mg/kg) | ND | NE | ND |
| Bis (2-ethylhexyl) phthalate | | | |
| PCBs (mg/kg) | ND | ND | ND |
| Metals (mg/kg) | NE | Below SWQS | Below SWQS |

| OB-14A | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Sep | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 10-May | 11-May | 12-Apr |
| ftbgs | 14-Apr | 14-Apr | 14-Apr | 14-Apr | 14-Apr | 14-Apr | 14-Apr | 14-Apr | 14-Apr | 14-Apr |
| (msl) | (497-487) | (497-487) | (497-487) | (497-487) | (497-487) | (497-487) | (497-487) | (497-487) | (497-487) | (497-487) |
| Metals: | | | | | | | | | | |
| Aluminum | 215 | 78.4 | < 26 | <24 | <24 | <26 | <26 | <7.8 | 69.1 | 67.7 |
| Arsenic | 4.5 | 2.4 | 23.1 | 14.4 | 2.3 | 2.8 | <2.4 | 1.8 | <0.92 | < 0.97 |
| Iron | 42300 | 45500 | 61400 | 52500 | 34700 | 50500 | 38600 | 51300 | 50900 | 46600 |
| Lead | < 2.6 | 3.3 | 1.4 | 4 | <1.4 | <1.7 | <1.7 | <1.9 | 3.8 | <1.7 |
| Manganese | 1050 | 1040 | 2770 | 1870 | 773 | 1360 | 969 | 1320 | 1480 | 1120 |
| VOCs and SVOCs: | | | | | | | | | | |
| Benzene | < 0.21 | < 0.21 | < 0.19 | <0.26 | <0.26 | <0.23 | <0.23 | <0.23 | <0.26 | <0.22 |
| bis(2-Ethylhexyl)phthalate | < 0.72 | < 0.7 | 1.4 | <0.9 | <0.78 | <0.34 | <0.36 | <0.33 | <0.34 | < 0.65 |
| PCBs: | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| OB-16 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Sep | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 10-May | 11-May | 12-Apr |
| ftbgs | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May | 15-May |
| (msl) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) |
| Metals: | | | | | | | | | | |
| Aluminum | | | | | | | | | 492 | 60 |
| Arsenic | 6.2 | 4.4 | 8.8 | 4.6 | 7.4 | 5.1 | 6.1 | 7.8 | 9.1 | 6.9 |
| Iron | 9890 | 8050 | 15400 | 11100 | 12200 | 12400 | 13200 | 14300 | 16700 | 17700 |
| Lead | < 2.6 | < 2.8 | < 0.94 | 3.7 | <1.4 | <1.7 | <1.7 | <1.9 | 1.4 | <1.7 |
| Manganese | 2840 | 2230 | 3940 | 2860 | 3250 | 3030 | 3440 | 3440 | 3260 | 4180 |
| VOCs and SVOCs: | | | | | | | | | | |
| Benzene | < 0.21 | < 0.21 | < 0.19 | <0.26 | <0.26 | <0.23 | <0.23 | <0.23 | <0.26 | < 0.22 |
| bis(2-Ethylhexyl)phthalate | < 0.71 | < 0.73 | < 0.66 | <0.92 | <0.81 | <0.36 | <0.35 | <0.36 | <0.33 | < 0.59 |
| PCBs: | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| OB-28 | | | |
|---|---|---|---|
| Date | 10-May | 11-May | 12-Apr |
| ftbgs | 18-Mar | 18-Mar | 18-Mar |
| (msl) | (451-466) | (451-466) | (451-466) |
| Metals: | | | |
| Aluminum | 721 | 25300 | 581 |
| Arsenic | <1.4 | 9.8 | < 0.97 |
| Iron | 1260 | 40300 | 1020 |
| Lead | <1.9 | 24.4 | <1.7 |
| Manganese | 3190 | 3680 | 3960 |
| VOCs and SVOCs: | | | |
| Benzene | <0.23 | <0.26 | <0.22 |
| Bis (2-ethylhexyl) phthalate | <0.37 | <0.33 | <0.6 |
| PCBs: | ND | ND | ND |

| OB-17 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Sep | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 10-May | 11-May | 12-Apr |
| ftbgs | 13-Mar | 13-Mar | 13-Mar | 13-Mar | 13-Mar | 13-Mar | 13-Mar | 13-Mar | 13-Mar | 13-Mar |
| (msl) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) | (484-474) |
| Metals: | | | | | | | | | | |
| Aluminum | < 110 | < 23 | < 26 | | 683 | 85.5 | <26 | <7.8 | 47.6 | 51.2 |
| Arsenic | < 1.5 | < 1.5 | 2.5 | <1.7 | <1.7 | <2.4 | <2.4 | 1.9 | <0.92 | <0.97 |
| Iron | 1770 | 1410 | 3830 | 1570 | 79.9 | 3130 | 1730 | 2620 | 1350 | 5200 |
| Lead | < 2.6 | 3.5 | 1.7 | 2.3 | 1.4 | <1.7 | <1.7 | <1.9 | 1.6 | <1.7 |
| Manganese | 619 | 496 | 669 | 472 | 64.5 | 496 | 462 | 538 | 165 | 608 |
| VOCs and SVOCs: | | | | | | | | | | |
| Benzene | < 0.21 | < 0.21 | < 0.19 | <0.26 | <0.26 | <0.23 | <0.23 | <0.23 | <0.26 | <0.22 |
| bis(2-Ethylhexyl)phthalate | < 0.66 | < 0.68 | < 0.73 | 1.3 | <0.8 | <0.33 | <0.34 | <0.34 | <0.33 | <0.62 |
| PCBs: | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

| SW-PAB-03 | | | |
|---|---|---|---|
| Date | 5-Nov | 11-Jun | 12-Apr |
| VOCs (mg/kg) | ND | ND | ND |
| SVOCs (mg/kg) | ND | ND | ND |
| PCBs (mg/kg) | ND | ND | ND |
| Metals (mg/kg) | NE | Below SWQS | Below SWQS |

| OB-18 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 6-Sep | 7-Apr | 7-Oct | 8-Apr | 8-Sep | 9-Jul | 9-Oct | 10-May | 11-May | 12-Apr |
| ftbgs | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct | 20-Oct |
| (msl) | (485-475) | (485-475) | (485-475) | (485-475) | (485-475) | (485-475) | (485-475) | (485-475) | (485-475) | (485-475) |
| Metals: | | | | | | | | | | |
| Aluminum | < 110 | < 23 | 262 | <24 | 114 | 420 | 57.3 | <7.8 | 236 | 327 |
| Arsenic | < 1.5 | < 1.5 | < 1.1 | <1.7 | <1.7 | <2.4 | <2.4 | <1.4 | <0.92 | <0.97 |
| Iron | | | | | | 490 | 85.4 | 25 | 278 | 404 |
| Lead | < 2.6 | < 2.8 | 1.2 | <1.4 | 1.4 | <1.7 | <1.7 | <1.9 | <0.94 | <1.7 |
| VOCs and SVOCs: | | | | | | | | | | |
| Benzene | < 0.21 | < 0.21 | < 0.19 | <0.26 | <0.26 | <0.23 | <0.23 | <0.23 | <0.26 | < 0.22 |
| bis(2-Ethylhexyl)phthalate | < 0.71 | < 0.66 | < 0.74 | 1.1 | <0.79 | <0.37 | <0.34 | <0.33 | <0.33 | < 0.7 |
| PCBs: | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

## LEGEND

- DEEP BEDROCK WELL
- UNCONSOLIDATED WELL
- MONITORING WELL DAMAGED OR NOT AVAILABLE FOR SAMPLING
- PAINT SLUDGE REMOVAL AREA
- SW/SD-2 — SURFACE WATER AND SEDIMENT – SAMPLE LOCATION
- SW/SD-PMB-01 — SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM PETERS MINE BROOK
- SW/SD-PAB-01 — SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM PARK BROOK
- SW-PAB-01(BP) — PROPOSED SURFACE WATER – SAMPLE LOCATION FROM BEAVER POND

| Constituent | Higher of PQL or NJDEP Groundwater Quality Criteria |
|---|---|
| Metals | |
| Aluminum | 200 |
| Arsenic | 3 |
| Beryllium | 1 |
| Cadmium | 4 |
| Chromium | 70 |
| Iron | 300 |
| Lead | 5 |
| Manganese | 50 |
| Mercury | 2 |
| Nickel | 100 |
| Sodium | 50000 |
| Zinc | 2000 |
| VOCs and SVOCs | |
| Benzene | 1 |
| bis(2-ethylhexyl)phthalate | 3 |

ND NOT DETECTED ABOVE LABORATORY DETECTION LIMIT
NA NOT ANALYZED
NS* NOT SAMPLED, NO LONGER PART OF THE GROUNDWATER MONITORING PROGRAM
< LESS THAN
DRY WELL NOT SAMPLED, BECAUSE WELL WAS DRY DURING SAMPLING EVENT
**BOLD** CONTAMINANT DETECTED AT LEVELS GREATER THAN THE NJDEP GROUNDWATER QUALITY CRITERIA
ftbgs FEET BELOW GROUND SURFACE
msl MEAN SEA LEVEL

NOTES:

1. DATA QUALIFIERS WERE NOT PROVIDED ON DRAWINGS. DATA QUALIFIERS ARE REPORTED IN ANALYTICAL TABLES.
2. WHEN A DUPLICATE SAMPLE ANALYSIS WAS PERFORMED, THE DATA REPORTED ON THE DRAWING IS THE GREATER OF THE TWO ANALYTICAL RESULTS.
3. EXISTING CONTOURS DEPICT TOPOGRAPHY PRIOR TO REMOVAL ACTIVITIES.
4. SAMPLE DEPTHS ARE APPROXIMATE.
5. PCBs RESULTS ARE REPORTED AS TOTAL PCBs.
6. ALL RESULTS ARE PRESENTED AS MICROGRAM PER LITER (μg/L).
7. CONCENTRATIONS OF METALS ARE SHOWN FOR THE UNFILTERED SAMPLES, OR TOTAL METAL CONCENTRATIONS.
8. SWQS REFER TO THE NJDEP SURFACE WATER QUALITY STANDARDS, N.J.A.C. 7:9B

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Fairlawn\ACT\NJ000604\2013\00022\2013-06\OCDA RI\FIG 08-GW_SW RESULTS.dwg LAYOUT: 8 SAVED: 6/10/2013 12:01 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ANSI B-PDF PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 6/10/2013 12:01 PM BY: GONZALEZ, JAMES

XREFS: IMAGES: PROJECTNAME: ----
21828RKL_R1-2011
BASEMAP-KEY

FORMER O'CONNOR DISPOSAL AREA
RINGWOOD MINES/LANDFILL SITE
RINGWOOD, NEW JERSEY
**REMEDIAL INVESTIGATION REPORT**

**GROUNDWATER AND SURFACE WATER ANALYTICAL RESULTS**

ARCADIS

FIGURE 8

ARCADIS

## Appendix A

Administrative Order On Consent

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

June 1, 2010

Timothy Green, Esq.
Office of the General Counsel
Ford Motor Company
Room 406-A5
One American Road
Dearborn, Michigan 48126-2701

Gary P. Gengel, Esq.
Latham & Watkins LLP
One Newark Center, 16th Floor
Newark, New Jersey 07101-3174

RE: Ringwood Mines/Landfill Superfund Site
Administrative Settlement Agreement and Order on Consent for Remedial Investigation and Feasibility Study
CERCLA Docket No. 02-2010-2020

Dear Counsel:

Please find enclosed a copy of the executed Administrative Settlement Agreement and Order on Consent for Remedial Investigation and Feasibility Study, CERCLA Docket No. 02-2010-2020, and attachments regarding the above matter.

Thank you for your courtesies in this matter.

Very truly yours,

Frank X. Cardiello
Assistant Regional Counsel
USEPA Region 2



R2-0004689

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 2

IN THE MATTER OF:

Ringwood Mines/Landfill Superfund Site
Passaic County, New Jersey,

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION / FEASIBILITY STUDY

U.S. EPA Region 2
CERCLA Docket No. 02-2010-2020

Proceeding Under Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9607 and 9622.

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APPENDIX C: LIST OF RESPONDENTS
SCHEDULE A: DESCRIPTION OF 2005 WORK




R2-0004691

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION / FEASIBILITY STUDY

## I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent ("Settlement Agreement") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and the Ford Motor Company and the Borough of Ringwood (jointly, "Respondents"). The Settlement Agreement concerns the preparation and performance of a remedial investigation and feasibility study ("RI/FS") for four areas of concern (ACs) at the Ringwood Mines/Landfill Superfund Site located in the Borough of Ringwood, Passaic County, New Jersey ("Site"): the Peters Mine Pit Area, the Cannon Mine Pit Area, the O'Connor Disposal Area and Site-related groundwater contamination, and the reimbursement of Future Response Costs incurred by EPA in connection with the performance of RI/FS activities for these four ACs at the Site.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9607 and 9622 ("CERCLA"). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (Jan. 29, 1987), and further delegated to Regional Administrators on May 11, 1994, by EPA Delegation Nos. 14-14-C and 14-14-D. This authority was further delegated on November 23, 2004, by the Regional Administrator of EPA Region 2 to the Director of the Emergency and Remedial Response Division by EPA Region 2 Delegation Nos. 14-14-C and 14-14-D.

3. In accordance with Sections 104(b)(2) and 122(j)(1) of CERCLA, 42 U.S.C. §§ 9604(b)(2) and 9622(j)(1), EPA notified Federal and New Jersey natural resource trustees on February 24, 2005 of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal and/or State trusteeship.

4. EPA and Respondents recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondents in accordance with this Settlement Agreement do not constitute an admission of any liability. Respondents do not admit, and retain the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of EPA's findings of fact, conclusions of law and determinations in Sections V and VI of this Settlement Agreement. Respondents agree to comply with and be bound by the terms of this Settlement Agreement and further agree that it will not contest the basis or validity of this Settlement Agreement or its terms.

## II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon EPA and upon Respondents and their successors and assigns. Any change in ownership or corporate



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status of Respondents including, but not limited to, any transfer of assets or real or personal property shall not alter Respondents' responsibilities under this Settlement Agreement.

6. Respondents shall ensure that their contractors, subcontractors, and representatives receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Respondents shall be responsible for any noncompliance with this Settlement Agreement.

7. The undersigned representatives of Respondents certify that he or she is fully authorized to enter into the terms and conditions of this Settlement Agreement and to execute and legally bind that Respondent to this Settlement Agreement.

## III. STATEMENT OF PURPOSE

8. In entering into this Settlement Agreement, the objectives of EPA and Respondents are: (a) to determine the nature and extent of contamination and any threat to public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Peters Mine Area, the Cannon Mine Pit Area, the O'Connor Disposal Area and Site-related groundwater contamination, by conducting Remedial Investigations as more specifically set forth in the Statement of Work ("SOW") attached as Appendix A to this Settlement Agreement; (b) to identify and evaluate remedial alternatives to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the following discrete ACs: the Peter's Mine Area AC, the O'Connor Disposal Area AC, the Cannon Mine Pit Area AC and the Site-related groundwater contamination AC, by conducting Feasibility Studies as more specifically set forth in the SOW in Appendix A to this Settlement Agreement; and (c) to recover response and oversight costs incurred by EPA with respect to this Settlement Agreement.

9. Respondent Ford is currently performing supplemental investigations pursuant to the Administrative Order on Consent and Settlement Agreement for Investigative Work entered into by Ford and EPA in September 2005 (the "2005 AOC"). Certain work that Ford was required to do pursuant to the 2005 AOC has not yet been done (the "2005 Work"). The Respondents are jointly and severally liable for and shall fully finance and perform all of the 2005 Work under this Settlement Agreement. The 2005 Work includes, but is not limited to, payment of EPA response costs which Ford was required to pay to EPA under the 2005 AOC, but which Ford has not yet paid to EPA and completion of the activities listed in Schedule A and as more fully described in the SOW. The Work conducted under this Settlement Agreement is subject to approval by EPA and shall provide all appropriate and necessary information to evaluate alternatives to the extent necessary to select a remedy that will be consistent with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 ("NCP"). Respondents shall conduct all Work under this Settlement Agreement in compliance with CERCLA, the NCP, and all applicable EPA guidance, policies, and procedures.



R2-0004693

## IV. DEFINITIONS

10. Unless otherwise expressly provided herein, terms used in this Settlement Agreement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "2005 AOC" shall mean the Administrative Order on Consent and Settlement Agreement for Investigative Work ("2005 AOC") under Sections 104, 107 and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607 and 9622, entered into between EPA and Ford in September 2005.

b. "Borough" shall mean the Borough of Ringwood, a municipality established under the laws of the State of New Jersey in Passaic County, New Jersey.

c. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq.*

d. "Cannon Mine Pit Area AC" shall mean that area of concern which is located approximately 1,500 feet west of Peters Mine Road, 50 feet south of Van Dunk Lane, and 400 feet north of Horse Shoe Bend Road, as depicted generally on the map attached as Appendix B to this Settlement Agreement.

e. "Day" shall mean a calendar day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next working day.

f. "Effective Date" shall be the effective date of this Settlement Agreement as provided in Section XXIX.

g. "Engineering Controls" shall mean constructed containment barriers or systems that control one of the following: downward migration, infiltration or seepage of surface runoff or rain; or natural leaching migration of contaminants through the subsurface over time. Examples include caps, engineered bottom barriers, immobilization processes, and vertical barriers.

h. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

i. "Ford" shall mean Ford Motor Company.

j. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs after the Effective Date in reviewing or developing plans, reports and other deliverables pursuant to this



R2-0004694

Settlement Agreement, in overseeing implementation of the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, Agency for Toxic Substances and Disease Registry ("ATSDR") costs, and the costs incurred pursuant to Paragraph 65 (including, but not limited to, costs and attorneys fees and any monies paid to secure access, including, but not limited to, the amount of just compensation) and Paragraph 53 (emergency response). The term "Future Response Costs" shall also include Interim Costs.

k. "Institutional controls" shall mean non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use. Examples of institutional controls include easements and covenants, zoning restrictions, special building permit requirements, and well drilling prohibitions.

l. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

m. "Interim Costs" shall mean all costs, including, but not limited to direct and indirect costs, the United States incurred relating to the Site prior to the effective date of this Settlement Agreement which Ford has agreed to pay in any administrative settlement with EPA which Ford entered prior to the Effective Date., including all costs identified as "Future Response Costs" in the Administrative Order on Consent and Settlement Agreement for Investigative Work, CERCLA Docket No. 02-2005-2013 ("the 2005 AOC") which Ford agreed to pay to, but which have not yet been paid to the United States as required by that 2005 AOC.

n. "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

o. "NJDEP" shall mean the New Jersey Department of Environmental Protection and any successors.

p. "O'Connor Disposal Area AC" shall mean that area of concern east of Peters Mine Road and approximately 300 feet southeast of the Peters Mine Pit Area, as depicted generally on the map attached as Appendix B to this Settlement Agreement.

q. "Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral.



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r. "Parties" shall mean EPA and Respondents.

s. "Peter's Mine Area AC" shall mean that area of concern immediately northwest of the northern end of Peters Mine Road and located at the head of a small valley drained by Park Brook, as depicted generally on the map attached as Appendix B to this Settlement Agreement.

t. "RCRA" shall mean the Resource Conservation and Recovery Act, also known as the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.*

u. "Respondents" shall mean those parties identified in Exhibit C.

v. "Ringwood Mines/Landfill Special Account" shall mean the special account established for the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3).

w. "Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral.

x. "Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent, the SOW, all appendices attached hereto (listed in Section XXVII) and all documents incorporated by reference into this document including without limitation EPA-approved submissions. EPA-approved submissions (other than progress reports) are incorporated into and become a part of the Settlement Agreement upon approval by EPA. In the event of conflict between this Settlement Agreement and any appendix or other incorporated documents, this Settlement Agreement shall control.

y. "Site" shall mean the Ringwood Mines/Landfill Superfund Site as depicted generally on Appendix B.

z. "State" shall mean the State of New Jersey.

aa. "Statement of Work" or "SOW" shall mean the Statement of Work attached as Appendix A to this Settlement Agreement, which requires, among other tasks, the development of an RI/FS for the Peter's Mine Area AC, an RI/FS for the O'Connor Disposal Area AC, an RI/FS for the Cannon Pit Area AC and an RI/FS for the Site-related groundwater contamination AC and completion of the 2005 Work. The Statement of Work is incorporated into and is an enforceable part of this Settlement Agreement, as are any modifications made thereto in accordance with this Settlement Agreement.

bb. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); (3) any "solid waste"



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under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27) and (4) any mixture containing any of the constituents noted in (1), (2) or (3), above.

cc. "Work" shall mean all activities Respondents are required to perform under this Settlement Agreement, including the 2005 Work, except those activities required by Section XIV (Retention of Records).

dd. "2005 Work" shall mean the work remaining to be done pursuant to the requirements of the 2005 AOC. The term "2005 Work" includes, but is not limited to the payment of unreimbursed EPA response costs which Ford was required to pay to EPA pursuant to the 2005 AOC, and all activities listed in Schedule A attached.

## V. EPA'S FINDINGS OF FACT

11. The Ringwood Mines/Landfill Site is located in the Borough of Ringwood in the northeast corner of Passaic County, New Jersey. The Site is approximately 455 acres in size and includes approximately 50 residential properties, an inactive municipal landfill, abandoned mine shafts, filled mine pits, an industrial refuse disposal area, small surficial dumps, a municipal recycling center and a rugged, forested area within the Ringwood State Park. The Site lies within the watershed of the Wanaque Reservoir, which supplies drinking water to much of northern New Jersey. The residents in the immediate area of the Site receive their water from municipal wells which are unaffected by the Site.

12. In 1965, the Ringwood Realty Corporation ("RRC"), a subsidiary of the Ford Motor Company, purchased over 800 acres within the Borough of Ringwood, including the acreage which is now within the Site. Shortly thereafter, RRC removed substantial numbers of junked cars and other Waste Materials from the Site, closed numerous mine shafts and filled some mine pits at the Site in response to a request by the Borough.

13. In late 1967, RRC entered into an agreement with the O'Connor Trucking and Haulage Corporation ("O'Connor") to dispose of Waste Materials from Ford's Mahwah automobile assembly plant ("Ford Mahwah"). From late 1967 to mid-1971, RRC authorized O'Connor to dispose of Waste Material from Ford Mahwah at the Site. Contracts between RRC and O'Connor called for the disposal of cardboard and other packing materials from Ford Mahwah, scrap car parts, paint sludge and scrap and dented drums containing "obsolete hardened production sealing and insulating stock of non-inflammable nature." Ford claims that State and local officials approved O'Connor's disposal activities at the Site.

14. Beginning in 1969, RRC began selling or donating portions of its acreage. In 1970, RRC transferred 289.9 acres of the Site to the Ringwood Solid Waste Management Authority ("RSWMA"), an entity apparently created by the Borough, which allowed O'Connor to continue to dispose of Waste Material at the Site and which subsequently operated a municipal landfill at the Site. From November 1970 through approximately



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1976, the RSWMA allowed disposal of and/or disposed of municipal waste from the Borough and the Town of West Milford at the Site.

15. In 1970, RRC sold 209.9 acres to the Public Service Electric and Gas Company for a transmission line right of way and sold 140.623 acres to High Point Homes, Inc. In 1973, NJDEP accepted the donation of 109.249 acres of the Site and added the area to the Ringwood State Park. . In that same year, Housing Operation with Training Opportunity ("HOW TO") a New Jersey not for profit corporation, accepted the donation of 35.475 acres. Ford claims that as of December 21, 1973, Ford no longer owned any portion of the Site.

16. Prior to and since RRC's ownership, persons who are not connected to Respondents have conducted unpermitted and unauthorized disposal of Waste Materials unrelated to Ford's Mahwah plant at certain portions of the Site.

17. In 1982, NJDEP sampled groundwater and surface water at the Site and found volatile organic compounds as well as lead and arsenic. In 1983, EPA added the Site to the National Priorities List ("NPL") pursuant to CERCLA Section 105, 42 U.S.C. § 9605.

18. In March 1984, EPA and Ford entered into an Administrative Order on Consent ("AO 1") under Section 3013 of RCRA, 42 U.S.C. § 6934, by which Ford agreed to conduct investigations at the Site. Ford complied with AO 1. From 1984 through 1987, Ford's contractor conducted a remedial investigation ("RI") for the Site. During this RI, Ford's contractor identified four sludge disposal areas and estimated the volume of paint sludge at the Site to be 6,300 cubic yards. The hazardous substances detected in the waste included lead, arsenic, chromium, naphthalene, toluene, ethylbenzene, xylene, trichloroethene, and low levels of PCBs.

19. In June 1987, EPA issued a Unilateral Administrative Order to Ford ("AO 2"), pursuant to CERCLA, 42 U.S.C. § 9601 et seq., directing Ford to perform a FS for the Site. EPA also required Ford to conduct an endangerment assessment to evaluate any potential risk to public health and the environment from hazardous substances present at the Site. At the same time, EPA issued a Unilateral Administrative Order to Ford ("AO 3") under Section 106 of CERCLA, 42 U.S.C. § 9606, directing Ford to remove paint sludge found at the Site and dispose of the paint sludge and associated soil at an EPA-approved off-site disposal facility.

20. Ford complied with AO 2 and prepared an FS and a Risk Assessment for the Site. Ford also complied with AO 3 and removed approximately 7,000 cubic yards of paint sludge and associated soil from the Site.

21. During the RI, Ford's contractor also sampled the groundwater, which is not currently used as drinking water at the Site. Elevated levels of heavy metals were found sporadically in limited areas of groundwater. The risk assessment indicated that if groundwater were to be used as drinking water, lifetime ingestion of arsenic, lead and thallium from the groundwater posed unacceptable risks to persons at the Site. The risk



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assessment also indicated that exposure to soils and surface water at the Site did not pose an unacceptable risk to public health and the environment.

22. Following the completion of the RI and FS, EPA presented the results of those studies to the community, published the plan for its preferred remedial alternative, and announced a public comment period. EPA also held a public meeting on August 17, 1988, at which it discussed its proposed plan for the Site. EPA issued a Record of Decision ("ROD") for the Site on September 29, 1988. The ROD indicated that the known areas of paint sludge had been removed and that no contaminants were entering the Wanaque Reservoir from the Site. EPA selected long term monitoring of the groundwater and surface water as the appropriate remedy for the Site. EPA also required additional confirmatory sampling of the area from which most of the paint sludge had been removed.

23. In 1988, EPA formally identified Ford Motor Company as a potentially responsible party at the Site under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

24. In 1989, Ford and EPA entered into an Administrative Order on Consent ("1989 AOC") under Sections 104 and 122 of CERCLA, 42 U.S.C. § 9604 and 9622, respectively, in which Ford agreed to conduct the long term monitoring program selected in the ROD. Pursuant to the 1989 AOC, Ford agreed to conduct a chemical analysis of soil, sediment and mine tailings to determine the background concentrations of metals in the area; to reevaluate the hydrogeologic data for the Site; and to analyze surface water and groundwater in monitoring and potable wells at and near the Site.

25. In compliance with its obligations under the 1989 AOC, Ford conducted the investigations and sampling requirements described above. These investigations indicated that Site activities have had minimal impacts on soil and sediment quality. Furthermore, surface water quality was found to comply with regulatory criteria established for the protection of surface water bodies. Finally, the results of the required groundwater sampling indicated that contaminant levels had been reduced since the removal of waste from the Site, and those contaminants detected only appeared sporadically.

26. In 1990, EPA notified the Borough that it was a potentially responsible party for the Site under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a). The Borough is the current owner of a portion of the Site and acquired the property with knowledge of the disposal of waste at the Site. The Borough also owned and operated a portion of the Site during a period when Waste Materials from Ford's Mahwah facility were disposed of at the Site. The Borough also owned and operated a municipal landfill at the Site.

27. In 1993, Ford and the Borough entered into a Consent Decree with EPA pursuant to which they agreed to pay certain past response costs EPA had incurred relating to the Site.

28. In 1993, EPA published a Notice of Intent to Delete the Site from the NPL. The notice was published in the Federal Register and in a local newspaper. In this notice,



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EPA established a public comment period and asked for comments on its proposal to delist the Site. NJDEP concurred with this delisting proposal. EPA received no objections from the Borough or other members of the public to delisting the Site and the Site was removed from the NPL in November 1994.

29. Since Ford completed its removal work in 1989, it has returned to the Site at the request of residents and/or Borough officials to voluntarily remove additional paint sludge and drums. In 1990, Ford removed 51 drum remnants and 727 tons of additional paint sludge and soil from the O'Connor Disposal Area. In 1995, Ford removed 5 cubic yards of paint sludge from a residential property. In 1998, Ford removed 30 cubic yards of paint sludge from the hillside adjacent to the O'Connor Disposal Area. From 2005 through 2008, Ford removed an additional 35,000 tons of paint sludge and associated soil, and drum remnants, from twelve disposal areas at the site.

30. In September 2005, EPA and Ford entered into an Administrative Order on Consent and Settlement Agreement for Investigative Work ("2005 AOC") under Sections 104, 107 and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607 and 9622, in which, among other activities, Ford agreed to undertake a thorough reinvestigation of the Site because significant amounts of additional Waste Materials containing hazardous substances had been found at the Site ("2005 AOC Work"). Some waste materials were identical to those identified in Paragraph 18 which were found during the original RI and during earlier removal actions.

31. After participating in preliminary negotiations with EPA, the Borough declined to enter into the 2005 AOC. As a result, in September 2005, EPA issued a Unilateral Administrative Order ("UAO") to the Borough under Section 106 of CERCLA, 42 U.S.C. § 9606(a). The UAO obligated the Borough to either perform the 2005 AOC Work with Ford or, in lieu of performance, assume financial responsibility with Ford for the 2005 AOC work. Ford has informed EPA that the Borough has not participated in the 2005 AOC work, nor has the Borough assumed financial responsibility for the 2005 AOC work.

## VI. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, EPA has determined that:

32. The Ringwood Mines/Landfill Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

33. The contaminants found at the Site, including lead, arsenic, chromium, naphthalene, toluene, ethylbenzene, xylene, trichloroethene, and PCBs, as identified in the Findings of Fact above, include "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

34. The conditions described in the Findings of Fact above constitute an actual and/or threatened "release" of a hazardous substance from a facility as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).



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35. Each Respondent is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

36. Each Respondent is a responsible party under one or more sub-sections of Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

37. The actions required by this Settlement Agreement are necessary to protect the public health, welfare or the environment, are in the public interest, 42 U.S.C. § 9622(a), are consistent with CERCLA and the NCP, 42 U.S.C. §§ 9604(a)(1), 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S.C. § 9622(a).

38. EPA has determined that Respondents are qualified to conduct the Work a within the meaning of Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and will carry out the Work properly and promptly, in accordance with Sections 104(a) and 122(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9622(a), if Respondents comply with the terms of this Settlement Agreement.

## VII. SETTLEMENT AGREEMENT AND ORDER

39. Based upon the foregoing Findings of Fact and Conclusions of Law and Determinations, it is hereby Ordered and Agreed that Respondents shall comply with all provisions of this Settlement Agreement, including, but not limited to, all appendices to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

## VIII. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATOR AND REMEDIAL PROJECT MANAGER

40. Selection of Contractors, Personnel. All Work performed under this Settlement Agreement shall be under the direction and supervision of qualified personnel. Within 30 days of the Effective Date of this Settlement Agreement, and before the Work outlined below begins, Respondents shall notify EPA in writing of the names, titles, and qualifications of the personnel, including contractors, subcontractors, consultants and laboratories to be used in carrying out such Work. With respect to any proposed contractor, Respondents shall demonstrate that the proposed contractor has a quality system which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995, or most recent version), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001 or subsequently issued guidance) or equivalent documentation as determined by EPA. The qualifications of the persons undertaking the Work for Respondents shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. This Settlement Agreement is contingent on Respondents' demonstration to EPA's satisfaction that Respondents are qualified to perform properly and promptly the



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actions set forth in this Settlement Agreement. If EPA disapproves in writing of any person's technical qualifications, Respondents shall notify EPA of the identity and qualifications of the replacements within 30 days of the written notice. If EPA subsequently disapproves of the replacement, EPA reserves the right to terminate this Settlement Agreement and to conduct a complete FS, and to seek reimbursement for costs and penalties from Respondents. During the course of the FS, Respondents shall notify EPA in writing of any changes or additions in the personnel used to carry out such Work, providing their names, titles, and qualifications. EPA shall have the same right to disapprove changes and additions to personnel as it has hereunder regarding the initial notification.

41. Within 7 days after the Effective Date, Respondents shall designate a Project Coordinator who shall be responsible for administration of all actions by Respondents required by this Settlement Agreement and shall submit to EPA the designated Project Coordinator's name, address, telephone number, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site Work. EPA retains the right to disapprove of the designated Project Coordinator. If EPA disapproves of the designated Project Coordinator, Respondents shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number and qualifications within 30 days following EPA's disapproval. Respondents shall have the right to change their Project Coordinator, subject to EPA's right to disapprove. Respondents shall notify EPA 7 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notification. Receipt by Respondents' Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by Respondents.

42. EPA has designated Joseph Gowers, of the Emergency Response and Remedial Division, Region II, as its Remedial Project Manager ("RPM"). EPA will notify Respondents of a change of its designated RPM. Except as otherwise provided in this Settlement Agreement, Respondents shall direct all submissions required by this Settlement Agreement to the RPM.

43. EPA's RPM shall have the authority lawfully vested in a Remedial Project Manager by the NCP. In addition, EPA's RPM shall have the authority consistent with the NCP, to halt any Work required by this Settlement Agreement, and to take any necessary response action when s/he determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. The absence of the EPA RPM from the area under study pursuant to this Settlement Agreement shall not be cause for the stoppage or delay of Work.

44. EPA shall arrange for a qualified person to assist in its oversight and review of the performance of the RI/FS activities as required by Section 104(a) of CERCLA, 42 U.S.C. Section 9604(a). Such person shall have the authority to observe Work and make inquiries in the absence of EPA, but not to modify the RI/FS Work Plans.



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## IX. WORK TO BE PERFORMED

45. The Work to be performed under this Settlement Agreement consists of performing the remedial investigations and feasibility studies for the four ACs described in Paragraph 8, and completing the 2005 Work , as specified in the SOW. The Parties to this Settlement Agreement understand that Respondent Ford Motor Company is currently performing a Supplemental Investigation of the Site pursuant to the 2005 AOC. The Parties further understand that as a result of the Supplemental Investigation (hereinafter referred to as "Remedial Investigation."), information, data, plans and reports exist which could be used to satisfy the Work required by this Settlement Agreement. This Settlement Agreement does not require Respondents to halt currently ongoing work at the Site, but may obligate Respondents to modify or supplement work previously done at the Site to meet the requirements of this Settlement Agreement. It is the intent of the Parties to this Settlement Agreement that work done and data generated by Respondent Ford Motor Company prior to the Effective Date of this Settlement Agreement be retained and utilized to the maximum extent feasible in meeting the requirements of this Settlement Agreement and the attached SOW.

46. Activities and Deliverables. Respondents shall conduct activities and submit plans, reports or other deliverables as provided by the attached SOW, which is incorporated by reference. All Work shall be conducted in full accordance with the provisions of the Settlement Agreement, the SOW, CERCLA, the NCP and EPA guidance, including, but not limited to, the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive #9355.3-01, October 1988 or subsequently issued guidance), Guidance for Data Usability in Risk Assessment" (OSWER Directive #9285.7-05, October 1990 or subsequently issued guidance), and guidance referenced therein, and guidances referenced in the SOW, as may be amended or modified by EPA. All Work performed under the SOW, and pursuant to this Agreement shall conform to EPA's Region 2 "Clean and Green Policy" which may be found at http://www.epa.gov/region02/superfund/green remediation/policy.html. The general activities that Respondents are required to perform are identified below. The tasks that Respondents must perform are described more fully in the SOW and guidances. All Work performed under this Settlement Agreement shall be in accordance with the schedules herein or established in the SOW. In accordance with the schedules established in this Settlement Agreement or in the SOW, Respondents shall submit to EPA 4 copies of all plans, reports and other deliverables required under this Settlement Agreement and the SOW. Respondents shall also provide EPA with on electronic copy of all plans, reports and other deliverables required under this Settlement Agreement and the SOW, and 4 extra copies of all diagrams, figures and/or drawings incorporated into these deliverables. At the same time, Respondents shall submit to NJDEP 3 copies of all plans, reports and other deliverables required under this Settlement Agreement and the SOW. All plans, reports and other deliverables will be reviewed and approved by EPA pursuant to Section X (EPA Approval of Plans and Other Submissions). Upon EPA's request, Respondents shall also provide copies of draft final plans, reports or other deliverables to Community Advisory Groups, any other entities as directed by EPA.



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a. Remedial Investigation Report. Respondent Ford Motor Company has submitted Technical Memoranda for the Peters Mine Pit Area, the Cannon Mine Pit Area and the O'Connor Disposal Area for EPA review and approval, pursuant to the 2005 AOC. Within 30 days of EPA's approval of the Technical Memorandum for each of the ACs addressed by this Settlement Agreement, or within 30 days of the Effective Date of this Settlement Agreement, whichever is later, Respondents shall submit draft RI Reports to EPA for each AC, in accordance with the SOW, this Settlement Agreement, and EPA guidance, including, without limitation, EPA's Region 2 RI Report Guidelines. Within 30 days of receiving EPA's comments on a draft RI Report, Respondents shall submit a final RI Report for EPA review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions).

b. Community Relations Plan. EPA has prepared a community relations plan in accordance with EPA guidance and the NCP. At EPA's request, Respondents shall provide information supporting EPA's community relations plan and shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or concerning the Site.

c. Baseline Human Health Risk Assessment. Respondents shall submit a Pathway Analysis Report ("PARs") for each AC to EPA within sixty (60) days of Respondents' receipt of the last set of validated data for that AC, or within 30 days of the date of this Settlement Agreement, whichever is later. The PARs must meet the requirements for preparation of PARs specified in the SOW. The PARs will also be subject to the review, modification and approval requirements set forth in the SOW. Within sixty (60) days of EPA approval of a PAR for an AC, Respondents shall submit a draft Baseline Human Health Risk Assessment for that AC for EPA. Respondents will perform the Baseline Human Risk Assessments in accordance with the requirements specified in the 2005 AOC and applicable EPA guidance, including but not limited to the "Interim Final Risk Assessment Guidance for Superfund, Volume 1- Human Health Evaluation Manual (Part A)," (RAGS, EPA-540-1-89-002, OSWER Directive 9285.7-01D, January 1998.

d. Baseline Ecological Risk Assessment. Respondents shall submit a Screening Level Ecological Risk Assessment ("SLERA") for each AC to EPA within sixty (60) days of Respondents' receipt of the last set of validated data for that AC, or within thirty (30) days of the date of this Settlement Agreement, whichever is later. SLERAs shall meet the requirements for preparation in the SOW and shall be prepared in accordance with applicable EPA guidance, including but not limited to the "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments" (ERAS, EPA-540-R-97-006, OSWER Directive 9285.7-25, June 1997) or subsequently issued guidance, and shall be submitted for EPA review and approval. The SLERAs will also be subject to the review, modification and approval requirements set forth in the SOW. EPA will notify Respondents in writing if EPA determines that a full Baseline Ecological Risk Assessment is required for an AC. If so notified by EPA, Respondents shall perform



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a full Baseline Ecological Risk Assessment in accordance with the SOW, this Settlement Agreement and applicable EPA guidance.

e. Reuse Assessment. If EPA, in its sole discretion, determines that a Reuse Assessment is necessary, Respondents will perform the Reuse Assessment in accordance with the SOW, this Settlement Agreement and applicable EPA guidance, including, but not limited to the "Reuse Assessments: A Tool To Implement The Superfund Land Use Directive," OSWER Directive 9355.7-06P, June 4, 2001 or subsequently issued guidance. The Reuse Assessment should provide sufficient information to develop realistic assumptions of the reasonably anticipated future uses for those areas at the Site which EPA instructs Respondents to address in the Reuse Assessment.

f. Feasibility Study Work Plan. Within 30 days of the Effective Date of this Settlement Agreement, or EPA's approval of the Technical Memorandum for each of the ACs addressed by this Settlement Agreement, whichever is later, Respondents shall submit a detailed Work Plan(s) for the completion of Feasibility Studies for the ACs at the Site. Respondents may submit FS Work Plan(s) that address one or more of the ACs addressed by this Settlement Agreement. The FS Work Plan(s) shall be prepared in accordance with the SOW, this Settlement Agreement and applicable EPA guidance. The FS Work Plan(s) shall be submitted for EPA review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions), and upon approval by EPA, the FS Work Plan(s) shall be incorporated into and become enforceable under this Settlement Agreement. Each Feasibility Study shall determine and evaluate (based of treatability testing, where appropriate) alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy the release or threatened release of hazardous substances, pollutants, or contaminants at or from the AC. The Alternatives evaluated must include, but shall not be limited to the range of alternatives described in the NCP, and shall include remedial actions that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In evaluating the alternatives, Respondents shall address the factors required to be taken into account by Section 121 of CERCLA 42 U.S.C. § 9621, and Section 300.430(e) of the NCP, 40 C.F.R. § 300.430(e).

g. Identification of Candidate Technologies Memorandum. Within 30 days of EPA's approval of the FS Work Plan(s), Respondents shall submit for EPA review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions), an Identification of Candidate Technologies Memorandum in accordance with the SOW and applicable EPA guidance.

h. Development and Screening of Alternatives. Respondents shall develop and evaluate a range of appropriate waste management options that at a minimum ensure protection of human health and the environment. The waste management options developed by Respondents will be evaluated through the development and screening of alternatives in accordance with the SOW, applicable EPA guidance, and the EPA-approved FS Work Plan(s). Within 30 days of EPA's approval of the Baseline Risk



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Assessment for an AC, Respondents, in accordance with the SOW, this Settlement Agreement and applicable EPA guidance, shall:

(1) Make a presentation to EPA identifying the remedial action objectives and summarizing the development and preliminary screening of remedial alternatives; and

(2) Submit for EPA review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions), a Development and Screening of Remedial Alternatives Technical Memorandum. The memorandum shall include, among other things, remedial action objectives for Engineering Controls as well as for Institutional Controls.

i. Detailed Analysis of Alternatives. Respondents shall conduct a detailed analysis of remedial alternatives, as described in the SOW, applicable EPA guidance and the applicable FS Work Plan. Respondents shall evaluate each remedial alternative against the following nine criteria: (1) overall protection of human health and the environment; (2) compliance with legally applicable or relevant and appropriate requirements; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) State acceptance; and (9) community acceptance.

j. Comparative Analysis. Respondents shall perform a comparative analysis of the remedial alternatives identified for each of the ACs addressed by this Settlement Agreement. The comparative analysis shall be performed in accordance with the SOW and applicable EPA guidance. Respondents shall submit a technical memorandum summarizing the results of the comparative analysis to EPA in accordance with the schedule and/or deadline in the EPA-approved FS Work Plan.

k. Draft Feasibility Study Report. Respondents shall submit to EPA draft and final Feasibility Study Reports for each of the ACs addressed by this Settlement Agreement. Within 45 days after the presentation to EPA described in Paragraph 46(h)(1), Respondents shall submit for EPA review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions), a draft FS Report for the applicable ACs in accordance with the SOW, the NCP, applicable EPA guidance, and the EPA-approved FS Work Plan. Within twenty-one (21) days of submitting the draft FS report for each AC, the Respondents shall make a presentation to EPA and NJDEP which shall summarize the findings of the draft FS report and discuss EPA's preliminary comments and concerns associated with the draft FS report. Within twenty-one (21) days of receiving EPA's comments, if any, on the draft FS report, Respondents shall prepare a revised FS that is responsive to the directions in all EPA comments. Respondents shall then submit the revised FS report to EPA for approval pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Settlement Agreement, unless the Respondents are directed otherwise by EPA in writing. The draft FFS Report must reflect the findings in the EPA-approved Baseline Risk Assessments. Respondents shall refer to Table 6-5 of the RI/FS Guidance for report content and format. The draft FS Report shall include: (a) a



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summary of feasibility study objectives; (b) a summary of remedial action objectives; (c) a discussion of general response actions; (d) an identification and screening of remedial technologies; (e) a description of remedial alternatives; (f) a detailed analysis of remedial alternatives; and (g) a summary and conclusions. Within fourteen (14) days of submitting the draft FS report for each AC, Respondents shall make a presentation to EPA and NJDEP which shall summarize the findings of the draft FS report and discuss EPA's preliminary comments and concerns associated with the draft FS report.

47. The FS Report, as amended, and the administrative record shall provide the basis for the proposed plan under CERCLA Sections 113(k) and 117(a) by EPA, and shall document the development and analysis of remedial alternatives.

48. Upon receipt of the draft FS Report, EPA will evaluate, as necessary, the estimates of the risk to the public and environment that are expected to remain after a particular remedial alternative has been completed and will evaluate the durability, reliability and effectiveness of any proposed Institutional and/or Engineering Controls.

49. Modification of the FS Work Plan.

a. If at any time during the FS process, Respondents identify a need for additional data, Respondents shall submit a memorandum documenting the need for additional data to the EPA RPM within 14 days of identification. EPA in its discretion will determine whether the additional data will be collected by Respondents and whether it will be incorporated into reports and deliverables.

b. In the event of unanticipated or changed circumstances at the Site, Respondents shall notify the EPA RPM by telephone within 24 hours of discovery of the unanticipated or changed circumstances. In addition to the authorities in the NCP, in the event that EPA determines that the immediate threat or the unanticipated or changed circumstances warrant changes in the FS Work Plan, EPA shall modify or amend the FS Work Plan in writing accordingly. Respondents shall perform the FS Work Plan as modified or amended

c. EPA may determine that in addition to tasks defined in the initially approved FS Work Plan, other additional Work may be necessary to accomplish the objectives of the FS. Respondents agree to perform these response actions in addition to those required by the initially approved FS Work Plan, including any approved modifications, if EPA determines that such actions are necessary for a complete FS.

d. Respondents shall confirm their willingness to perform the additional Work in writing to EPA within 7 days of receipt of the EPA request. If Respondents object to any modification determined by EPA to be necessary pursuant to this Paragraph, Respondents may seek dispute resolution pursuant to Section XV (Dispute Resolution). The SOW and/or FS Work Plan shall be modified in accordance with the final resolution of the dispute.



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e. Respondents shall complete the additional Work according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the FS Work Plan or written FS Work Plan supplement. EPA reserves the right to conduct the Work itself at any point, to seek reimbursement from Respondents, and/or to seek any other appropriate relief.

f. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions at the Site.

50. Off-Site Shipment of Waste Material. Respondents shall, prior to any off-site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to EPA's RPM. However, this notification requirement shall not apply to any off-site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

a. Respondents shall include in the written notification the following information: (1) the name and location of the facility to which the Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. Respondents shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by Respondents following the award of the contract for the feasibility study. Respondents shall provide the information required by Subparagraph 50.a and 50.c as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

c. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-site location, Respondents shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondents shall only send hazardous substances, pollutants, or contaminants from the Site to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

51. Meetings. Respondents shall make presentations at, and participate in, meetings at the request of EPA during the initiation, performance, and completion of the Work. In addition to discussion of the technical aspects of the Work, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion.

52. Progress Reports. In addition to the deliverables set forth in this Settlement Agreement, Respondents shall provide to EPA monthly progress reports by the 10th day



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of the following month. At a minimum, with respect to the preceding month, these progress reports shall (1) describe the actions which have been taken to comply with this Settlement Agreement during that month, (2) include all descriptions of, and validated data from, sampling and tests and all other data received by Respondents, (3) describe Work planned for the next two months with schedules relating such Work to the overall project schedule for the completion of the FFS, and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

53. Emergency Response and Notification of Releases.

a. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondents shall immediately take all appropriate action. Respondents shall take these actions in accordance with all applicable provisions of this Settlement Agreement, as well as, the Health and Safety Plan approved for the Site, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondents shall also immediately notify the EPA RPM or, in the event of his/her unavailability, the Chief of the New York Remediation Branch at (212) 637-4288, and the 24-hour EPA Superfund/Oil Emergency Hotline at (732) 548-8730 of the incident or Site conditions. In the event that Respondents fail to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Respondents shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XVIII (Payment of Response Costs).

b. In addition, in the event of any release of a hazardous substance from the Site, Respondents shall immediately notify the EPA RPM or the 24-hour EPA Superfund/Oil Emergency Hotline at (732) 548-8730 and the National Response Center at (800) 424-8802. Respondents shall submit a written report to EPA within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

## X. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

54. After review of any plan, report or other item that is required to be submitted for approval pursuant to this Settlement Agreement, EPA shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Respondents modify the submission; or (e) any combination of the above. However, EPA shall not modify a submission without first providing



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Respondents at least one notice of deficiency and an opportunity to cure within 21 days, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved due to material defects.

55. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Subparagraph 54 (a), (b), (c) or (e), Respondents shall proceed to take any action required by the plan, report or other item, as approved or modified by EPA subject only to their right to invoke the Dispute Resolution procedures set forth in Section XV (Dispute Resolution) with respect to the modifications or conditions made by EPA. Following EPA approval or modification of a submittal or portion thereof, Respondents shall not thereafter alter or amend such submittal or portion thereof unless directed by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Subparagraph 54(c) and the submission had a material defect, EPA retains the right to seek stipulated penalties, as provided in Section XVI (Stipulated Penalties).

56. Resubmission of Plans.

a. Upon receipt of a written notice of disapproval, Respondents shall, within 21 days or such longer time as specified by EPA in such written notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XVI, shall accrue during the 21-day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 57 and 58.

b. Notwithstanding the receipt of a written notice of disapproval, Respondents shall proceed to take any action required by any non-deficient portion of the submission, unless otherwise directed by EPA. Implementation of any non-deficient portion of a submission shall not relieve Respondents of any liability for stipulated penalties under Section XVI (Stipulated Penalties).

c. Respondents shall not proceed further with any subsequent activities or tasks until receiving EPA approval or modification of the FS Work Plan and the draft FS report. While awaiting EPA approval or modification of these deliverables, Respondents shall proceed with all other tasks and activities which may be conducted independently of these deliverables, in accordance with the schedule set forth in this Settlement Agreement.

d. For all remaining deliverables not enumerated above in subparagraph 56.c., Respondents shall proceed will all subsequent tasks, activities and deliverables without awaiting EPA approval on the submitted deliverable. EPA reserves the right to stop Respondents from proceeding further, either temporarily or permanently, on any task, activity or deliverable at any point during the FS.

57. If EPA disapproves a resubmitted plan, report or other item, or portion thereof, EPA may again direct Respondents to correct the deficiencies. EPA shall also retain the



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right to modify or develop the plan, report or other item. Respondents shall implement any such plan, report, or item as corrected, modified or developed by EPA, subject only to their right to invoke the procedures set forth in Section XV (Dispute Resolution).

58. If upon resubmission, a plan, report, or item is disapproved or modified by EPA due to a material defect, Respondents shall be deemed to have failed to submit such plan, report, or item timely and adequately unless Respondents invoke the dispute resolution procedures in accordance with Section XV (Dispute Resolution) and EPA's action is revoked or substantially modified pursuant to a Dispute Resolution decision issued by EPA or superseded by an agreement reached pursuant to that Section. The provisions of Section XV (Dispute Resolution) and Section XVI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is not otherwise revoked, substantially modified or superseded as a result of a decision or agreement reached pursuant to the Dispute Resolution process set forth in Section XV, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XVI.

59. In the event that EPA takes over some of the tasks, but not the preparation of the FS report, Respondents shall incorporate and integrate information supplied by EPA into the FS report.

60. All plans, reports, and other items submitted to EPA under this Settlement Agreement shall, upon approval or modification by EPA, be incorporated into and enforceable under this Settlement Agreement. In the event EPA approves or modifies a portion of a plan, report, or other item submitted to EPA under this Settlement Agreement, the approved or modified portion shall be incorporated into and enforceable under this Settlement Agreement.

61. Neither failure of EPA to expressly approve or disapprove of Respondents' submissions within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Whether or not EPA gives express approval for Respondents' deliverables, Respondents are responsible for preparing deliverables acceptable to EPA.

## XI. ACCESS TO INFORMATION

62. Access to Information.

a. Respondents shall provide to EPA, upon request, copies of all documents and information within its possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondents shall also make available to EPA, for purposes of investigation, information



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gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

b. Respondents may assert business confidentiality claims covering part or all of the documents or information submitted to EPA under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when it is submitted to EPA, or if EPA has notified Respondents that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondents. Respondents shall segregate and clearly identify all documents or information submitted under this Settlement Agreement for which Respondents assert business confidentiality claims.

c. Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondents assert such a privilege in lieu of providing documents, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondents. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

d. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

63. In entering into this Settlement Agreement, Respondents waive any objections to any data gathered, generated, or evaluated by EPA, the State or Respondents in the performance or oversight of the Work that has been verified according to appropriate quality assurance/quality control ("QA/QC") procedures or any EPA-approved FS Work Plan or Sampling and Analysis Plan for the Site. If Respondents object to any other data relating to the FS, Respondents shall submit to EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to EPA within 15 days of the monthly progress report containing the data.

## XII. SITE ACCESS AND INSTITUTIONAL CONTROLS

64. If the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by Respondents, Respondents shall,



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commencing on the Effective Date, provide EPA, the State and all other Respondents with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement.

65. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondents, Respondents shall use its best efforts to obtain all necessary access agreements within 30 days after the Effective Date, or as otherwise specified in writing by the EPA RPM. Respondents shall immediately notify EPA if after using its best efforts it is unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access, unless the owner of the property in question has received written notification from EPA stating that EPA considers the owner to be a potentially responsible party for the Site under Section 107(a) of CERCLA. Respondents shall describe in writing its efforts to obtain access. If Respondents cannot obtain access agreements, EPA may either (i) obtain access for Respondents or assist Respondents in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate; (ii) perform those tasks or activities with EPA contractors; or (iii) terminate the Settlement Agreement. Respondents shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XVIII (Payment of Response Costs). If EPA performs those tasks or activities with EPA contractors and does not terminate the Settlement Agreement, Respondents shall perform all other activities not requiring access to that property, and shall reimburse EPA for all costs incurred in performing such activities. Respondents shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables.

66. Notwithstanding any provision of this Settlement Agreement Order, EPA and the State retain all of their access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

## XIII. COMPLIANCE WITH OTHER LAWS

67. Respondents shall comply with all applicable local, state and federal laws and regulations when performing the FS. No local, state, or federal permit shall be required for any portion of any action conducted entirely on-site, including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work is to be conducted off-site and requires a federal or state permit or approval, Respondents shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. This Settlement Agreement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

## XIV. RETENTION OF RECORDS

68. During the pendency of this Settlement Agreement and for a minimum of 10 years after commencement of construction of any remedial action, Respondents shall



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preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until 10 years after commencement of construction of any remedial action, Respondents shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

69. At the conclusion of this document retention period, Respondents shall notify EPA at least 90 days prior to the destruction of any such records or documents, and, upon request by EPA, Respondents shall deliver any such records or documents to EPA. Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondents assert such a privilege, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondents. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

70. Each Respondent hereby certifies that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

## XV. DISPUTE RESOLUTION

71. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

72. If Respondents object to any EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, Respondents shall notify EPA in writing of its objection(s) within 14 days of such action, unless the objection(s) has/have been resolved informally. EPA and Respondents shall have 60 days from EPA's receipt of Respondents' written objection(s) to resolve the dispute (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA. Such extension may be granted verbally but must be confirmed in writing.



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73. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, the Chief of the New Jersey Remediation Branch of the Emergency and Remedial Response Division of EPA Region II will issue a written decision. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Respondents' obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondents shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs, and regardless of whether Respondents agree with the decision.

## XVI. STIPULATED PENALTIES

74. Respondents shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 75 and 76 for failure to comply with any of the requirements of this Settlement Agreement specified below unless excused under Section XVII (Force Majeure). "Compliance" by Respondents shall include completion of the Work under this Settlement Agreement or any activities contemplated under any FS Work Plan or other plan approved under this Settlement Agreement identified below, in accordance with all applicable requirements of law, this Settlement Agreement, the SOW, and any plans or other documents approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

75. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per day for any noncompliance identified in Subparagraph 76(b):

| Penalty Per Violation Per Day | Period of Noncompliance |
|---|---|
| $ 500 | 1st through 14th day |
| $ 1,000 | 15th through 30th day |
| $ 2,000 | 31st day and beyond |

b. Compliance Milestones

Payment of Future Costs – 30 days after receipt of bill and SCORPIOS Report from EPA.

76. Stipulated Penalty Amounts - Reports.



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a. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports, with the exception of monthly reports:

| Penalty Per Violation Per Day | Period of Noncompliance |
|---|---|
| $1,000 | 1st through 14th day |
| $2,000 | 15th through 30th day |
| $3,000 | 31st day and beyond |

b. Compliance Milestones

Submission of Required Reports – as scheduled in the SOW

77. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a deficient submission under Section X (EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Respondents of any deficiency; and (2) with respect to a decision by the EPA Management Official designated in Paragraph 74 of Section XV (Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the EPA Management Official issues a final decision regarding such dispute, if Respondents' position in the dispute is upheld by the EPA Management Official issuing the final decision. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

78. Following EPA's determination that Respondents have failed to comply with a requirement of this Settlement Agreement, EPA may give Respondents written notification of the same and describe the noncompliance. EPA may send Respondents a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Respondents of a violation.

79. a. All penalties accruing under this Section shall be due and payable to EPA within 30 days of Respondents' receipt from EPA of a demand for payment of the penalties, unless Respondents invoke the dispute resolution procedures in accordance with Section XV (Dispute Resolution). All payments to EPA under this Section shall be made to EPA by Electronic Fund Transfer ("EFT") to the Federal Reserve Bank of New York. In order to effectuate an EFT payment, Respondents shall provide the following information to its bank:

(i) Amount of Payment: State Amount
(ii) Title of Federal Reserve Bank account to receive payment: EPA



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(iii) Address of Federal Reserve Bank: 33 Liberty Street, New York, New York 10045
(iv) Account Code for Federal reserve Bank Account receiving the payment: 68010727
(v) Federal Reserve Bank ABA Routing Number: 021030004
(vi) Name of Party making payment:
(vii) A message in Field Tag 4200 of the EFT that reads: "D 68010727 Environmental Protection Agency"
(viii) Site/Spill Identifier: 02-62
(ix) Swift Address: FRNYUS33

b. At the time of EFT payment, Respondents shall send notice that payment has been made to:

Ringwood Mines/Landfill Superfund Site Attorney
Office of Regional Counsel
U.S. EPA Region II
290 Broadway, 17th Floor
New York, NY 1007-1866

Carole Peterson, Chief
New Jersey Remedial Action Branch
U.S. EPA Region II
290 Broadway, 19th Floor
New York, NY 1007-1866

U.S. Environmental Protection Agency
26 W. Martin Luther King Drive
Attention: Finance
MS: NWD
Cincinnati, Ohio 45268

80. The payment of penalties shall not alter in any way Respondents' obligation to complete performance of the Work required under this Settlement Agreement.

81. Penalties shall continue to accrue as provided in Paragraph 77 during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

82. If Respondents fail to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Respondents shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 79.

83. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Respondents' violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties



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pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of willful violation of this Settlement Agreement. EPA agrees not to seek stipulated or statutory penalties under both the Settlement Agreement and the 2005 AOC based on the same facts or alleged violation. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

## XVII. FORCE MAJEURE

84. Respondents agree to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, *force majeure* is defined as any event arising from causes beyond the control of Respondents or of any entity controlled by Respondents or any entity controlled by the Respondents, including but not limited to its contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondents' best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.

85. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Respondents shall notify EPA orally within 48 hours of when Respondents first knew that the event might cause a delay. Within 14 days thereafter, Respondents shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondents' rationale for attributing such delay to a *force majeure* event if it intends to assert such a claim; and a statement as to whether, in the opinion of Respondents, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondents from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

86. If EPA agrees that the delay or anticipated delay is attributable to *a force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Respondents in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure*



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event, EPA will notify Respondents in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

## XVIII. PAYMENT OF RESPONSE COSTS

87. Payments of Future Response Costs.

a. Respondents shall pay EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send Respondents a bill requiring payment that includes a SCORPIOS Report. Respondents shall make all payments within 30 days of receipt of each bill requiring payment. Respondents shall make all payments required by this Paragraph by EFT in accordance with the instruction provided in Paragraph 79.

b. At the time of payment, Respondents shall send notice that payment has been made to:

Joseph Gowers, Remedial Project Manager
Ringwood Mines/Landfill Superfund Site
U.S. EPA Region II
290 Broadway, 19th Floor
New York, NY 1007-1866

U.S. Environmental Protection Agency
26 W. Martin Luther King Drive
Attention: Finance
MS: NWD
Cincinnati, Ohio 45268

c. The total amount to be paid by Respondents pursuant to Subparagraph 87.a. shall be deposited in the Ringwood Mines/Landfill Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

88. If Respondents do not pay Future Response Costs within 30 days of Respondents' receipt of a bill, Respondents shall pay Interest on the unpaid balance of the Future Response Costs. The Interest on unpaid Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. If EPA receives a partial payment, Interest shall accrue on any unpaid balance. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondents' failure to make timely payments under this Section, including but not limited to, payments of stipulated



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penalties pursuant to Section XVI. Respondents shall make all payments required by this Paragraph in the manner described in Paragraph 79.

89. Respondents may contest payment of any Future Response Costs under Paragraph 72 if it determines that EPA has made a mathematical error or included a cost item that is not within the definition of Future Response Costs, or if it believes EPA incurred excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. Such objection shall be made in writing within 30 days of receipt of the bill and must be sent to the EPA RPM. Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, Respondents shall within the 30 day period pay all uncontested Future Response Costs to EPA in the manner described in Paragraph 78. Simultaneously, Respondents shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of New Jersey and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Respondents shall send to the EPA RPM a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Respondents shall initiate the Dispute Resolution procedures in Section XV (Dispute Resolution). If EPA prevails in the dispute, within 5 days of the resolution of the dispute, Respondents shall pay the sums due (with accrued interest) to EPA in the manner described in Paragraph 79. If Respondents prevail concerning any aspect of the contested costs, Respondents shall pay that portion of the costs (plus associated accrued interest) for which it did not prevail to EPA in the manner described in Paragraph 78. Respondents shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Respondents' obligation to reimburse EPA for its Future Response Costs.

## XIX. COVENANT NOT TO SUE BY EPA

90. In consideration of the actions that will be performed and the payments that will be made by Respondents under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, EPA covenants not to sue or to take administrative action against Respondents pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and for Future Response Costs as defined in this Settlement Agreement. This covenant not to sue shall take effect upon the Effective Date, and is conditioned upon the complete and satisfactory performance by Respondents of all of its obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XVIII. This covenant not to sue extends only to Respondents and does not extend to any other person.



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## XX. RESERVATIONS OF RIGHTS BY EPA

91. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondents in the future to perform additional activities pursuant to CERCLA or any other applicable law.

92. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondents with respect to all other matters, including, but not limited to:

a. claims based on a failure by Respondents to meet a requirement of this Settlement Agreement;

b. liability for costs not included within the definition of Future Response Costs;

c. liability for performance of response actions other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site that are not paid as Future Response Costs under this Settlement Agreement.

## XXI. COVENANT NOT TO SUE BY RESPONDENTS

93. Respondents covenant not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the



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Work, Future Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of the Work or arising out of the response actions for which the Future Response Costs have or will be incurred, including any claim under the United States Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work or payment of Future Response Costs.

These covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 92 (b), (c), and (e) - (g), but only to the extent that Respondents' claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

94. These covenants not to sue shall not apply with respect to any claim by Respondent against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the United States' liability as former owner and operator of the Site. The United States and Respondent entered into a tolling agreement on September 2, 2008 governing this potential cost recovery claim, and the agreement remains in effect.

95. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

## XXII. OTHER CLAIMS

96. By issuance of this Settlement Agreement, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondents.

97. Except as expressly provided in Section XIX (Covenant Not to Sue by EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondents or any person not a party to this Settlement



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Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

98. No action or decision by EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

## XXIII. CONTRIBUTION

99. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. § 9613(f)(2) and 9622(h)(4), and that Respondents are entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Section 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 122(h)(4), or as may be otherwise provided by law, for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work and Future Response Costs.

100. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Sections 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which each Respondent, as of the Effective Date, resolved its liability to the United States for the Work and Future Response Costs.

101. Nothing in this Settlement Agreement shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Settlement Agreement. Each Party expressly reserves any and all rights (including, but not limited to, pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613) defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto Agreement. Nothing in this Settlement Agreement diminishes the right of the United States, pursuant to Section 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2) and (3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2).

102. Respondents shall, with respect to any suit or claim brought by them for matters related to this Settlement Agreement, notify EPA in writing no later than 60 days prior to the initiation of such suit or claim. Respondents also shall, with respect to any suit or claim brought against them for matters related to this Settlement Agreement, notify EPA in writing within 10 days of service of the complaint or claim upon them. In addition, Respondents shall notify EPA within 10 days of service or receipt of any Motion for Summary Judgment and within 10 days of receipt of any order from a court setting a case for trial, for matters related to this Settlement Agreement.

## XXIV. INDEMNIFICATION



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103. Respondents shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Respondents agree to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondents, their officers, directors, employees, agents, contractors, subcontractors and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondents in carrying out activities pursuant to this Settlement Agreement. Neither Respondents nor any such contractor shall be considered an agent of the United States.

104. The United States shall give Respondents written notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondents prior to settling such claim.

105. Respondents waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Respondents and any person for performance of Work relating to the Site. In addition, Respondents shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondents and any person for performance of Work relating to the Site.

## XXV. INSURANCE

106. At least 7 days prior to commencing any On-Site Work under this Settlement Agreement, Respondents shall secure, and shall maintain for the duration of this Settlement Agreement, comprehensive general liability insurance with limits of $3 million and automobile insurance with limits of $3 million, combined single limit, and shall obtain endorsements on the policies identifying EPA as an additional insured. Within the same period, Respondents shall provide EPA with certificates of such insurance and a copy of each insurance policy. Respondents shall submit such certificates and copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement Agreement, Respondents shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondents in furtherance of this Settlement Agreement. If Respondents demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondents



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need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

## XXVI. FINANCIAL ASSURANCE

107. Within 30 days of the Effective Date, Respondents shall establish and maintain financial security for the benefit of EPA in the amount of $1.5 million in order to secure the full and final completion of Work by Respondents

a. a surety bond unconditionally guaranteeing payment and/or performance of the Work;

b. one or more irrevocable letters of credit, payable to or at the direction of EPA, issued by financial institution(s) acceptable in all respects to EPA equaling the total estimated cost of the Work;

c. a trust fund administered by a trustee acceptable in all respects to EPA;

d. a policy of insurance issued by an insurance carrier acceptable in all respects to EPA, which ensures the payment and/or performance of the Work;

e. a written guarantee to pay for or perform the Work provided by one or more parent companies of Respondents, or by one or more unrelated companies that have a substantial business relationship with at least one of Respondents; including a demonstration that any such guarantor company satisfies the financial test requirements of 40 C.F.R. Part 264.143(f);

f. a demonstration of sufficient financial resources to pay for the Work made by Respondents, which shall consist of a demonstration that Respondents satisfy the requirements of 40 C.F.R. Part 264.143(f).

108. If Respondents seek to provide a demonstration under 40 C.F.R. § 264.143(f) and has provided a similar demonstration at other RCRA or CERCLA sites, the amount for which Respondents are providing financial assurance at those sites should be added to the estimated costs of the Work for Paragraph 107. Respondents must provide documentation of the prior demonstration currently in effect.

109. Any and all financial assurance instruments provided pursuant to this Section shall be in form and substance satisfactory to EPA, determined in EPA's sole discretion. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section (including, without limitation, the instrument(s) evidencing such assurances) are inadequate, Respondents shall, within 30 days of receipt of notice of



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EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 107, above. In addition, if at any time EPA notifies Respondents that the anticipated cost of completing the Work has increased, then, within 30 days of such notification, Respondents shall obtain and present to EPA for approval a revised form of financial assurance (otherwise acceptable under this Section) that reflects such cost increase. Respondents' inability to demonstrate financial ability to complete the Work shall in no way excuse performance of any activities required under this Settlement Agreement.

110. If Respondents seek to ensure completion of the Work through a guarantee pursuant to Subparagraph 107.e. of this Settlement Agreement, Respondents shall (i) demonstrate to EPA's satisfaction that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f); and (ii) resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date, or such other date as agreed by EPA, to EPA. For the purposes of this Settlement Agreement, wherever 40 C.F.R. Part 264.143(f) references "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates," the dollar amount to be used in the relevant financial test calculations shall be the current cost estimate of $1.5 million for the Work at the Site plus any other RCRA, CERCLA, TSCA, or other federal environmental obligations financially assured by the relevant Respondents or Guarantor to EPA by means of passing a financial test.

111. If, after the Effective Date, Respondents can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 107 of this Section, Respondents may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondents shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security after receiving written approval from EPA. In the event of a dispute, Respondents may seek dispute resolution pursuant to Section XV (Dispute Resolution). Respondents may reduce the amount of security in accordance with EPA's written decision resolving the dispute.

112. Respondents may change the form of financial assurance provided under this Section at any time, upon notice to and prior written approval by EPA, provided that EPA determines that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondents may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

## XXVII. INTEGRATION/APPENDICES

113. This Settlement Agreement and its appendices and any deliverables, technical memoranda, specifications, schedules, documents, plans, reports (other than progress reports), etc. that will be developed pursuant to this Settlement Agreement and become incorporated into and enforceable under this Settlement Agreement constitute the final, complete and exclusive agreement and understanding among the Parties with respect to



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the settlement embodied in this Settlement Agreement. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Settlement Agreement:

"Appendix A" is the SOW.

"Appendix B" is the map of the Site.

"Appendix C" is the list of Respondents.

## XXVIII. ADMINISTRATIVE RECORD

114. EPA will determine the contents of the administrative record file for selection of the remedial action. Respondents shall submit to EPA documents developed during the course of the FS upon which selection of the response action may be based. Upon request of EPA, Respondents shall provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Upon request of EPA, Respondents shall additionally submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action, and all communications between Respondents and state, local or other federal authorities concerning selection of the response action. At EPA's discretion, Respondents shall establish a community information repository at or near the Site, to house one copy of the administrative record.

## XXIX. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

115. This Settlement Agreement shall be effective on the date that the Settlement Agreement is signed by the Director of the Emergency and Remedial Response Division of Region 2 or his delegate.

116. This Order may be amended by mutual agreement of EPA and Respondents. Amendments shall be in writing and shall be effective when signed by EPA. EPA RPMs do not have the authority to sign amendments to the Settlement Agreement.

117. No informal advice, guidance, suggestion, or comment by the EPA RPM or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondents shall relieve Respondents of its obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

## XXX. NOTICE OF COMPLETION OF WORK

118. When EPA determines that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by



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this Settlement Agreement, including but not limited to payment of Future Response Costs or record retention, EPA will provide written notice to Respondents. If EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, EPA will notify Respondents, provide a list of the deficiencies, and require that Respondents modify the FS Work Plan if appropriate in order to correct such deficiencies, in accordance with Paragraph 49 (Modification of the Work Plan). Failure by Respondents to implement the approved modified FS Work Plan shall be a violation of this Settlement Agreement.

## XXXI. RELATIONSHIP BETWEEN THIS SETTLEMENT AGREEMENT AND THE 2005 AOC

119. Certain work remains to be completed which Ford was required to do pursuant to the 2005 AOC which has not yet been done. That work (the "2005 Work") includes, but is not necessarily limited to, those activities specified in Schedule A, attached to this Settlement Agreement. It is the intention of the Parties that all of the 2005 Work, including payment to EPA of all unreimbursed EPA response costs that Ford was required to pay to EPA under the 2005 AOC, shall now be performed pursuant to this Settlement Agreement.

120. In consideration of the Respondents' agreement to perform all of the 2005 Work under this Settlement Agreement, EPA shall provide Ford with a Notice of Certification of Completion of the Work ("NOC") relating to the work required by the 2005 AOC, as provided for by paragraph 119 in the 2005 AOC, within 30 days after the Effective Date. Notwithstanding that NOC, Ford shall remain liable for and shall pay EPA all Interim Costs and shall remain obligated to perform all other actions identified in the 2005 AOC as surviving any NOC issued by EPA pursuant to the terms of the 2005 AOC.

It is so ORDERED AND AGREED this 24th day of May, 2010.

BY: _____
Walter Mugdan, Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency – Region 2



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ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

U.S. EPA Region 2
CERCLA Docket No. 02-2010-2020

Agreed this 20 day of May, 2010.

For Respondent **FORD MOTOR COMPANY**

By: _____

Title: Peter J. Sherry, Jr. Secretary



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ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

U.S. EPA Region 2
CERCLA Docket No. 02-2010-2020

## SCHEDULE A

**"2005 Work"** consists of the following:

1. Preparation of a Final Technical Memorandum acceptable to EPA for each of the following four (4) areas of concern: the Peter's Mine Area; the O'Connor Disposal Area, the Cannon Pit Area and the Site-related groundwater contamination Area;

2. Preparation of a Final Pathway Analysis Report acceptable to EPA for each of the following four (4) areas of concern: the Peter's Mine Area; the O'Connor Disposal Area, the Cannon Pit Area and the Site-related groundwater contamination Area;

3. Preparation of a Final Baseline Human Health Risk Assessment acceptable to EPA for each of the following four (4) areas of concern: the Peter's Mine Area; the O'Connor Disposal Area, the Cannon Pit Area and the Site-related groundwater contamination Area;

4. Preparation of a Final Ecological Risk Assessment acceptable to EPA for each of the following four (4) areas of concern: the Peter's Mine Area; the O'Connor Disposal Area, the Cannon Pit Area and the Site-related groundwater contamination Area;

5. Preparation of a Supplemental Investigation Report acceptable to EPA for each of the following four (4) areas of concern: the Peter's Mine Area; the O'Connor Disposal Area, the Cannon Pit Area and the Site-related groundwater contamination Area;

6. Completion of all activities described in Section II.A., Section II.B, Section II.C., and Section I.3. through Section I.6. of the SOW;

7. Completion of all "Work" (as that term is defined in the 2005 AOC) which, pursuant to the terms of the 2005 AOC, survives the issuance of the Notice of Certification of Completion of the Work under the 2005 AOC; and

8. Payment of all "Interim Costs" to EPA.

# APPENDIX A

STATEMENT OF WORK
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
**RINGWOOD MINES/LANDFILL SITE**
RINGWOOD, NEW JERSEY

## I. INTRODUCTION

1. A supplemental remedial investigation for the Site, referred to as the Supplemental Investigation, was conducted pursuant to the Administrative Order on Consent and Settlement Agreement for Investigative Work, CERCLA Docket Number 02-2005-2013 (2005 AOC). Data collected as part of that Supplemental Investigation resulted in the identification of four areas of concern (ACs) at the Ringwood Mines/Landfill Superfund Site (the Site) identified as: the Peters Mine Pit Area, the O'Connor Disposal Area, the Cannon Mine Pit Area, and Site-Related Groundwater Contamination.

2. The purpose of this remedial investigation and feasibility study (RI/FS) is to investigate the overall nature and extent of contamination and to develop and evaluate potential remedial alternatives to address contamination remaining at each of the ACs at the Site, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA). Respondent Ford has completed the scoping activities described in the 2005 AOC, including the Supplemental Investigations Work Plan for the Field Reconnaissance Survey, a Field Sampling Plan and Quality and Assurance Plan, a Site Health and Safety Plan, a Community Relations Plan, and has submitted draft Technical Memoranda for three of the four ACs. Respondents shall complete all of the activities required by the 2005 AOC which had not been completed prior to the Effective Date (2005 Work), including the following for each of the four (4) areas of concern: a Final Technical Memorandum acceptable to EPA, a Final Pathway Analysis Report acceptable to EPA, a Final Baseline Human Health Risk Assessment acceptable to EPA , a Final Ecological Risk Assessment acceptable to EPA a Remedial Investigation Report acceptable to EPA and draft and revised versions of each of the foregoing documents, as set forth in this SOW.

3. The Respondents shall submit a Technical Memorandum for each AC at the Site. The Technical Memorandum for each AC shall incorporate and discuss the data collected during the Supplemental Investigation for each respective AC. Draft Technical Memoranda have been submitted for the Peters Mine Pit Area, the O'Connor Disposal Area and the Cannon Mine Pit Areas of the Site. If EPA disapproves, or requires revisions to a Technical Memorandum, in whole or in part, the Respondents, shall amend and submit to EPA a revised Technical Memorandum which is responsive to the directions in all of EPA's written comments within 21 days of receipt of EPA's comments, unless a different period is specified or agreed to in writing by EPA.

4. The Respondents shall perform a Baseline Human Health Risk Assessment (BHHRA) for the Site. The Respondents shall provide for the preparation of BHHRAs

which meet the requirements specified in this SOW for each AC. The Respondents shall adhere to the following schedule for submittal of BHHRA-related deliverables:

a. Pathway Analysis Reports (PARs) – The Respondents shall prepare and submit PARs for each AC within sixty (60) days after receipt of the last set of validated data generated for the respective AC, or within thirty (30) days of the date of this Settlement Agreement, whichever is later. The PARs must meet the requirements for preparation of PARs specified in the Settlement Agreement. The PARs will also be subject to the review, modification and approval requirements set forth in the Settlement Agreement.

b. Baseline Human Health Risk Assessment – Within sixty (60) days of EPA approval of a PAR, the Respondents shall submit to EPA a Draft BHHRA for the respective AC. The BHHRAs shall be subject to the review, modification and approval requirements set forth in the Settlement Agreement.

5. The Respondents shall conduct an Ecological Risk Assessment (ERA) for the Site. The Respondents shall provide for the preparation of ERAs which meet the requirements specified in the Settlement Agreement, for each AC. The Respondents shall adhere to the following schedule for submittal of ERA-related deliverables:

a. Screening Level Ecological Risk Assessment (SLERA) – The Respondents shall prepare and submit SLERAs for each AC within sixty (60) days after receipt of the last set of validated data generated for the respective AC, or within thirty (30) days of the effective date of the Settlement Agreement, whichever is later. The SLERAs shall be subject to the review, modification and approval requirements set forth in the Settlement Agreement.

b. Full Baseline Ecological Risk Assessment (BERA) – If EPA notifies the Respondents that a full updated Baseline Ecological Assessment is required for an AC, the Respondents shall submit a Scope of Work for the BERA, a draft BERA Report, and a Final BERA Report within the timeframes specified in the Settlement Agreement. All BERA-related submittals must meet the requirements for preparation of these submittals, and will be subject to the review, modification and approval requirements, as set forth in the Settlement Agreement.

c. Reuse Assessment. If EPA, in its sole discretion, determines that a Reuse Assessment is necessary, Respondents will perform the Reuse Assessment in accordance with applicable EPA guidance, including, but not limited to the "Reuse Assessments: A Tool To Implement The Superfund Land Use Directive," OSWER Directive 9355.7-06P, June 4, 2001 or subsequently issued guidance. The Reuse Assessment should provide sufficient



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information to develop realistic assumptions of the reasonably anticipated future uses for those areas at the Site which EPA instructs Respondents to address in the Reuse Assessment.

6. The Respondents shall prepare and submit to EPA a Remedial Investigation (RI) Report, which meets the requirements specified in the Settlement Agreement, for each AC. Each draft RI Report shall be submitted to EPA for review and comment within thirty (30) days of EPA's approval of the required Technical Memoranda which corresponds to the respective AC. Within thirty (30) days of receiving EPA's comments on a draft RI Report, the Respondents shall amend and submit to EPA a final RI Report which is responsive to the directions in all EPA comments.

7. The Respondents shall conduct a FS and shall produce a draft FS report for each AC that is in accordance with this SOW, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988), and any other guidance that EPA uses in conducting a FS, as well as any additional requirements in the Administrative Order on Consent and Settlement Agreement (Settlement Agreement). The RI/FS Guidance describes the report format and the required report content for the FS. The Respondents shall furnish all necessary personnel, materials, and services needed for, or incidental to, the performance of the FSs, except as otherwise specified in the Settlement Agreement.

8. EPA will be responsible for the selection of the remedy for each AC of the Site and EPA will document the selection of the Remedy in a Record of Decision (ROD). The remedial action selected by EPA will meet the cleanup standards specified in CERCLA Section 121. That is, EPA shall select remedial actions that are protective of human health and the environment, cost-effective, and that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The selected remedy for each AC shall address the statutory preference for treatment as a principal element and shall be in compliance with, or include a waiver of, legally applicable or relevant and appropriate requirements (ARARs) under Federal environmental law, State environmental law or facility siting law. The EPA approved RI and FS reports, the applicable baseline risk assessment and the administrative record will form the basis for the selection of the remedies for each AC of the Site and will provide the information necessary to support the development of the ROD(s).

9. As specified in CERCLA Section 104(a)(1), as amended by SARA, EPA will provide oversight of the activities of Respondents and their contractors throughout the performance of each FS. The Respondents shall support EPA's initiation and conduct of activities related to the implementation of oversight activities.

## II. REQUIRED WORK AND SCHEDULE

### A. BASELINE HUMAN HEALTH RISK ASSESSMENT



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The Respondents shall prepare a Baseline Human Health Risk Assessment (BHHRA) for each AC of the Site. The Respondents shall provide EPA with the following deliverables:

> Baseline Human Health Risk Assessment (BHHRA) . This assessment shall include actual and potential cancer risks and non-cancer hazards to human health which are identified and characterized in accordance with CERCLA, the NCP, and EPA guidances including, but not limited to, the RI/FS Guidance, "Land Use in the CERCLA Remedy Selection Process" (OSWER Directive No. 9355.7-04) and the definitions and provisions of "Risk Assessment Guidance for Superfund ( RAGS) , " Volume 1, "Human Health Evaluation Manual," (December 1989) (EPA/540/1-89/002).
>
> The assessment shall also include a description of representative contaminants and associated concentrations in Site media including groundwater, soil, sediment, and surface water which have been determined by using all currently available media-specific analytical data generated during the SI.

The information required shall be presented in the following deliverables:

> a. Memorandum on Exposure Scenarios and Assumptions. Within 45 days after approval of the SI Work Plan, the Respondents shall submit a memorandum describing the exposure scenarios and assumptions, taking into account for the BHHRA the present and reasonably anticipated future land use of the Site. The memorandum should include appropriate text describing the preliminary conceptual Site model and exposure routes of concern for the Site, and include a completed RAGS Part D Table 1. This table shall describe the pathways that will be evaluated in the BHHRA, the rationale for their selection, and a description of those pathways that will not be evaluated. In addition, the Memorandum shall include a completed RAGS Part D Table 4 describing exposure pathway parameters with appropriate references to EPA's 1991 Standard Default Assumptions and updated guidance developed by EPA. If EPA disapproves of or requires revisions to the memorandum, in whole or in part, it will provide written reasons for the disapproval or directions for revisions to make the submittal approvable. Ford may meet with the Chief of the Branch ("EPA Branch Chief") responsible for the Site in the ERRD, EPA-Region II to discuss any matter(s) relating to the memorandum. Ford shall make the request in writing to EPA and shall set forth the topics and/or issues Ford would like to discuss and what resolution and/or other action(s), if any, Ford is seeking from EPA . The Respondents shall amend and submit to EPA a revised memorandum which is responsive to the directions in all EPA comments, within



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twenty-one (21) days of receiving EPA's comments, unless a different period is specified or agreed to in writing by EPA

b. Pathway Analysis Report (PAR). The Respondents shall prepare and submit a PAR for each AC within sixty (60) days after receipt of the last set of validated data for the respective AC. The PARs shall be developed in accordance with OSWER Directive 9285.7-01D-1 dated December 17, 1997 (or more recent version), entitled, "Risk Assessment Guidelines for Superfund Part D" and other appropriate guidance in Appendix 1A and updates thereto. The PARs shall contain all the information necessary for a reviewer to understand how the risks at the Site will be assessed. The PARs shall build on the Memorandum on Exposure Scenarios and Assumptions (see a. above) describing the risk assessment process and how the risk assessment will be prepared. The PARs shall include completed RAGS Part D Tables 2, 3, 5, and 6 as described below. The Respondents shall submit the PARs for EPA review and approval. Respondents must obtain EPA approval of the PAR prior to Respondents' submission of the draft BHHRA.

i. Chemicals of Concern (COCs). The PARs shall contain all the information necessary about the COCs at the Site for a reviewer to understand how the risks at the Site will be evaluated.

A. Based on the data obtained during the SI, the Respondents shall list the hazardous substances present in all sampled media (e.g., groundwater, soils, sediment, etc.) and the contaminants of potential concern (COPCs) as described in the Risk Assessment Guidance for Superfund Part A.

B. Table 2-Selection of COCs. Representative contaminants and associated concentrations in sample media for the PARs shall be determined utilizing all currently available media specific validated analytical data generated during the SI. The selection of COCs shall follow Risk Assessment Guidance for Superfund (Part A) and before chemicals are deleted as COCs they shall be evaluated against the residential PRGs from Region IX. The COCs shall be presented in completed RAGS Part D Table 2 format.

ii. Table 3 - Media Specific Exposure Point Concentrations. Using the chemicals selected in Table 2, this Table shall summarize the Exposure Point Concentrations for all COCs for the various media. The calculation of the Exposure Point Concentration shall follow



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the 1992 Guidance Document on the calculation of the 95% Upper Confidence Limit (UCL) on the Mean. In those cases where the 95% UCL exceeds the maximum, the maximum concentration shall be used as the EPC.

iii. Tables 5 and 6 – Toxicological Information. This section of the PARs shall provide the toxicological data (e.g., Cancer Slope Factors, Reference Doses, Reference Concentrations, Weight of Evidence for Carcinogens, and adjusted dermal toxicological factors where appropriate) for the chemicals of concern. The toxicological data shall be presented in completed RAGS Part D Tables 5 and 6. The source of data in order of priority are: EPA's Integrated Risk Information System (IRIS), Health Effects Assessment Summary Tables (HEAST)-1997 and contact with EPA's National Center for Environmental Assessment. To facilitate a timely completion of the PARs, the Respondents shall submit a list of chemicals for which IRIS values are not available to EPA as soon as identified thus allowing EPA to facilitate obtaining this information from EPA's National Center for Environmental Assessment.

iv. If EPA disapproves, or requires revisions to a PAR, in whole or in part, the Respondents, shall amend and submit to EPA a revised PAR which is responsive to the directions in all of EPA's written comments within 21 days of receipt of EPA's comments, unless a different period is specified or agreed to in writing by EPA.

c. Baseline Human Health Risk Assessment

i. Within sixty (60) days of EPA's approval of a PAR, the Respondents shall submit to EPA a Draft BHHRA. The submittal shall include completed RAGS Part D Tables 7 through 10 summarizing the calculated cancer risks and non-cancer hazards and appropriate text in the risk characterization with a discussion of uncertainties and critical assumptions (e.g., background concentrations and conditions). The Respondents shall perform the BHHRA in accordance with the approach and parameters described in the approved Memorandum of Exposure Scenarios and Assumptions and the PAR describe above. Text and tables from these previously approved reports shall be included in the appropriate sections of the BHHRA .

ii. If EPA disapproves or requires revisions to a BHHRA, in whole or in part, it will provide written reasons for the disapproval or directions for revisions to make the



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submittal approvable. The Respondents shall amend and submit to EPA a revised report which is responsive to the directions in all EPA comments, within 21 days of receiving EPA's comments, unless a different period is specified or agreed to in writing by EPA.

B. ECOLOGICAL RISK ASSESSMENT

1. Screening-Level Ecological Risk Assessment (SLERA)

Within sixty (60) days after receipt of the last set of validated data for an AC, the Respondents shall submit a Screening-Level Ecological Risk Assessment (SLERA) for the AC in accordance with current Superfund ecological risk assessment guidance (Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments [ERAGSJ, USEPA, 1997 [EPA/540-R-97-0061). The SLERA shall include a comparison of the maximum contaminant concentrations in each media of concern to appropriate conservative ecotoxicity screening values, and should use conservative exposure estimates. EPA will review and approve the SLERA and determine whether a full updated Baseline Ecological Assessment is required.

2. Full Baseline Ecological Risk Assessment (BERA)

a. If EPA determines that a full updated Baseline Ecological Assessment (BERA) is required for an AC and so notifies the Respondents, the Respondents shall, within thirty (30) days thereafter, submit a Scope of Work outlining the steps and data necessary to perform the BERA, including any amendments to the SI Work Plan required to collect additional relevant data. If EPA disapproves of or requires revisions to the BERA Scope of Work, in whole or in part, the Respondents shall amend and submit to EPA a revised Scope of Work that is responsive to the directions in all of EPA's written comments within twenty-one (21) days of receipt of EPA's comments, unless a different period is specified or agreed to in writing by EPA. The BERA Scope of Work shall identify any SI Work Plan amendments or addenda, including establishment of a schedule for review and approval of additional field data.

b. The Respondents shall notify EPA in writing within seven (7) days of completion of all field activities associated with the BERA, as identified in the BERA Scope of Work and performed under the approved SI Work Plan addenda.

c. The Respondents shall prepare a draft BERA Report which identifies and characterizes actual and potential ecological risks in accordance with



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CERCLA, the NCP, and EPA guidances including, but not limited to, "Ecological Risk Assessment Guidance for Superfund, Process for Designing and Conducting Ecological Risk Assessments," (1997) (EPA/540-R-97-006),E RAGS, dated June 5, 1997, or other most recent guidance.

d. The Draft BERA Report shall include:

1. Hazard Identification (sources). The Respondents shall review available information on the hazardous substances present at the Site and identify the major contaminants of concern.

2. Dose-Response Assessment. The Respondents shall identify and select contaminants of concern based on their intrinsic toxicological properties.

3. Characterization of Site and Potential Receptors. The Respondents shall identify and characterize environmental exposure pathways.

4. Select Chemicals, Indicator Species, and End Points. In preparing the assessment, The Respondents shall select representative chemicals, indicator species (species which are especially sensitive to environmental contaminants), and end points on which to concentrate.

5. Exposure Assessment - The exposure assessment shall identify the magnitude of actual or environmental exposures, the frequency and duration of these exposures, and the routes by which receptors are exposed. The exposure assessment shall include an evaluation of the likelihood of such exposures occurring and shall provide the basis for the development of acceptable exposure levels. In developing the exposure assessment, the Respondents shall develop central tendency and reasonable maximum estimates of exposure for both current land use conditions and potential land use
conditions at the Site.

6. Toxicity Assessment/Ecological Effects Assessment. The toxicity and ecological effects assessment shall address the types of adverse environmental effects associated with chemical exposures, the relationships between magnitude of exposures and adverse effects, and the related uncertainties for contaminant toxicity (e.g., weight of evidence for a chemical's carcinogenicity).



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7. Risk Characterization. During risk characterization, chemical-specific toxicity information, combined with quantitative and qualitative information from the exposure assessment, shall be compared to measured contaminant exposure levels and the levels predicted through environmental fate and transport modeling. These comparisons shall determine whether concentrations of contaminants at or near the Site are affecting or could potentially affect the environment.

8. Identification of Limitations/Uncertainties. The Respondents shall identify critical assumptions (e.g., background concentrations and conditions) and uncertainties in the report.

9. Site Conceptual Model. Based on contaminant identification, exposure assessment, toxicity assessment, and risk characterization, the Respondents shall develop a conceptual model of the Site.

e. The Respondents shall submit the draft updated BERA Report to EPA within sixty (60) days of obtaining the final set of BERA-related validated data.

f. If EPA disapproves of or requires revisions to the updated BERA Report, in whole or in part, such disapproval or required revisions shall be provided in writing with reasons for the disapproval or directions for revisions to make the submittal approvable. The Respondents shall amend and submit to EPA a final, updated ecological assessment which is responsive to the directions in all EPA comments.

g. Final Baseline Ecological Risk Assessment Report. Within 21 days of receiving EPA's comments on the Draft BERA Report, the Respondents shall amend and submit to EPA a final report for the AC which is responsive to the directions in all EPA comments.

C. REMEDIAL INVESTIGATION REPORTS

a. The Respondents shall prepare an RI Report for each AC, which shall incorporate the results of investigations conducted for the respective AC.

b. The RI Report shall be submitted to EPA within 30 days of EPA's approval of the Technical Memorandum prepared for the associated AC. .

D. FEASIBILITY STUDY WORK PLAN(S)

Within thirty (30) days of the Effective Date of the Settlement Agreement, the Respondents shall submit to EPA and NJDEP a FS Work Plan(s) that address all



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ACs of the Site work. The FS Work Plan(s) shall include, among other things, a detailed schedule for completion of all FS activities at the four ACs at the Site. The Respondents shall submit the FS Work Plan(s) to EPA for approval pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Settlement Agreement. Within twenty-one (21) days of receipt of EPA's written comments, the Respondents shall prepare a revised FS Work Plan that is responsive to the directions in all EPA written comments. The Respondents shall submit the revised FS Work Plan to EPA for approval pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Settlement Agreement, unless the Respondents are directed otherwise by EPA in writing. Following approval of the FS Work Plan, or modification of it pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Settlement Agreement, the FS Work Plan shall be deemed to be incorporated into and enforceable under the Settlement Agreement.

## F. IDENTIFICATION OF CANDIDATE TECHNOLOGIES

An Identification of Candidate Technologies Memorandum shall be submitted by the Respondents within thirty (30) days of EPA's approval or modification of each FS Work Plan pursuant to Section X (EPA Approval of Plans and Other Submissions) of the Settlement Agreement. The candidate technologies identified shall include innovative treatment technologies (as defined in the RI/FS Guidance) where appropriate. The candidate technologies will cover the range of technologies required for alternatives analysis. EPA may provide written comments on the submitted memorandum, in which case the Respondents shall amend and submit to EPA a revised memorandum which is responsive to the directions in all EPA written comments within twenty-one (21) days of receipt of EPA's comments.

## G. DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

The Respondents shall develop and evaluate a range of appropriate waste management options for each AC that at a minimum ensure protection of human health and the environment. The development and screening of remedial alternatives shall develop an appropriate range of waste management options that will be evaluated. This range of alternatives should include options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a no-action alternative. The following activities will be performed as a function of the development and screening of remedial alternatives:



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1. Development and Screening of Remedial Alternatives

a. Develop General Response Actions

The Respondents shall develop general response actions for each medium of interest defining containment, treatment, excavation, pumping, or other actions, singly or in combination to satisfy the remedial action objective.

b. Identify Areas or Volumes of Media

The Respondents shall identify areas or volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The chemical and physical characterization of the four ACS of the site will also be taken into account.

c. Assemble and Document Alternatives

The Respondents shall assemble selected representative technologies into alternatives for each affected medium or AC.

Together, all of the alternatives will represent a range of treatment and containment combinations that will address each AC as a whole. A summary of the assembled alternatives and their related action-specific ARARS will be prepared by the Respondents for inclusion in a technical memorandum. The reasons for eliminating alternatives during the preliminary screening process must be specified.

d. Refine Alternatives

The Respondents shall refine the remedial alternatives to identify contaminant volume addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information will be collected for an adequate comparison of alternatives. Preliminary Remediation Goals (PRGs) for each chemical in each medium will also be modified as necessary to incorporate any new risk assessment information presented in the baseline risk assessment report. Additionally, action-specific ARARs will be updated as the remedial alternatives are refined.

e. Conduct and Document Screening Evaluation of Each Alternative



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The Respondents may perform a final screening process based on short and long term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives will be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis. As appropriate, the screening will preserve the range of treatment and containment alternatives that was initially developed. The range of remaining alternatives will include options that use treatment technologies and permanent solutions to the maximum extent practicable.

2. Development and Screening of Alternatives Deliverables

Within thirty (30) days after EPA's approval of the Baseline Risk Assessment for each AC, the Respondents shall: (1) make a presentation to EPA identifying the remedial action objectives and summarizing the development and preliminary screening of remedial alternatives, and (2) prepare and submit a Development and Screening of Remedial Alternatives Technical Memorandum for each AC which summarizes the work performed in, and the results of, each task above (C.1.a. through 1.e.), including an alternatives array summary. The memorandum shall also summarize the reasoning employed in screening, arraying alternatives that remain after screening, and identifying the action-specific ARARs for the alternatives that remain after screening. The memorandum shall also provide an explanation for choosing any institutional or engineering controls as part of any remedial alternative, and the level of effort that will be required to secure, maintain, and enforce the control. EPA may elect to comment on the memorandum. If required by EPA's written comments, the alternatives will be modified by the Respondents to assure that a complete and appropriate range of viable alternatives are identified and considered in the detailed analysis. This deliverable will document the methods, rationale, and results of the alternatives screening process.

3. Detailed Analysis of Remedial Alternatives

The detailed analysis will be conducted by the Respondents for each AC to provide EPA with the information needed to allow for the selection of remedies for the Site. This analysis is the final task to be performed by the Respondents during the FS.

a. Detailed Analysis of Alternatives

The Respondents shall conduct a detailed analysis of alternatives for each AC which will consist of an analysis of each option against a set of nine evaluation criteria and a comparative analysis



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of all options using the same evaluation criteria as a basis for comparison.

b. Apply nine criteria and document analysis

The Respondents shall apply nine evaluation criteria to the assembled remedial alternatives to ensure that the selected remedial alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARS; will be cost-effective; will utilize permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria are: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) State (or support agency) acceptance; and (9) community acceptance.

For each alternative, the Respondents should provide: (1) a description of the alternative that outlines the waste management strategy involved and identifies the key ARARs associated with each alternative, and (2) a discussion of the individual criterion assessment. If the Respondents do not have direct input on criteria (8) State (or support agency) acceptance and (9) community acceptance, these criteria will be addressed by EPA.

c. Compare Alternatives Against Each Other and Document the Comparison of Alternatives

## H. FEASIBILITY STUDY REPORTS

The Respondents shall prepare a FS Report for each AC, which consists of a detailed analysis of alternatives and a cost-effectiveness analysis, in accordance with the National Contingency Plan (NCP), 40 CFR Part 300, as well as the most recent guidance. Within forty-five (45) days of the presentation to EPA required under Section C.2 above, the Respondents shall submit to EPA a Draft FS report which reflects the findings in the approved Baseline Risk Assessment for the respective AC. The Respondents shall refer to the FS Work Plan and the RI/FS Guidance and this SOW for the draft FS report's content and format. Upon request by EPA or NJDEP, the Respondents will make a presentation to EPA and NJDEP which shall summarize the findings of the draft FS report and discuss EPA's preliminary comments and concerns associated with the draft FS report. Within twenty-one (21) days of receiving EPA's written comments, if any, on the draft FS report, Respondents shall prepare a revised FS report. Respondents shall then submit the revised FS report to EPA for approval pursuant to Section X



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(EPA Approval of Plans and Other Submissions) of the Settlement Agreement, unless the Respondents are directed otherwise by EPA in writing.

1. The draft FS report and the Final FS report for each AC shall include the following:

a. Summary of Feasibility Study objectives

b. Summary of remedial action objectives

c. Discussion of general response actions

d. Identification and screening of remedial technologies

e. Remedial alternatives description

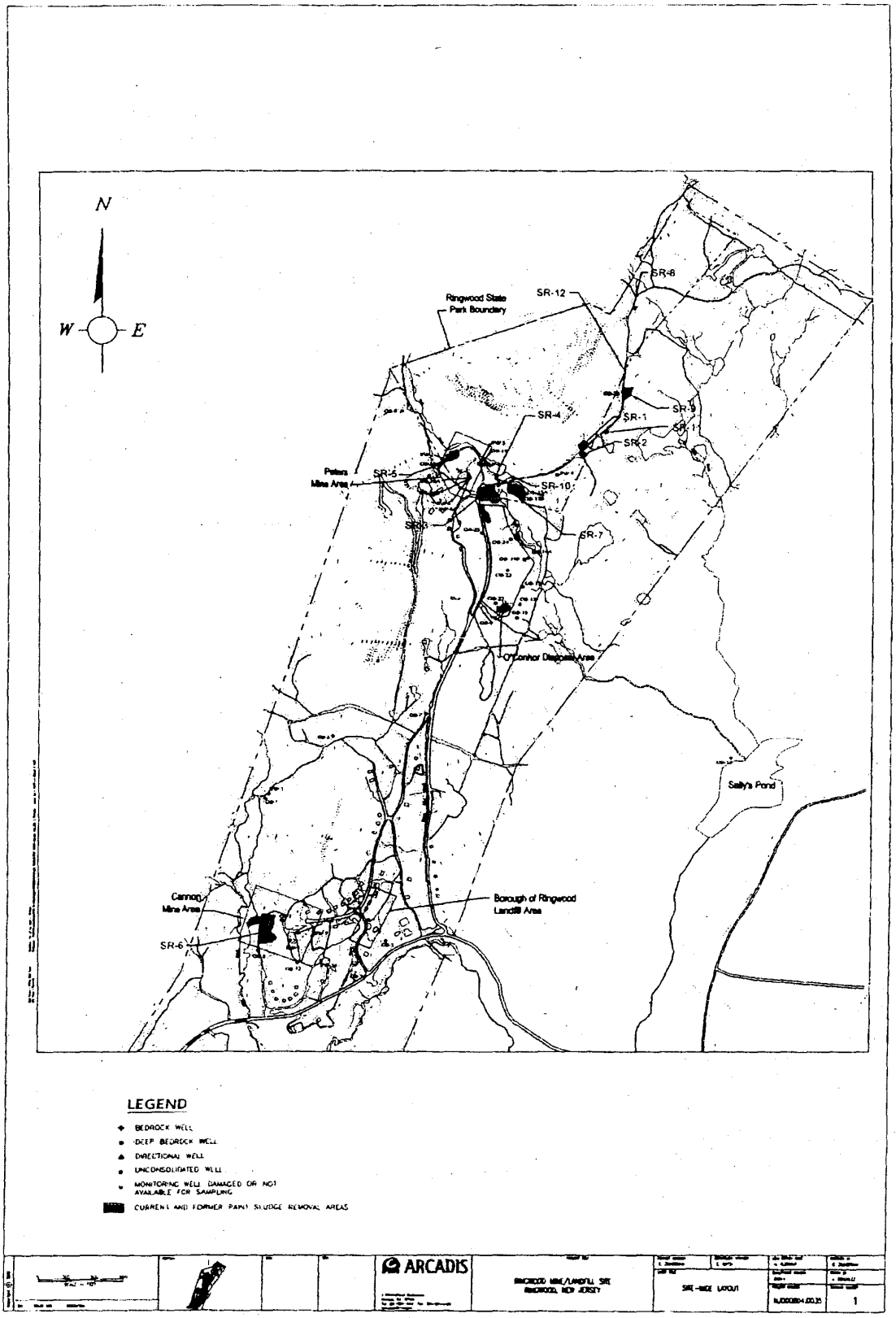
f. Detailed analysis of remedial alternatives and comparative analysis

g. Summary and conclusions

The Respondents' technical feasibility considerations shall include the careful study of any problems that may prevent a remedial alternative from mitigating the contamination related to the four ACs at the Site. Therefore, the Site characteristics from the RI must be kept in mind as the technical feasibility of the alternatives is studied. Specific items to be addressed are reliability (operation over time), safety, operation and maintenance, ease with which the alternative can be implemented, and time needed for implementation.



R2-0004744




APPENDIX B

R2-0004745

## APPENDIX C

ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

U.S. EPA Region 2
CERCLA Docket No. 02-2010-2020

## LIST OF RESPONDENTS

**FORD MOTOR COMPANY**

ARCADIS

## Appendix B

Surface Soil Sampling Logs

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-01(MS/MSD) Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1356

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 32 (North view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT-SAND (medium to fine grain, dark brown); traces of clay (rust); some pebbles. |
| 0 | 0.5 | SILT-SAND (medium to fine grain, dark brown); traces of clay (rust); some pebbles. |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-02 (split EPA) Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1007

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 25 (Southwest view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT (coarse grain, dark brown); clay (medium grain, brown); organic matter (roots, seeds). |
| 0 | 0.5 | SILT (coarse grain, dark brown); clay (medium grain, brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-03 (split EPA) Project/No. NJ000604.0026.0001 Page

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 0951

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 24 (East view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT (medium to fine grain); pebbles. |
| 0 | 0.5 | SILT (medium to fine grain); pebbles. |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-4 Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1446

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, J. Orentlicher Data Entered By: V. Myers

Others present at location: Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 34

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT( coarse grain, very dark brown). |
| 0 | 0.5 | SAND( coarse grain, light brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-5 Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1430

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, J. Orentlicher Data Entered By: V. Myers

Others present at location: Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 33 (South view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SAND( coarse grain, very dark brown). |
| 0 | 0.5 | SAND, mine tailings ( coarse grain, very dark brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-06 (split EPA) Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1041

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 26

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SAND (medium grain, dark brown to light gray); pebble. |
| 0 | 0.5 | SAND, mine tailings (medium grain, dark brown to light gray); pebble. |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-7 Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1526

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, J. Orentlicher Data Entered By: V. Myers

Others present at location: Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 35 (South view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT (dark brown, loose); some sand (coarse, light brown). |
| 0 | 0.5 | SILT (dark brown, loose); some sand (coarse, light brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-08 (split EPA) Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1225

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 30 (West view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SAND (coarse grain, light brown); some silt (medium grain, dark brown). |
| 0 | 0.5 | SAND (coarse grain, light brown); some silt (medium grain, dark brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-09 (split EPA) Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1243

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 31 (West view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SAND (coarse grain, very dark brown); traces of silt (medium grain, very dark brown). |
| 0 | 0.5 | SAND, mine tailings (coarse grain, very dark brown); traces of silt (medium grain, very dark brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-10 Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1538

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, J. Orentlicher Data Entered By: V. Myers

Others present at location: Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 36 (West view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT (medium grain, dark brown); some clay (light brown). |
| 0 | 0.5 | SILT (medium grain, dark brown); some clay (light brown); refuse (paint chips blue and red, snap when broken, very flat). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-11 (split EPA) Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1207

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 29 (North view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SAND (medium to coarse grain, light brown). |
| 0 | 0.5 | SAND (medium to coarse grain, light brown); some clay (light brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-12 Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1620

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, J. Orentlicher Data Entered By: V. Myers

Others present at location: Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 38 (East view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT (medium grain, very dark brown); some sand (coarse grain, dark brown); organic matter (roots, leaf litter). |
| 0 | 0.5 | SILT (medium grain, very dark brown); some sand, mine tailings (coarse grain, dark brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-13 Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1600

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, J. Orentlicher Data Entered By: V. Myers

Others present at location: Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 37 (West view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT (medium to fine grain, dark brown to black); organic matter (roots, leaf litter). |
| 0 | 0.5 | SILT (medium to fine grain, dark brown to black). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-14 (split EPA) Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1145

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 28 (Southwest view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT (coarse grain, dark brown); organic matter (grass, leaf litter, vegetation). |
| 0 | 0.5 | SILT (coarse grain, dark brown); traces of sand, mine tailings (light brown). |
| | | |

**ARCADIS**

# Soil Sampling Log

Date: 11/21/2006

Sample ID: OC-SS-15 (split EPA) Project/No. NJ000604.0026.0001 Page 1 of 1

Site Area

Location Ringwood, New Jersey Location In O'Connor Sample Time 1115

Total Sample Depth 0.5 Feet Sample Type Surface Sample

Investigated By: V. Myers, A. Sanchez Data Entered By: V. Myers

Others present at location: Diane Sulkie (USEPA), Christina Leung (USEPA) and Matt Johnson (H2M)

Name of instruments (PID): Oscar PID Reading (ppm) 0.0

Photo Numbers. 27 (Southeast view)

Sample Depth (feet below surface gradient)

| From | To (ft.) | Pit Description |
|---|---|---|
| Surface | | SILT (medium to fine grain, dark brown); organic matter (grass, leaf litter, vegetation). |
| 0 | 0.5 | SAND ( medium to fine grain, light yellow-gray); clay (fine grain, light gray). |
| | | |

ARCADIS

## Appendix C

Test Trench and Test Pit Field Logs

**ARCADIS**

# Test Pit Log

Date 07.19.06

Trench ITP-01 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Location Ringwood, New Jersey Area Location O' Connor Trench Started 0830 Trench Completed 0950

Total Depth Excavated 10 Feet Pit Dimension (L x W) 10 x 6 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire Backhoe

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, C. Coyt

Sample/Trench Depth (feet below land surface) ft bls Photos 38-56

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 3 | SAND, Medium to Coarse; some Gravel, Medium to Coarse; some Cobbles; Brown. Paint Sludge on surface | 0.0 |
| | | (2-3" diameter). | |
| 3 | 4.8 | COBBLES; some Gravel, Medium to Coarse; some Sand, Medium to Coarse; Light brown. Debris (rusted | 0.0 |
| | | metal scrap) | |
| 4.8 | 5.5 | SAND, Medium to Coarse; some Cobbles; some Gravel, Coarse; Light brown. Some debris (scrap metal); | 0.0 |
| | | compact mine tailings | |
| 5.5 | 9 | SAND, Medium to Fine, Light brown; some Clay, Light gray. | 0.0 |
| 9 | 10 | SAND, Medium to Fine, Light brown; some Clay, Light gray. | |
| | | Refusal at 10 ft | |
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**ARCADIS**

# Test Pit Log

Date 07.18.06

Trench ITP-02 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Location Ringwood, New Jersey Area Location O' Connor Trench Started 1404 Trench Completed 1455

Total Depth Excavated 7.5 Feet Pit Dimension (L x W) 11 x 6 Feet Type of Sample/ Trenching Device Rubber Tire Backhoe Investigation/

Land-Surface Elev. feet ☐ Surveyed ☐ Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 23-37

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 3 | SAND, Medium to Coarse; some Cobbles; Light brown. | 0.0 |
| 3.5 | 7.5 | BOULDERS; and Cobbles. | 0.0 |
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# Test Pit Log

Date 07.19.06

Trench ITP-03 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Location Ringwood, New Jersey Area Location O' Connor Trench Started 1052 Trench Completed 1205

Total Depth Excavated 10.5 Feet Pit Dimension (L x W) 9 X 4 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 57-76

| From | To | Description | PID ppm |
|---|---|---|---|
| 0 | 2.5 | DEBRIS (glass, scrap metal, and a metal cord); Paint Sludge (gray, blue) at 2 ft bls, approximately 1 to 2-inches | 0.0 |
| | | in diameter. | |
| 2.5 | 4 | SAND, Medium to Coarse; Dark brown; and Paint Sludge; Debris (scrap metal, bricks, glass, and a black, hard | |
| | | substance with a white waxy like material along with rust). | |
| 4 | 8 | COBBLES; and Gravel, Medium to Coarse. Debris (white substance, glass, scrap metal). | |
| 8 | 10.5 | Native material at approx. 10.5-feet bls | |
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# Test Pit Log

Date 07.24.06

Trench ITP-04 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1118 Completed 1313

Total Depth Excavated 5 Feet Pit Dimension (L x W) 8 x 4 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire Excavator

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 73-82

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 2 | SILT; little Sand;Organic Matter (Roots); Debris (Plastic, cardboard, scrap metal and Styrofoam). | 0.0 |
| 2 | 3 | DEBRIS (55-gallon drum, crushed and rusted). | 0.2 |
| 3 | 5 | SILT; little Sand; little MineTailings; trace Roots; Debris (wooden planks, plastic both hard and soft, scrap metal) | 0.0 |
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# Test Pit Log

Date 07.20.06

Trench ITP-05 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Location Ringwood, New Jersey Area Location O' Connor Trench Started 1410 Trench Completed 1517

Total Depth Excavated 15.3 Feet Pit Dimension (L x W) 10 X 4 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, D. Kirschner

Sample/Trench Depth (feet below land surface) ft bls Photos 57-59

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 3 | SAND, Medium to Coarse; light brown ; some Cobbles; some Gravel, Medium to Coarse. | 0.0 |
| | | Debris (Wood, scrap metal, metal with corrosive material that is white and waxy looking, plastic, tires); Mine Tailings; | |
| 3 | 4.5 | DEBRIS (Plastic drum, wood, roofing, plastic pods, wire casing). | 0.0 |
| 4.5 | 7.2 | DEBRIS( Wood, rubber hosing, metal straps, plastic, glass bottles, roofing) | |
| 7.2 | 15.3 | SAND, Coarse; Dark gray to black; with Debris (wood). | 0.0 |
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# Test Pit Log

Date 07.21.06

Trench ITP-06 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Location Ringwood, New Jersey Area Location O' Connor Trench Started 1320 Trench Completed 1420

Total Depth Excavated 15 Feet Pit Dimension (L x W) 17 X 5 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 1-25

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 1.5 | SAND, Medium to Fine; some Gravel, Coarse; some Cobbles; trace Roots; Light brown. | 0.0 |
| | | Debris (plastic hosing, plastic strapping, scrap metal). | |
| 1.5 | 3.5 | SAND, Medium to Fine; Light brown, dry. Debris (metal hitch, Styrofoam, plastic spoon) | 0.0 |
| 3.5 | 4.5 | SAND, Medium to Fine, light brown; some Clay, gray; Moist. Debris (plastic bags, | 0.0 |
| | | plastic tubing and medium to small cobbles. Directional stickers, newspaper from 1970, wood, radiators for a home). | |
| 4.5 | 15 | SILT; and Clay; some Sand; Debris (Pieces of wooden planks. Newspapers, metal sheeting). | 0.0 |
| | | Paint Sludge, moist, white, cream, and gray in color. | |
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# Test Pit Log

Date 07.18.06

Trench ITP-07 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Location Ringwood, New Jersey Area Location O' Connor Trench Started 1115 Trench Completed 1215

Total Depth Excavated 12 Feet Pit Dimension (L x W) 10 x 6 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 13-22

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 1.9 | SAND, Medium to Coarse; some Cobbles; some Roots; Dark brown. | 0.5 |
| 1.9 | 2.3 | BOULDERS, and Cobbles; Light brown. | 1.2-1.4 |
| 2.3 | 4 | DEBRIS (plastic strapping and poly). | 0.9 |
| 4 | 5.5 | DEBRIS (wood, cardboard, plastic strapping from base, fibrous | 1.8 |
| | | crystal approx. 2-inches long mine tailings. Styrofoam at 4-foot lbls) | |
| 5.5 | 6.4 | DEBRIS (Seatbelt material, dashboard material, roofing, Styrofoam, electrical box | |
| | | seatbelt, wood with paint sludge incrusted on the outside of the wood, | |
| | | red). | |
| 6.4 | 12 | DEBRIS (wet cardboard, wood, mine tailings and poly). | 0.0 |
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# Test Pit Log

Date 07.26.06

Trench ITP-08 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1319 Completed 1351

Total Depth Excavated 6 Feet Pit Dimension (L x W) 14 X 6.8 Feet Type of Sample/ Trenching Device Rubber Tire / Investigation

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 125-130

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 2 | SAND, Medium to Coarse; some Organic Matter (roots); Dark brown. | 0.0 |
| 2 | 4 | CLAY; Dark gray to black. | |
| 4 | 6 | MINE TAILINGS; and Clay. Shale at the bottom of the test pit with water seeping in from the top layer. | |
| | | Some small boulders. | |
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# Test Pit Log

Date 08.17.06

Trench ITP-09 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1323 Completed 1347

Total Depth Excavated 9.2 Feet Pit Dimension (L x W) 10 x 6 Feet Type of Sample/ Trenching Device Investigation/ Excavator CX330

Land-Surface Elev. ____ feet ☐ Surveyed ☐ Estimated Datum ____

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, J. Orentlicher

Sample/Trench Depth (feet below land surface) ft bls

Photos 135 - 138

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 0.6 | SAND, Fine to Medium; some Organic Matter (Roots). Some Debris at surface (tires, seatbelt strapping, scrap metal | 0.0 |
| | | and plastic). | |
| 0.6 | 1 | SILT, Fine; some Cobbles; some Gravel, Fine to Medium; Light brown. | |
| 1 | 4.5 | SILT; and Clay; some Cobbles; some Gravel, Medium; Light brown to gray . | |
| 4.5 | 9.2 | CLAY; some Gravel, Fine to Medium; some Cobbles; Light gray. | |
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# Test Pit Log

Date 08.17.06

Trench ITP-10 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1110 Completed 1140

Total Depth Excavated 10 Feet Pit Dimension (L x W) 10.4 x 5.6 Feet Type of Sample/ Trenching Device Investigation/ Excavator CX330

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers

Sample/Trench Depth (feet below land surface) ft bls

Photos 131 - 134

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 1 | SAND, Medium to Fine; some Roots ; some Organic Matter ; some Debris; Paint sludge on the surface | 0.0 |
| 1 | 4 | SAND; some Boulders; Cobbles; Light brown. | |
| 4 | 6 | CLAY; some Cobbles; Gray and tan. | |
| 6 | 10 | SAND; and Clay; some Cobbles; some Gravel; Tan. | |
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# Test Pit Log

Date 07.20.06

Trench ITT-01 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1034 Completed 1132

Total Depth Excavated 4.7 Feet Pit Dimension (L x W) 40.10 x 3 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire Backhoe

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, D. Kirschner

Sample/Trench Depth (feet below land surface) ft bls

Photos 44-50

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 1.8 | SAND; Medium to Coarse; some Clay; Light brown to gray; | 0.0 |
| | | Debris (scrap metal, clothes; tire on surface) | |
| 1.8 | 4.7 | SAND, Coarse; some Cobbles; some Organic Matter (roots). | 0.0 |
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| | | Paint sludge found on edge of pile. | |
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# Test Pit Log

Date 07.19.06

Trench ITT-02 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1328 Completed 1346

Total Depth Excavated 11 Feet Pit Dimension (L x W) 11 X 4.6 Feet Type of Sample/ Trenching Device Rubber Tire / Investigation

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, C. Coyt

Sample/Trench Depth (feet below land surface) ft bls Photos 88-104

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 3 | SAND, Fine to Medium; some Gravel, Medium to Coarse; some Cobbles; Boulders; Debris at 2-3.5 ft bls(Glass, | 0.0 |
| | | scrap metal, tires, clothing, empty 5-gallon bucket of plastic roof cement, plastic soda bottles, styrafoam); | |
| | | Mine Tailings from 2-3 ft bls | |
| 3 | 6.3 | DEBRIS (Glass bottles with white hard cement-like pieces) | 0.0 |
| 6.3 | 11 | CLAY (Native material) | 0.0 |
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# Test Pit Log

Date 07.25.06

Trench ITT-03 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 0900 Completed 0927

Total Depth Excavated 4 Feet Pit Dimension (L x W) 11 x 6 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire Excavator

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 80-85

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 3 | SILT; some Clay; some Cobbles; some Organic Matter (Roots). DEBRIS 14.0-feet | 0.0 |
| | | from the side of the road on surface (tins, concrete, and car seat). | |
| 3 | 4 | SILT; with Mine tailings. DEBRIS (scrap metal, wooden planks, glass) | 0.0 |
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# Test Pit Log

Date 07.25.06

Trench ITT-04 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 0825 Completed 0846

Total Depth Excavated 4.1 Feet Pit Dimension (L x W) 22.2 X 4.5 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire Excavator

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Excavation Contractor Compass Equipment Operator Mike

Prepared By C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 74-79

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 3.5 | SAND; and Silt; some Mine tailings. Debris starting ~8.2 ft from road, down to 1 ft bgs (glass, plastic, scrap metal, | 0.0 |
| | | rubber, and wooden planks. | |
| 3.5 | 4.1 | SILT; some Clay; little Sand. Debris (scrap metal, glass and plastic) | 0.0 |
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# Test Pit Log

Date 07.24.06

Trench ITT-05 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1410 Completed 1441

Total Depth Excavated 6.5 Feet Pit Dimension (L x W) 16.5 X 4 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 83-88

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 4.5 | SILT; and Sand; some Mine tailings; little Organic Matter (Roots); some Debris (plastic, rubber, scrap metal and | 0.0 |
| | | fiberglass). | |
| 4.5 | 6.5 | Mine tailings; Debris (pieces of wood, plastic and glass bottles). | 0.0 |
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# Test Pit Log

Date 08.18.06

Trench ITT-06 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 0850 Completed 0940

Total Depth Excavated 8 Feet Pit Dimension (L x W) 40. x 5.6 Feet Type of Sample/ Trenching Device Investigation/ Excavator

Land-Surface Elev. _____ feet ☐ Surveyed ☐ Estimated Datum _____

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers

Sample/Trench Depth (feet below land surface) ft bls

Photos150-155

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 1 | SAND, Medium to Coarse; some Organic Matter (Roots); Dark brown. | 0.0 |
| | | Debris on surface (tires, scrap metal, tanks, clothing). | |
| | | 2-drums found on surface at side of trench | |
| 1 | 8 | Mine Tailings; with Clay; Gray, at base of test trench | 0.0 |
| | | Debris throughout top 3 ft bls (scrap metal, tires, rugs, fencing) | |
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# Test Pit Log

Date 08.17.06

Trench ITT-07 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 0850 Completed 1020

Total Depth Excavated 6.8 Feet Pit Dimension (L x W) 60.0 X 5.7 Feet Type of Sample/ Trenching Device Investigation/ Excavator CX330

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, J. Orentlicher

Sample/Trench Depth (feet below land surface) ft bls

Photos 116-130

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 1 | SILT; and Sand, Fine to Medium; some Organic Matter (Roots); Light brown. Some Debris | 0.0 |
| 1 | 2.11 | SAND, Fine to Medium; and Silt ; some Cobbles; some Gravel, Medium to Coarse | |
| 2.11 | 3.5 | PAINT SLUDGE, blue-gray and red paint sludge observed | 0.0 |
| 3.5 | 6.8 | SAND, Fine to Medium, brown; some Clay, gray to red. | 0.0 |
| | | Water at 6.8ft bls | |
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# Test Pit Log

Date 08.16.06

Trench ITT-08 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1303 Completed 1350

Total Depth Excavated 5.3 Feet Pit Dimension (L x W) 39.2 x 5.4 Feet Type of Sample/ Trenching Device Investigation/ Excavator

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, J. Orentlicher

Sample/Trench Depth (feet below land surface) ft bls

Photos 103-112

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 2.4 | SAND, Fine to Medium; Dark Brown; some Organic Matter (Roots); Moist | 0.0 |
| 2.4 | 5.3 | CLAY; Gray. Water at 5.3 ft bls | 0.0 |
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# Test Pit Log

Date 08.16.06

Trench ITT-09 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1400 Completed 1443

Total Depth Excavated 7.3 Feet Pit Dimension (L x W) 52.11 x 6.5 Feet Type of Sample/ Trenching Device Investigation/ Excavator

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers

Sample/Trench Depth (feet below land surface) ft bls

Photos 114-116

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 2.5 | SAND, Fine to Medium; some Organic Matter (Roots); Dark brown to gray . Paint Sludge from 0 to | 0.0 |
| | | 52.11-feet (lengthwise into the trench). | |
| 2.5 | 7.3 | COBBLES; and Gravel, Medium to Coarse; some Clay; Light brown. Water at 7.3 ft | 0.0 |
| | | Debris starts at 52.11- feet from the beginning of the test trench (tires, scrap metal, clothing plastic) | |
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**ARCADIS**

# Test Pit Log

Date 08.17.06

Trench ITT-10 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1410 Completed 1447

Total Depth Excavated 4.2 Feet Pit Dimension (L x W) 35.9 x 5.6 Feet Type of Sample/ Trenching Device Investigation/ Excavator CX330

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers

Sample/Trench Depth (feet below land surface) ft bls

Photos 139-143

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 4.2 | SAND; and Clay; and Cobbles; Grey to light brown; moist. Organic Matter in top 2" (Roots) | 0.0 |
| | | Water at 4.2 ft | |
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**ARCADIS**

# Test Pit Log

Date 07.26.06

Trench ITT-11 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1017 Completed 1049

Total Depth Excavated 3 Feet Pit Dimension (L x W) 24 x 4.4 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 116-124

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 2.5 | SAND; Medium to Coarse; some Silt, Fine to Medium; some gravel; some | 0.0 |
| | | Cobbles; Light brown. Debris (tire, scrap metal) on surface. | |
| 2.5 | 3 | DEBRIS starting at 16.8 -feet from the start of the trench (scrap metal, glass, tires, and hoses). | 0.0 |
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**ARCADIS**

# Test Pit Log

Date 07.25.06

Trench ITT-12 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1344 Completed 1408

Total Depth Excavated 3.7 Feet Pit Dimension (L x W) 26.4 X 4 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By D. Kirschner

Sample/Trench Depth (feet below land surface) ft bls

Photos 99-106

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 2.5 | SAND, Medium to Coarse; Light gray, dry. | 0.0 |
| | | Debris at starting at 16.9 ft from east side of trench | |
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**ARCADIS**

# Test Pit Log

Date 08.10.06

Trench ITT-13 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1029 Completed 1145

Total Depth Excavated 8 Feet Pit Dimension (L x W) 56 x 4.10 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. feet Surveyed Estimated Datum

Excavation Contractor Compass Equipment Operator Mike

Prepared By V. Myers, A. Sanchez

Sample/Trench Depth (feet below land surface) ft bls Photos 87-102

| From | To | Description | PID (ppm) |
|---|---|---|---|
| 0 | 3.5 | SAND, Fine to Medium; and Silt; some Organic Matter (Roots) ; Light gray, dry. | 0.0 |
| 3.5 | 8 | CLAY; Light gray to red, moist. | 0.0 |
| | | Mine tailings at ~8 ft bls | |
| | | Water at 8 ft | |
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**ARCADIS**

# Test Pit Log

Date 07.25.06

Trench ITT-14 Project/No. NJ000604.0022.0001 Page 1 of 1

Site Area Trench Trench

Location Ringwood, New Jersey Location O' Connor Started 1030 Completed 1123

Total Depth Excavated 3.1 Feet Pit Dimension (L x W) 22.6 X 5 Feet Type of Sample/ Trenching Device Investigation/ Rubber Tire

Land-Surface Elev. _____ feet [ ] Surveyed [ ] Estimated Datum _____

Excavation Contractor Compass Equipment Operator Mike

Prepared By C. Coyt

Sample/Trench Depth (feet below land surface) ft bls

Photos 86-98

| From | | Description | PID (ppm) |
|---|---|---|---|
| 0 | 2 | SILT; some Sand; some Organic Matter (Roots). Paint sludge, up to 1 ft x 10 in. (6 ft from start of trench) | 419 |
| | | Debris (tires, plastic, clothing, and household fabric) | |
| 2 | 3.10 | SAND, Medium to Fine; some Gravel, Fine to Medium; some Cobbles | |
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# TEST PIT LOG

LOCATION: **OC-ITP-01**

TOTAL DEPTH (feet): **9.50**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Greg Albright**

DATE STARTED: **3/22/2007**

DATE COMPLETED: **3/22/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841211.923499**

EASTING: **556162.980857**

ELEVATION: **405.63**

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -4 | | SM: medium brown, fine to medium grained, SILTY SAND, firm, moist, subangular, re-worked soils, trace (<10%) gravel, with (15-25%) debris and rubbish (lumber scraps, broken glass, small metal fragments, rubber gaskets/seals). | Fill | 0.0 |
| -4 to -7 | | GW-GM: medium brown, fine to coarse grained, WELL-GRADED SILTY GRAVEL, loose, moist, subangular,waste rock, concrete, trace (<10%) gravel and debris, paint sludge chunks at 6' (6"-1'). | Mine Waste Rock (re-worked) | 0.0 |
| -7 to -9 | | MH: light brown, fine grained, ELASTIC SILT, soft, saturated, subangular, native material, trace (<10%) clay. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-02**

TOTAL DEPTH (feet): **9.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/20/2007**

DATE COMPLETED: **3/20/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

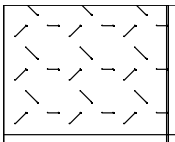
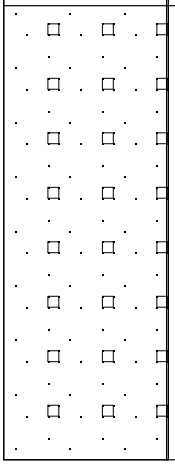
**COORDINATES**

NORTHING: **841314.812971**

EASTING: **556119.262201**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -2 |  | OL-OH: dark brown, fine to medium grained, NATURAL ORGANIC SILT-CLAY, firm, moist, subangular, native material, with (15-25%) cobbles. | Native Material | 0.0 |
| -2 to -9 |  | GW-GC: dark brown, fine to coarse grained, waste rock with concrete, WELL-GRADED CLAYEY GRAVEL, loose, moist, subangular, with (15-25%) silt, trace (<10%) clay. | Mine Waste Rock | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-03**

TOTAL DEPTH (feet): **11.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/22/2007**

DATE COMPLETED: **3/22/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

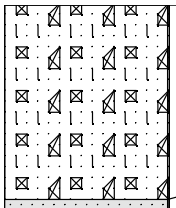
**COORDINATES**

NORTHING: **841343.552555**

EASTING: **556207.946745**

ELEVATION: **395.04**

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -3 |  | SM-GW: light brown, fine grained, SILTY SAND AND GRAVEL, soft, saturated, subangular, and (25-50%) debris and rubbish (broken brick, broken glass, plastic sheeting, toy parts, plastic bits, metal scraps and fragments, metal plate 1/8" thick, 1" steel cable). | Fill | 0.0 |
| -3 to -4 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, angular, mine tailing. | Mine Tailings | 0.0 |
| -4 to -11 | | GW-GM: medium brown, fine to coarse grained, WELL-GRADED SILTY GRAVEL, loose, moist, angular, waste rock. | Mine Waste Rock | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-04**

TOTAL DEPTH (feet): **9.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Greg Albright**

DATE STARTED: **3/22/2007**

DATE COMPLETED: **3/22/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841552.757803**

EASTING: **556352.789497**

ELEVATION: **414.90**

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 – 1 | | SM: medium brown, fine to medium grained, SILTY SAND, firm, moist, subangular, reworked soils, debris. | Fill Cover | 0.0 |
| 1 – 5 | | SW: dark gray, fine grained, WELL GRADED SAND, soft, moist, angular, mine tailing, with (15-25%) debris and rubbish (lumber scraps, wood fragments, plastic sheeting & cones, plastic strapping, cardboard, metallic fragments, large metal gear w/ ridged teeth). | Fill | 0.0 |
| 5 – 9 | | MH: dark gray, fine grained, ELASTIC SILT, soft, moist, angular, mine tailing, groundwater at 6 ft bgs. | Mine Tailings | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-05**

TOTAL DEPTH (feet): **16.50**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Greg Albright**

DATE STARTED: **3/22/2007**

DATE COMPLETED: **3/22/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841644.637227**

EASTING: **556178.433017**

ELEVATION: **412.70**

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -2 | | SM-GW: medium brown, fine to coarse grained, SILTY SAND AND GRAVEL, firm, moist, subangular, re-worked soils, with (15-25%) cobbles. | Fill Cover | 0.0 |
| -2 to -14 | | SM-GW: medium brown, fine to coarse grained, SILTY SAND AND GRAVEL, firm, moist, subangular, and (25-50%) debris and rubbish (plastic sheeting/cones, plastic bits, lumber scraps, wood planking, carpet, metal scraps), last 2 ft interbedded with mine tailings. | Fill | 0.0 |
| -14 to -16 | | SP: black, fine grained, POORLY GRADED SAND, loose, saturated, angular, mine tailing, groundwater at 14 ft bgs. | Mine Tailings | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-06**

TOTAL DEPTH (feet): **15.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Greg Albright**

DATE STARTED: **3/22/2007**

DATE COMPLETED: **3/22/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841735.638059**

EASTING: **556289.092601**

ELEVATION: **416.95**

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 – -1 | | ML: medium brown, fine to medium grained, SILT, firm, moist, subangular, soil cover, with (15-25%) sand and silt. | Fill Cover | 0.0 |
| -1 – -6 | | SM: medium brown, f to med grained, SILTY SAND, moist, subangular, with sand and (25-50%) debris & rubbish (wood & lumber scraps, carpet, cloth material, plastic sheeting/cones/caps, styrofoam, rubber gaskets, cardboard/paper, auto warranty cards, phone bill) | Fill | 0.0 |
| -6 – -9 | | SM: medium brown, fine to medium grained, SILTY SAND, firm, moist, subangular, re-worked soils, with debris (wood scraps, carpet, cloth material, plastic sheeting/cones/caps, styrofoam, rubber gaskets, cardboard/paper, auto warranty cards, phone bill). | Fill | 0.0 |
| -9 – -15 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, subangular, mine tailing, and (25-50%) debris (wood & lumber scraps, metal scraps/fragments, plastic bits & sheeting). | Fill | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-07**

TOTAL DEPTH (feet): **14.50**

| PROJECT INFORMATION | | DRILLING INFORMATION | |
|---|---|---|---|
| PROJECT: | **Ford Ringwood** | SUBCONTRACTOR: | **Compass Environmental** |
| PROJECT NUMBER: | **NJ000604.0001** | OPERATOR: | **Robert Ferguson** |
| SITE LOCATION: | **Ringwood, New Jersey** | METHOD: | **230 C (# 246-16-5017)** |
| LOGGED BY: | **Greg Albright** | **COORDINATES** | |
| DATE STARTED: | **3/22/2007** | NORTHING: | **841807.612971** |
| DATE COMPLETED: | **3/22/2007** | EASTING: | **556118.688761** |
| | | ELEVATION: | **407.08** |
| | | PID Lamp Size: | **10.6 eV lamp** |

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -11 | | SM: medium brown, fine to medium grained, SILTY SAND, firm, moist, subangular, re-worked soils, and (25-50%) debris and rubbish (wood/lumber scraps, plastic sheeting/cones, rubber gaskets/seals, metal fragments, cardboard). | Fill | 0.0 |
| -12 to -14 | | SW: black, fine to medium grained, WELL GRADED SAND, loose, moist, angular, mine tailing, trace (<10%) silt. | Mine Tailings | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-08**

TOTAL DEPTH (feet): **6.50**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Greg Albright**

DATE STARTED: **3/22/2007**

DATE COMPLETED: **3/22/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841931.430956**

EASTING: **556217.252857**

ELEVATION: **401.41**

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 – 1 | | SW: black-gray, fine to medium grained, WELL GRADED SAND, loose, moist, angular, mine tailing, trace (<10%) organic silt. | Mine Tailings | 0.0 |
| 1 – 3 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, angular, mine tailing, trace (<10%) silt. | Mine Tailings | 0.0 |
| 3 – 6 (▼4) | | SC-GW: olive-brown, fine to coarse grained, CLAYEY SAND AND GRAVEL, firm, saturated, subangular, native material, with (15-25%) cobbles, groundwater at 4ft. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-09**

TOTAL DEPTH (feet): **6.50**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Greg Albright**

DATE STARTED: **3/22/2007**

DATE COMPLETED: **3/22/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **842098.402348**

EASTING: **556145.769465**

ELEVATION: **398.97**

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 – -1 | | OL-OH: dark brown, fine to medium grained, NATURAL ORGANIC SILT-CLAY, firm, moist, subangular, soil cover, and (25-50%) debris and rubbish (plastic toy bits, tire, metal scrap fragments). | Fill | 0.0 |
| -1 – -2 | | PT: black, fine to medium grained, PEAT, firm, moist, subangular, re-worked soils, with (15-25%) sand and silt. | Native Soil | 0.0 |
| -2 – -3 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, angular, mine tailing. | Mine Tailings | 0.0 |
| -3 – -6 | | SC-GW: olive-brown, fine to coarse grained, CLAYEY SAND AND GRAVEL, firm, saturated, subangular, and (25-50%) cobbles, groundwater at 3 ft. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITP-10**

TOTAL DEPTH (feet): **11.50**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **842235.487276**

EASTING: **555984.819193**

ELEVATION: **411.51**

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 | | OL: medium gray, fine to medium grained, NATURAL ORGANIC SILT, soft, moist, subangular, trace (<10%) cobbles. | Native Soil | 0.0 |
| -1 | | SM: medium brown, fine to medium grained, SILTY SAND, firm, moist, subangular, re-worked soils, trace (<10%) cobbles. | Re-worked Soil | 0.0 |
| -2 | | GM: medium brown, fine to medium grained, SILTY GRAVEL, firm, moist, subangular, native material, and (25-50%) cobbles. | Native Soil | 0.0 |
| -3 | | | | |
| -4 | | | | |
| -5 | | | | |
| -6 | | | | |
| -7 | | | | |
| -8 | | | | |
| -9 | | | | |
| -10 | | | | |
| -11 | | | | |

# TEST PIT LOG

LOCATION: **OC-ITT-01**

TOTAL DEPTH (feet): **9.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/20/2007**

DATE COMPLETED: **3/20/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

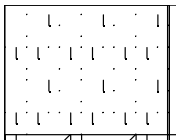
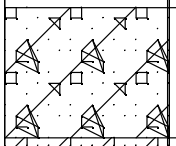
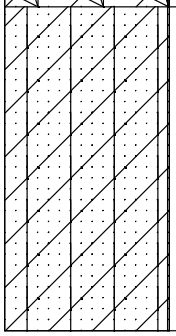
**COORDINATES**

NORTHING: **841065.264171**

EASTING: **556209.163257**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -1 |  | SP-SM: medium brown/gray, fine to medium grained, POORLY GRADED SILTY SAND, organics, firm, moist, subangular, re-worked soils, trace (<10%) cobbles, and (25-50%) debris and rubbish (tires, cloth, wood, metal). | Fill | 0.0 |
| -1 to -4 |  | SC-GW: light brown, fine to coarse grained, CLAYEY SAND AND GRAVEL, soft, saturated, subrounded, native material, mottled, with (15-25%) cobbles. | Native Soil | 0.0 |
| -4 to -9 |  | SC-SM: dark brown, fine to coarse grained, CLAYEY-SILTY SAND, firm, moist, subrounded, native material, mottled, with (15-25%) cobbles. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITT-01A**

TOTAL DEPTH (feet): **6.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841185.854507**

EASTING: **556199.093241**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 | | OL: dark brown, fine to medium grained, NATURAL ORGANIC SILT, firm, moist, subangular, re-worked soils, and (25-50%) debris and rubbish (tires, hub cap, metal, plastic sheeting, plastic caps). | Fill | 0.0 |
| -1 | | SM: dark brown, fine to coarse grained, SILTY SAND, firm, moist, subangular, re-worked soils, natural organics. | Re-worked Soil | 0.0 |
| -2 | | PS: dark gray-blue, fine to coarse grained, PAINT SLUDGE, dense, hard, moist, chemical odor, and (25-50%) debris and rubbish (hub cap, plastic sheeting, metal) | Fill/Paint Sludge | 0.0 |
| -3 | | | | |
| -4 | | | | |
| -5 | | SC: light brown, fine to medium grained, CLAYEY SAND, soft, saturated, subangular, native material. | Native Soil | 0.0 |
| -6 | | | | |

# TEST PIT LOG

LOCATION: **OC-ITT-02**

TOTAL DEPTH (feet): **9.50**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/20/2007**

DATE COMPLETED: **3/20/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841169.249323**

EASTING: **556090.223609**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 – -1 | | SC: medium brown, fine to coarse grained, CLAYEY SAND, firm, moist, subangular, soil cover, with (15-25%) cobbles. | Re-worked Soil | 0.0 |
| -1 – -7 | | SP-GP: dark brown, fine to coarse grained, waste rock, POORLY GRADED SAND-GRAVEL, loose, moist, angular, re-worked soils, and (25-50%) cobbles/waste rock. | Mine Waste Rock (re-worked) | 0.0 |
| -7 – -8 | | SP-GP: medium gray, fine to coarse grained, POORLY GRADED SAND-GRAVEL, firm, moist, subangular, native material, trace (<10%) cobbles >3' in size overlying native material. | Native Soil | 0.0 |
| -8 – -9 | | SC: light brown, fine to medium grained, CLAYEY SAND, soft, saturated, subangular, native material, trace (<10%) cobbles. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITT-02A**

TOTAL DEPTH (feet): **11.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/20/2007**

DATE COMPLETED: **3/20/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841249.242155**

EASTING: **556075.367417**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -2 | | SC-GW: dark brown, fine to coarse grained, CLAYEY SAND, firm, moist, subangular, re-worked soils, and (25-50%) cobbles and debris (tires and metal scraps on surface). | Re-worked Soil | 0.0 |
| -2 to -3 | | SP: black-gray, fine to medium grained, WELL GRADED SAND, loose, moist, angular, mine tailing, trace (<10%) organic silt. | Mine Tailings | 0.0 |
| -3 to -6 | | SC-GW: medium brown, fine to coarse grained, CLAYEY SAND, firm, moist, subangular, re-worked soils, and (25-50%) cobbles and debris. | Re-worked Soil | 0.0 |
| -6 to -11 | | SC: light brown, fine to medium grained, CLAYEY SAND, soft, saturated, subangular, native material, trace (<10%) cobbles. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITT-03**

TOTAL DEPTH (feet): **11.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Greg Albright**

DATE STARTED: **3/20/2007**

DATE COMPLETED: **3/20/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841332.282411**

EASTING: **556033.104889**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -3 | | SM-GW: light brown, fine grained, SILTY SAND AND GRAVEL, soft, saturated, subangular, re-worked soils, and (25-50%) cobbles and debris and rubbish (tires, wood, plastic bags, wire, metal straps). | Fill | 0.0 |
| -3 to -4 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, angular, re-worked mine tailing. | Mine Tailings | 0.0 |
| -4 to -7 | | SM-GW: medium brown, fine to medium grained, SILTY SAND AND GRAVEL, firm, moist, subangular, reworked soils. | Re-worked Soil | 0.0 |
| -7 to -8 | | OL-OH: black, fine to medium grained, NATURAL ORGANIC SILT-CLAY, firm, moist, subangular, re-worked soils, trace (<10%) cobbles. | Re-worked Soil | 0.0 |
| -8 to -11 | | GW-GM: medium brown, fine to coarse grained, WELL-GRADED SILTY GRAVEL, loose-saturated, moist, subangular, native soil, mottled, trace (<10%) cobbles. | Mine Tailings | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITT-04**

TOTAL DEPTH (feet): **15.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/20/2007**

DATE COMPLETED: **3/20/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841482.542123**

EASTING: **556058.209273**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -2 | | SP-GP: black, fine to coarse grained, POORLY GRADED SAND-GRAVEL, loose, moist, subangular, mine tailing, and (25-50%) debris and rubbish (plastic sheeting, plastic paint caps, metal straps, wood), trace (<10%) gravel. | Fill | 0.0 |
| -2 to -4 | | SM: black, fine to coarse grained, SILTY SAND, loose, moist, subangular, re-worked mine tailing, and (25-50%) debris, trace (<10%) gravel , No plastic sheeting. | Mine Tailings | 0.0 |
| -4 to -5 | | SM: black, fine to medium grained, SILTY SAND, loose, moist, angular, mine tailing, trace (<10%) gravel. | Mine Tailings | 0.0 |
| -5 to -15 | | SM-GW: medium brown, fine to coarse grained, SILTY SAND AND GRAVEL, firm, moist, subangular, native material, with (15-25%) cobbles, an abundance of cobbles from 12-14.5 ft. Little to no clay. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITT-05**

TOTAL DEPTH (feet): **16.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/20/2007**

DATE COMPLETED: **3/20/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

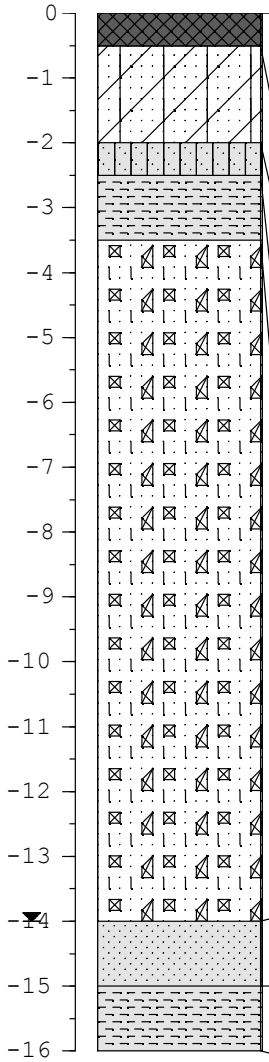
**COORDINATES**

NORTHING: **841747.039275**

EASTING: **556062.055417**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**




| DEPTH (feet) | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|
| 0 | OL: black, fine to medium grained, NATURAL ORGANIC SILT, firm, moist, subangular, re-worked soils, natural organic odor, with (15-25%) gravel, trace (<10%) debris debris and rubbish (tire, fiberglass, insulation, pieces of plastic). | Re-worked Soil | 0.0 |
| -1 | | Fill | 0.0 |
| -2 | SC-SM: medium brown, fine to medium grained, CLAYEY-SILTY SAND, firm, moist, subangular, soil cover, natural organic odor, trace (<10%) gravel, with (15-25%) debris and rubbish (tire, fiberglass, insulation, pieces of plastic). | Mine Tailings | 0.0 |
| -3 | SM: black, fine to coarse grained, SILTY SAND, loose, moist, angular, mine tailing, trace (<10%) gravel, and (25-50%) debris and rubbish (rubber gaskets, plastic sheeting, plastic straps, and wood). | Fill | 0.0 |
| -4 | SC: medium brown, fine to medium grained, CLAYEY SAND, firm, moist, subangular, soil cover, trace (<10%) gravel, and (25-50%) debris and rubbish (cardboard, inflatable tube, steering wheel, wood plastic sheeting, metal scraps, and debris from above). | | |
| -5 | | | |
| -6 | SM-GW: black, fine to coarse grained, SILTY SAND AND GRAVEL, firm, moist, angular, mine tailing, with (15-25%) gravel and (25-50%) debris soils and mine tailings are intermixed. | | |
| -7 | | | |
| -8 | | | |
| -9 | | Mine Tailings | 0.0 |
| -10 | | | |
| -11 | | | |
| -12 | | | |
| -13 | | | |
| -14 | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, angular, mine tailing, no debris. | Mine Tailings | 0.0 |
| -15 | SC: medium brown, fine to medium grained, CLAYEY SAND, firm, moist, subangular, native material, trace (<10%) fine to medium grained, gravel. | Native Soil | 0.0 |
| -16 | | | |

# TEST PIT LOG

LOCATION: **OC-ITT-06**

TOTAL DEPTH (feet): **9.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **842041.074732**

EASTING: **556010.234873**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 – -4 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, angular,re-worked mine tailing, and (25-50%) debris and rubbish (scrap metal, old car parts, abundance of tires with rims, wire, abandoned rusted cars). | Mine Tailings | 0.0 |
| -4 – -8 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, angular, mine tailing. | Mine Tailings | 0.0 |
| -8 – -9 | | SC-GW: light brown, fine to coarse grained, CLAYEY SAND AND GRAVEL, firm, saturated, subrounded, native material, with (15-25%) cobbles. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITT-07**

TOTAL DEPTH (feet): **7.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **842293.582892**

EASTING: **555998.032889**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 | | OL-OH: black, fine grained, NATURAL ORGANIC SILT-CLAY, loose, moist, subangular, mine tailing, trace (<10%) debris, natural organic odor. | Mine Tailings (re-worked) | 0.0 |
| -1 | | SM: orange-brown, fine to medium grained, SILTY SAND, loose, moist, angular, mine tailing. | Mine Tailings | 0.0 |
| -2 | | SM: black, fine to medium grained, SILTY SAND, loose, saturated, angular, mine tailing. | Mine Tailings | 0.0 |
| -3 | | | | |
| -4 ▼ | | | | |
| -5 | | | | |
| -6 | | GW-GM: medium gray, fine to coarse grained, WELL-GRADED SILTY GRAVEL, loose, saturated, angular, waste rock. | Mine Waste Rock | 0.0 |
| -7 | | | | |

# TEST PIT LOG

LOCATION: **OC-ITT-08**

TOTAL DEPTH (feet): **7.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **842237.129772**

EASTING: **556122.962937**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 | | OL-OH: black, fine grained, NATURAL ORGANIC SILT, firm, moist, subangular, re-worked soils, and (25-50%) mine tailings. | Mine Tailings (re-worked) | 0.0 |
| -1 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, saturated, angular, mine tailing, trace (<10%) silt. | | |
| -2 | | | | |
| -3 | | | | |
| -4 | | | Mine Tailings | 0.0 |
| -5 | | | | |
| -6 | | | | |
| -7 | | | | |

# TEST PIT LOG

LOCATION: **OC-ITT-09**

TOTAL DEPTH (feet): **3.50**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **842178.833452**

EASTING: **556207.774713**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 | | OL-OH: black, fine to coarse grained, NATURAL ORGANIC SILT-CLAY, soft, saturated, subangular, mottled, trace (<10%) debris, natural organic odor. | Re-worked Soil | 0.0 |
| -1 | | SP: black, medium to coarse grained, POORLY GRADED SAND, loose, saturated, angular, mine tailing, with (15-25%) silt, natural organic odor. | Mine Tailings | 0.0 |
| -2 | | SM: light brown, fine grained, SILTY SAND, firm, saturated, subangular, mottled, native soil, trace (<10%) sand and cobbles. | Native Soil | 0.0 |
| -3 | | | | |

# TEST PIT LOG

LOCATION: **OC-ITT-10**

TOTAL DEPTH (feet): **6.50**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **842027.422764**

EASTING: **556241.724409**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

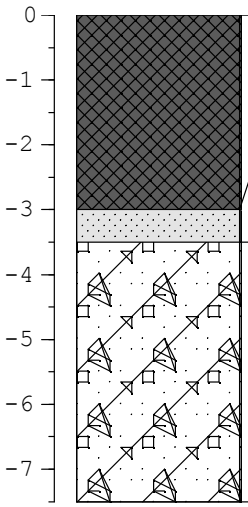
| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 | | OL-OH: black, fine to coarse grained, NATURAL ORGANIC SILT-CLAY, soft, saturated, subangular, mottled, trace (<10%) gravel, natural organic odor. | Native Soil | 0.0 |
| -1 | | PT: black, fine grained, PEAT, soft, saturated, subangular, mottled, natural organic odor. | Native Soil | 0.0 |
| -2 | | GC: medium gray, fine to coarse grained, CLAYEY GRAVEL, firm, saturated, subangular, mottled, trace (<10%) cobbles, natural organic odor. | Native Soil | 0.0 |
| -3 | | CH: medium brown, fine to coarse grained, FAT CLAY, firm, saturated, subangular, mottled, with (15-25%) cobbles. | Native Soil | 0.0 |
| -4 | | GC-GM: medium brown, fine to coarse grained, CLAYEY-SILTY GRAVEL, firm, saturated, subangular, mottled, and (25-50%) cobbles, native soil. | Native Soil | 0.0 |
| ▼5 | | | | |
| -6 | | | | |

# TEST PIT LOG

LOCATION: **OC-ITT-11**

TOTAL DEPTH (feet): **7.50**

| PROJECT INFORMATION | | DRILLING INFORMATION | |
|---|---|---|---|
| PROJECT: | **Ford Ringwood** | SUBCONTRACTOR: | **Compass Environmental** |
| PROJECT NUMBER: | **NJ000604.0001** | OPERATOR: | **Robert Ferguson** |
| SITE LOCATION: | **Ringwood, New Jersey** | METHOD: | **230 C (# 246-16-5017)** |
| LOGGED BY: | **Jeff Seier** | **COORDINATES** | |
| DATE STARTED: | **3/21/2007** | NORTHING: | **841857.547307** |
| DATE COMPLETED: | **3/21/2007** | EASTING: | **556324.047865** |
| | | ELEVATION: | |
| | | PID Lamp Size: | **10.6 eV lamp** |




| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 – -3 | | OL: black, fine grained, NATURAL ORGANIC SILT, firm, moist, subangular, re-worked soils, and (25-50%) debris and rubbish (wire, metal, plastic sheeting, tires, cloth). | Fill | 0.0 |
| -3 – -4 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, subangular, mine tailing, and (25-50%) debris. | Mine Tailings | 0.0 |
| -4 – -7 | | SC-GW: medium brown, fine to coarse grained, CLAYEY SAND AND GRAVEL, firm, moist, subangular, mottled, native soil, trace (<10%) cobbles. | Native Soil | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITT-12**

TOTAL DEPTH (feet): **12.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841759.646763**

EASTING: **556455.150585**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -8 | | SP: black, fine to medium grained, POORLY GRADED SAND, loose, moist, angular, mine tailing. | Mine Tailings | 0.0 |
| -8 to -9 | | SP: orange, fine to medium grained, POORLY GRADED SAND, loose, moist, angular, oxidized mine tailing. | Mine Tailings | 0.0 |
| -9 to -10 | | CH-MH: light gray, fine grained, ELASTIC SILT-CLAY, firm, saturated, subangular, mottled, native soil, trace (<10%) sand. | Native Soil | 0.0 |
| -10 to -12 | | SC: light brown, fine grained, CLAYEY SAND, firm, saturated, subangular, mottled, trace (<10%) sand, native soil. | Native Soil | 0.0 |

▼ -11

# TEST PIT LOG

LOCATION: **OC-ITT-13**

TOTAL DEPTH (feet): **14.50**

| PROJECT INFORMATION | | DRILLING INFORMATION | |
|---|---|---|---|
| PROJECT: | **Ford Ringwood** | SUBCONTRACTOR: | **Compass Environmental** |
| PROJECT NUMBER: | **NJ000604.0001** | OPERATOR: | **Robert Ferguson** |
| SITE LOCATION: | **Ringwood, New Jersey** | METHOD: | **230 C (# 246-16-5017)** |
| LOGGED BY: | **Jeff Seier** | **COORDINATES** | |
| DATE STARTED: | **3/21/2007** | NORTHING: | **841535.763499** |
| DATE COMPLETED: | **3/21/2007** | EASTING: | **556463.655929** |
| | | ELEVATION: | |
| | | PID Lamp Size: | **10.6 eV lamp** |

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 to -6 | | SW: black, fine grained, WELL GRADED SAND, loose, moist, angular, mine tailing, with (15-25%) silt, natural organics at surface. | Mine Tailings | 0.0 |
| -7 to -14 | | MH: black, ELASTIC SILT, soft, saturated, mine tailing (slime), dense. | Mine Tailings | 0.0 |

# TEST PIT LOG

LOCATION: **OC-ITT-14**

TOTAL DEPTH (feet): **7.00**

## PROJECT INFORMATION

PROJECT: **Ford Ringwood**

PROJECT NUMBER: **NJ000604.0001**

SITE LOCATION: **Ringwood, New Jersey**

LOGGED BY: **Jeff Seier**

DATE STARTED: **3/21/2007**

DATE COMPLETED: **3/21/2007**

## DRILLING INFORMATION

SUBCONTRACTOR: **Compass Environmental**

OPERATOR: **Robert Ferguson**

METHOD: **230 C (# 246-16-5017)**

**COORDINATES**

NORTHING: **841213.326379**

EASTING: **556303.950841**

ELEVATION:

PID Lamp Size: **10.6 eV lamp**

| DEPTH (feet) | SOIL SYMBOLS | SOIL DESCRIPTION | MATERIAL TYPE | PID (ppm) |
|---|---|---|---|---|
| 0 | | OL: black, fine to medium grained, NATURAL ORGANIC SILT, roots, loose, moist, subrounded, fill, paint sludge chunks, and (25-50%) debris and cobbles (tires, wood, metal, rope, wire). | Fill | 0.0 |
| -1 | | SM-GW: dark brown, fine to coarse grained, SILTY SAND AND GRAVEL, loose, moist, subangular, organics, debris, and (25-50%) gravel, trace (<10%) cobbles. | Fill | 0.0 |
| -2 | | | | |
| -3 | | | | |
| -4 | | SM-GW: dark brown, fine to coarse grained, SILTY SAND AND GRAVEL, firm, moist, subangular, native material, trace (<10%) cobbles, no debris. | Native Soil | 0.0 |
| -5 | | | | |
| -6 | | SC: light brown, fine to medium grained, CLAYEY SAND, soft, moist, subangular, native material, trace (<10%) gravel and cobbles. Groundwater at 9'. | Native Soil | 0.0 |
| -7 | | | | |

Location Ringwood, NJ Date 01/18/10

Project / Client NJ000604.0035.00035 / FORD

Prep for O'Connor work starting tomorrow.

Scope of Work: Investigation trenching in O'Connor. Trench T1 and T2 will be excavated SOUTH TO NORTH DOWN THE CENTER OF O'CONNOR WITH 6 perpendicular braches dissecting (T8, T7, T6, T5, T4 and T3). ONE BASE SAMPLE WILL BE COLLECTED AND ANALYZED FOR VOC, SVOC, PCBs and TAL Metals. 3 ENCORES AND 1-200 mL Amber will be USED in collection of the sample. These samples will be collected every 100'. Samples will Also be collected for atypical material found.

13:36 Called Adrianna from Accutest (Marie is work-

Location RINGWOOD, NJ Date 01/18/10 2/2

Project / Client NJ000604.0035.00035 / FORD

ING FROM home) Ordered sample bottles for soils. E-MAIL me confirmation of order. Bottles will ARRIVE IN Ringwood tomorrow morning.

15:00 JLA conference call w/ TONY MAFFEO, JON ROCKIP, Erich Zimmerman and Chris Motta.

15:15 RESCHEDULED

15:30 MET WITH T. MAFFEO TO DISCUSS LITHOLOGY OF TRENCHES AND SAMPLE ID TO BE USED FOR SCOPE OF WORKS. WE WILL USE THE TRENCH LOCATION AND STATION (ft) Example: T1-0+00 AND ~~T3-0+97~~ T3-1+00 WITH THE DEPTH FOLLOWING IN ( )

17:00 OFF-SITE 01/18/10

Location RINGWOOD, NJ Date 01/19/10

Project / Client FORD / NJ000604.0035.00035

06:45 ON-SITE

07:00 HEALTH & SAFETY MEETING

09:00 STARTED TRENCH WORK IN O'CONNOR AT SOUTHERN END ALONG THE T1 AXIS. BROKE GROUND 2' FROM CHAIN LINK FENCE.

→ 09:05 Sample T1-0+10 (11.0-12.0) WAS COLLECTED FROM TRENCH EXCAVATION BASE AND SAMPLED OUT OF THE ~~EXCAVATOR~~ EXCAVATOR BUCKET. PID READING 0.0 ppm. NO MAGNETIC FORCE.

LITHOLOGY:

0-2.0' bsg. TOPSOIL, SOME SILT, low plasticity, soft consistancy, moist, mediuy brown, roots, leaf litter AND

Location RINGWOOD, NJ Date 01/19/10 2/4

Project / Client NJ000604.0035.00035/ FORD

SOME VEGATATION ON SURFACE. TRACES OF HOUSEHOLD DEBRIS ON SURFACE.

2.0'-12.0' bsg. NATIVE SOIL, SILTY CLAY MEDIUM TO HIGH PLASTICY, SOFT CONSISTANCY MOIST TO WET, LIGHT BROWN WITH GRAY MOTTLES, TRACE OF COBBLES 4" in DIAMETER AND SMALLER SUBROUNDED TO ROUNDED.

~4.5' bsg WATER SEEPING IN FROM SIDEWALL

Photos: 001 TO 010. SEE photo log for description details.

10:30 OBSERVING PAINT SLUDGE ON SURFACE AND ~2.5' to 3.0' bsg. Paint Sludge Blue-gray AND RED-purple, DRY



Location RINGWOOD, NJ Date 01/19/10 3/4

Project / Client NJ000604.0035.00035/ FORD

AND BRITTEL. CHIPS OF PAINT SLUDGE IS MIXED WITH COBBLES AND SMALL BOULDERS 15" in diameter and smaller SUBANGULAR TO SUBROUNDED. PAINT SLUDGE LOCATED ON T1-0+88'. Also OBSERVED 2 tires, traces of rusted SCRAP metal AND CINDER Block.

LITHology:
T1-0+10' to T1-0+87.5'

0-1.5' bsg Topsoil, SOME SILT, low plasticity, Soft consistancy, moist, MEDIUM BROWN, ROOTS, LEAF LITTER AND SOME Vegetation ON Surface. Traces of household debris on surface.

1.5'-6.0' bsg NATIVE SOIL SILTY-CLAY, medium to high plasticity, soft consistancy, WET, light brown w/ gray mottles. Traces of cobbles

Location Ringwood Date 01/19/10 4/4

Project / Client NJ000604.0035.00035 / FORD

4" in diameter and Smaller, Subrounded to Rounded.

10:45 - Royal Environmental

12:00 CONSTRUCTED PAINT SLUDGE/ Prep Staging Area. Poly WAS laid AT BASE AND OVER SILL FENCE. SILL FENCE ON three SIDES WITH FOURTH SIDE OPEN. LOCATION OF STAGING ARE ON SOUTH END OF O'Connie ALONG PETERS MINE ROAD APPROXIMATELY 150' OFF ROAD.

13:00 BACKFILLED T1-0+00 to T1-0+85'

01/19/10

R2-0004818

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 1/19/10
CHKD: DATE:
REV: DATE:

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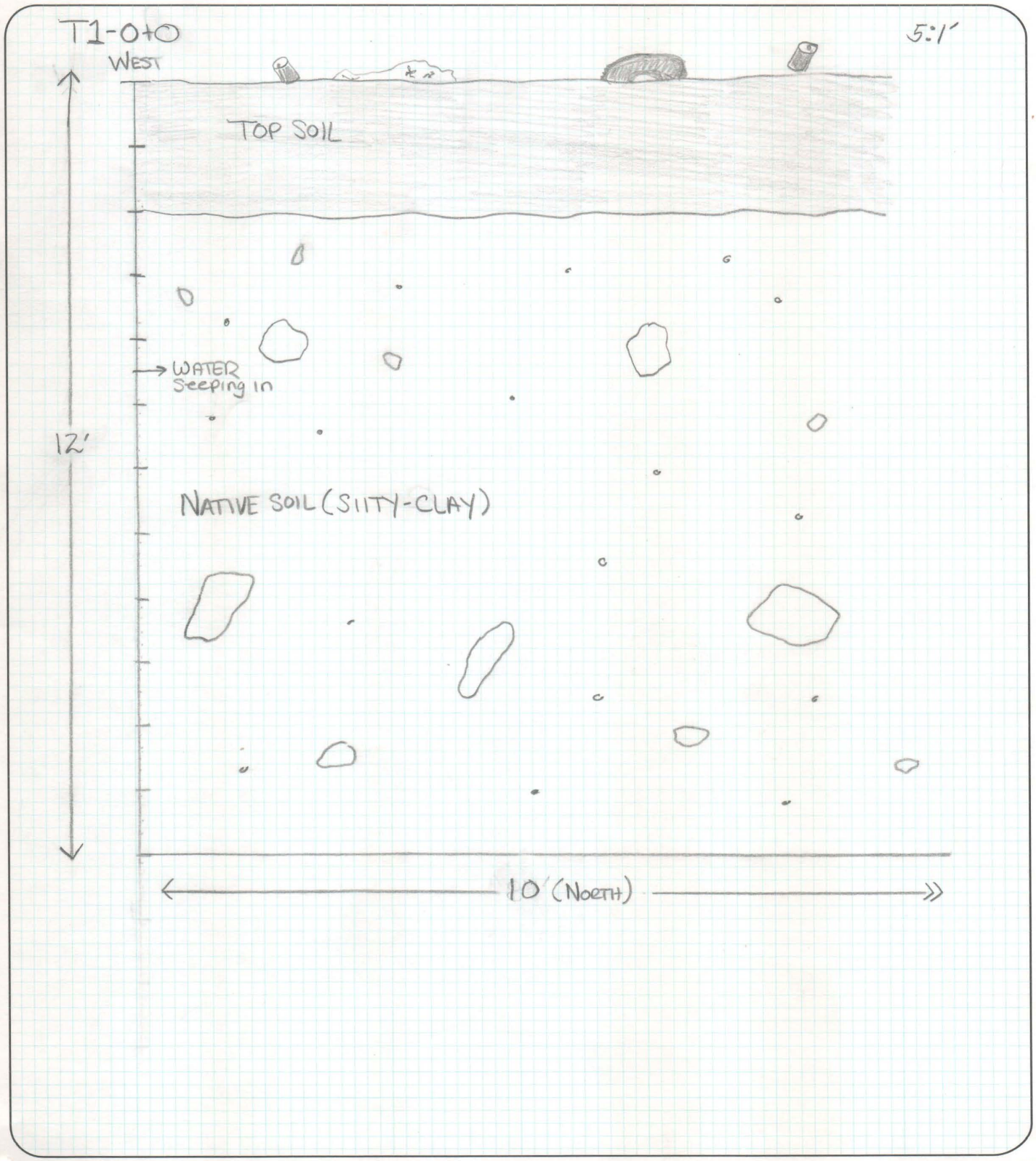


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AG 30-1-97

R2-0004819

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 1/19/10
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T1-0+10'

5:1'

R2-0004820

Location RINGWOOD, NJ Date 01/20/10

Project / Client NJ000604.0035.00035 / FORD

06:45 ON-SITE

07:20 HEALTH & SAFETY MEETING

08:10 RAYAL OILED EXCAVATOR

09:00 CONTINUED TRENCHING AT T1 AXIS AT T1-0+88'

PAINT SLUDGE WAS OBSERVED AT T1-0+88' TO T1-0+93' ON EAST SIDEWALL Approximately 3.5' DSG. PAINT SLUDGE WAS blue-gray with yellow plastic caps STUCK IN THE PAINT. CHASED PAINT SLUDGE VAIN IN EAST WALL 2.5' EAST UNTIL VISUALLY CLEAN PIECES WERE 0.6" Thick.

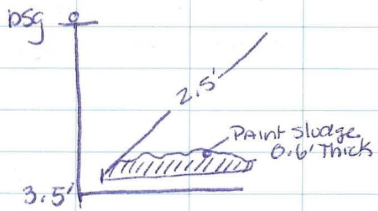
PAINT SLUDGE WAS EXCAVATED BY SKIDSTEAR AND TRANSFERRED TO STAGING AREA. V. MYERS

09:10 Inspected SIDEWALLS UNTIL

Location RINGWOOD, NJ Date 01/20/10 2/7

Project / Client NJ000604.0035.00035 / FORD

Visually clean.




09:10 Continued moving NORTH ALONG T1 AXIS TRENCHING.

09:40 Conversation with Bergie from Royal Show him areas of concern. We laid down play to fan out lifts so V. Myers can hand pick out SLUDGE PIECES.

10:08 T1-0+93' to T1-1+05' PAINT SLUDGE VAIN located ON WEST SIDEWALL ~ 4.0' to 5.5' bsg. PAINT SLUDGE IS BLUE-GRAY MARBLIZED W STRONG ODOR AND PID reading of 85.4 ppms



Location RINGWOOD, NJ Date 01/20/10 3/7

Project / Client NJ000604.0035.00035/ FORD

DRUM CARCUS CRUSH AND RUSTED WAS located WITH PAINT SLUDGE. NO MARKINGS ON ~~PAINT SLUDGE~~ DRUM.

10:25 CALLED T. MAPPED ABOUT Plan AND HE came Down to T1 location to observer. J. Gowers from USEPA and R. Hwee from USACOE were also on-site.

10:30 USE STOP work Authority to discuss further actions. ~~DISES~~ Choise was made to continue chasing PAINT sludge and document areas.

11:07 Continued T1 trenching

11:35 RESIDENTIAL DOG ENTERED O'CONNOR Area AND WAS ~~EXSCORTED~~ escorted out by V. Myers. ~~AREA~~ WAS secured.

Location Ringwood, NJ Date 01/20/10 4/7

Project / Client NJ000604.0035.00035 / FORD

12:00 Break for Lunch

13:05 T1-1+05 TO T1-1+15

0-2.4' bsg. Topsoil, some silt, low plasticity, soft consistancy, moist, medium brown, roots and vegetation on surface. Traces of household debris and surface paint sludge.

2.4-4.4' bsg. Fill, mine tailings mixed with paint sludge and industrial debris; rubber hose, rusted scrap metal, one Crushed drum with no PID readings 0.0 ppm. Drum was removed and placed in staging area. Some 6" and smaller in diameter cobbles, subangular to subrounded. mine tailings dark gray mixed with sand-silt medium, moist, loose,



Location Ringwood, NJ Date 01/20/10

Project / Client NJ000604.0035.00035 / FORD

well sorted, medium brown.

4.4'-6.0' bsg NATIVE SOIL, Silty-clay, medium to high plasticity, moist to wet, soft consistancy, light brown with gray mottles, Traces of 3" in diameter and smaller cobble, subrounded to rounded.

13:50 T1-1+16' ~~DS~~ on east Sidewall Paint Sludge, blue-gray located 4.6' bsg. Larger vein 1.5x3' pieces. Flow head down slope and through west sidewall, PID readings on paint sludge is 74.9 ppms. Plastic bags were stuck to sludge.

→ 15:00 ~~T1-1+00'~~ Sample T1-1+00 (6.5'-7.0) collected from base of trench

Location Ringwood, NJ Date 01/20/10 6/7

Project / Client NJ000604.0035.00035

From excavation bucket.

14:45 T1-1+16 to T1-1+32 PAint Sludge VAIN flowing EAST TO WEST IN TRENCH. Pieces 1.5'x3.0' in diameter and Smaller. Debris orange construction fencing, plastic strapping, clear plastic bags, and black plastic.

16:00 TRENCH BACKFILLED. LEFT T1-1+25 TO T1-1+32 open to START TOMORROW. Excavator bucket was lefted IN trench to prevent Cave in and for safety. PAint Sludge staging pile was Covered with poly.

16:15 Photos were downloaded and added some documentation.



Location Ringwood, NJ Date 01/20/10 7/7

Project / Client NJ000604.0035.00035

Photos 001 to 027 see photo log for details.

17:00 OFF-SITE

01/20/10

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: FORD RING-WOOD
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 1/20/10
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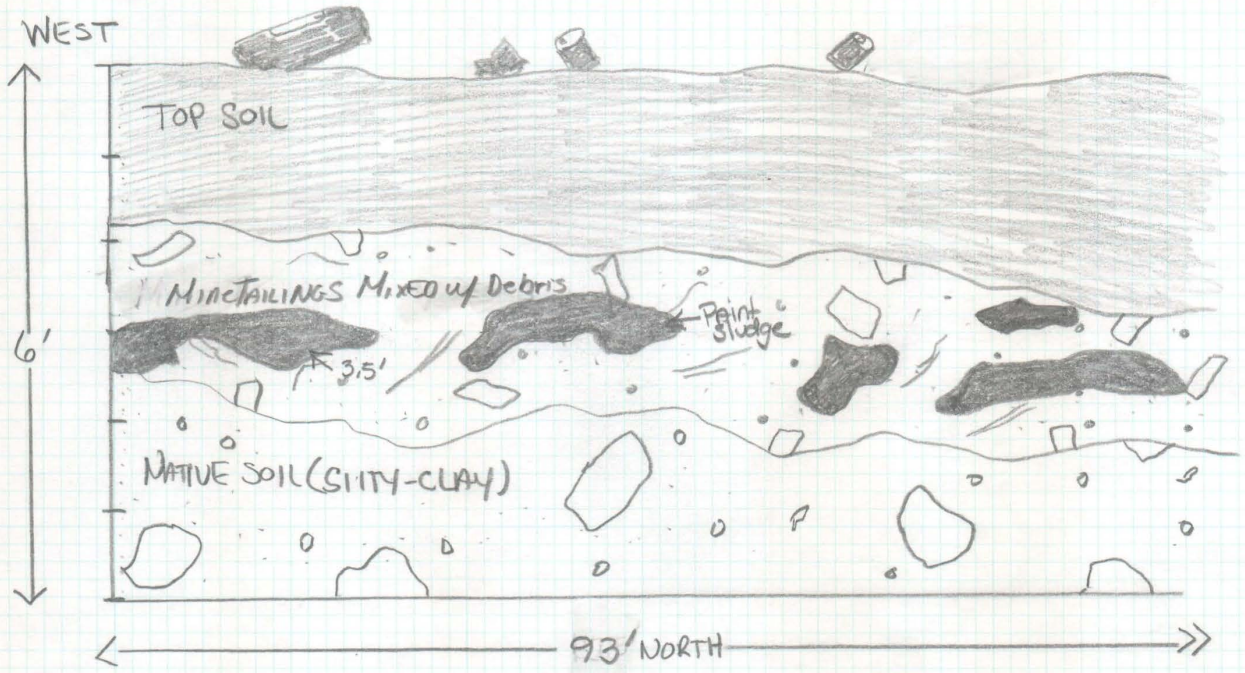
T1-1+88'

5:1'

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R2-0004825

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SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

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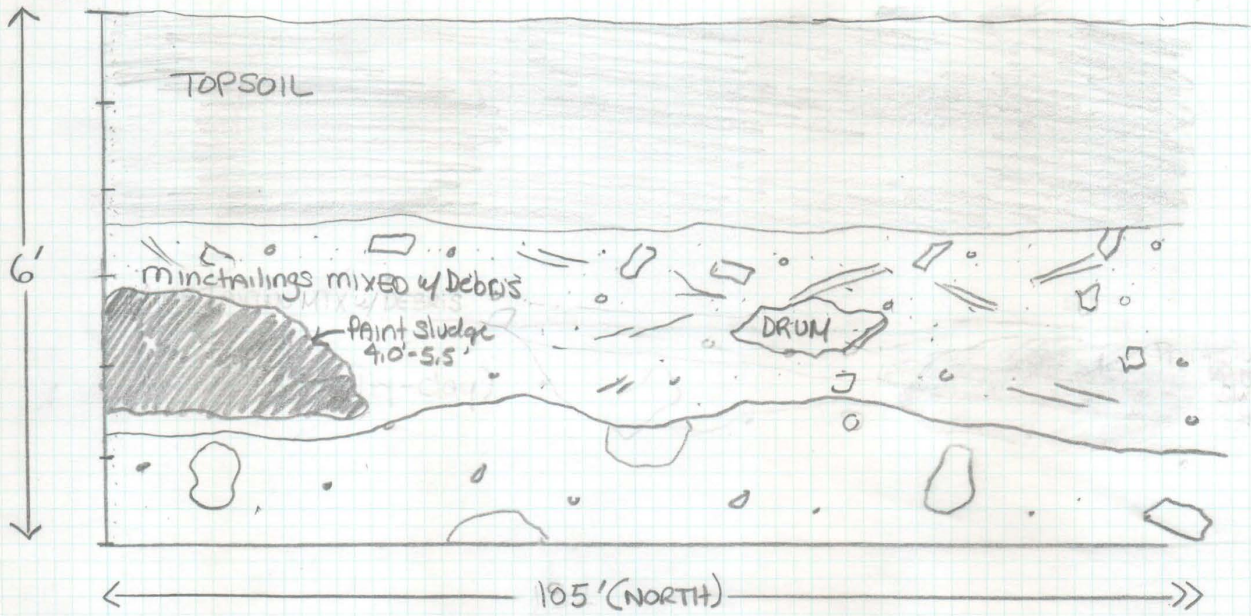
T1-0+93.0'
WEST

5:1'

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AG 30-1-97

R2-0004826

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 1/20/10
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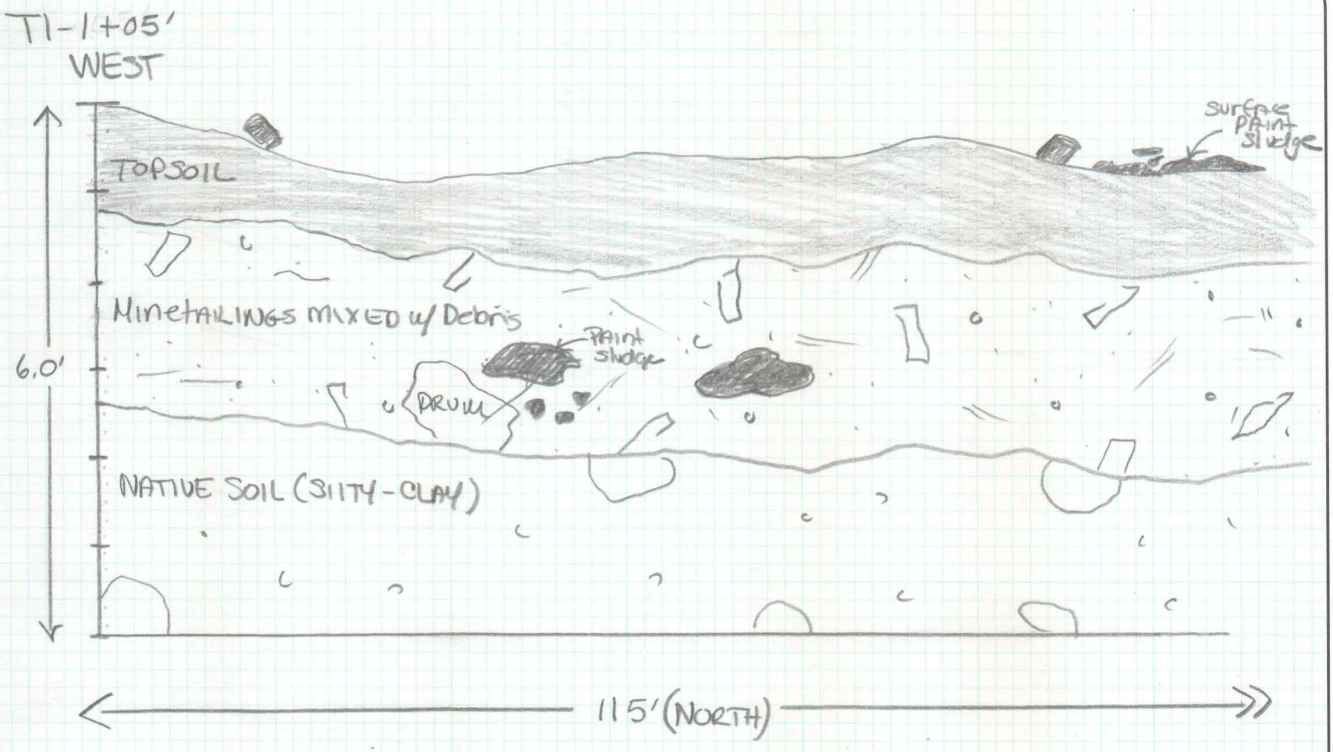




R2-0004827

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
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SUBJECT: O'Connor Trench Cross Sections
PROJECT: FORD RINGWOOD
CLIENT/PROJECT: NO: NJ000604.0036.00004

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T1-1+16'

WEST

R2-0004828

06:45 ON-SITE

07:15 HEALTH & SAFETY MEETING

07:30 CALIBRATION OF MULTIRAE
SN: 095-508367
CO-49, $H_2S$-25, LEL-50,
OXY 20.9, VOC-99.7

08:00 HELP D. KIRSCHNER
COLLECT POST EX SAMPLES
IN SR-7

09:00 Sample OC-PS-01
Collected Waste Classification
in O'Connor from the paint
sludge staging area. Was
Composit Sample. Pile is
~10 cubic yards. Photo 622

As per T. Maffeo not chasing
paint sludge. Only removing
paint sludge in the trench
and documenting paint



sludge areas.

09:00 Started excavating
continuing on T1

T1-1+31' to T1-1+63'
Surface paint sludge and
in west sidewall 1.7' to
3.4' bsg.

T1-1+31' to T1-1+63'
0-2.8' bsg. Topsoil, some
silt, low plasticity, soft
consistency, moist, medium
brown, roots and some
vegetation on surface. Paint
sludge on surface.

2.8-4.5' Fill, mine tailings, loose,
dry, well sorted, paint
sludge and debris industrial
wire, cloth, rubber hose,
wood, plastic bags, orange
and green caps, scrap

R2-0004829

metal.

4.5'-6.0' bsg NATIVE SOIL, Silty-clay, medium to high plasticity, soft consistancy, moist to wet, light brown with medium gray mottles, traces of 3" in diameter and smaller subrounded to rounded.

WIDTH OF TRENCH across is 6.5'

10:55 Trench backfilled

T1-1+46' EAST WALL OF TRENCH HAS SMALL AMOUNTS OF Paint Sludge, reddish color 2.4' bsg

Used Stake to mark end of excavation on T1 SO CAN be continued.



10:28 STARTED AT T8-0+0 excavating west. Trench started 4.5' off chain link fence.

→ 10:38 Sample T8-0+0 (6.0-7.0) collected from base of trench using excavator bucket.

T8-0+0 To T8-1+52

0-1.3' bsg. Topsoil, Some silt, low plasticity, soft consistancy, moist, medium brown, roots and Some vegetation on surface.

1.3'-7.10' bsg. NATIVE SOIL, Silty-clay medium to high plasticity, soft consistancy, moist to wet, light brown with gray mottles

T8-1+52 Paint Sludge in North and South Sidewall

R2-0004830

4.6 to 6.4' bsg.

→ 13:29 Sample TB-1+00 (6.0-7.0) collected at base of trench with excavation bucket.

13:48 TB-1+58 TO TB-1+69
@ 0-4.2' bsg. pockets of paint sludge in the north and South wall. Also at 6.4' bsg.

0-4.2 bsg. Fill, Sand and minetailing mix, Some 5" in diameter and smaller cobbles, angular to subangular. Sand medium dominantly minetailings loose, moist, well sorted. this was a daily COAT with debris Sandwiched. Debris was industrial; black plastic, metal braided cable, one drum CARCUS, rusted scrap metal, rubber hose, orange Construction fencing.



Looks like more drums in side wall.

Ended at TB-1+69

15:15 Paint sludge was removed and staged in paint sludge staging area by skidsteer. Pile was covered with poly and secured.

Trench was backfilled

16:10 Sample mangement

16:37 Downloaded photos 001-041. See photo log for details. Worked on photo log

17:00 OFF-SITE

01/21/10

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 01/21/10
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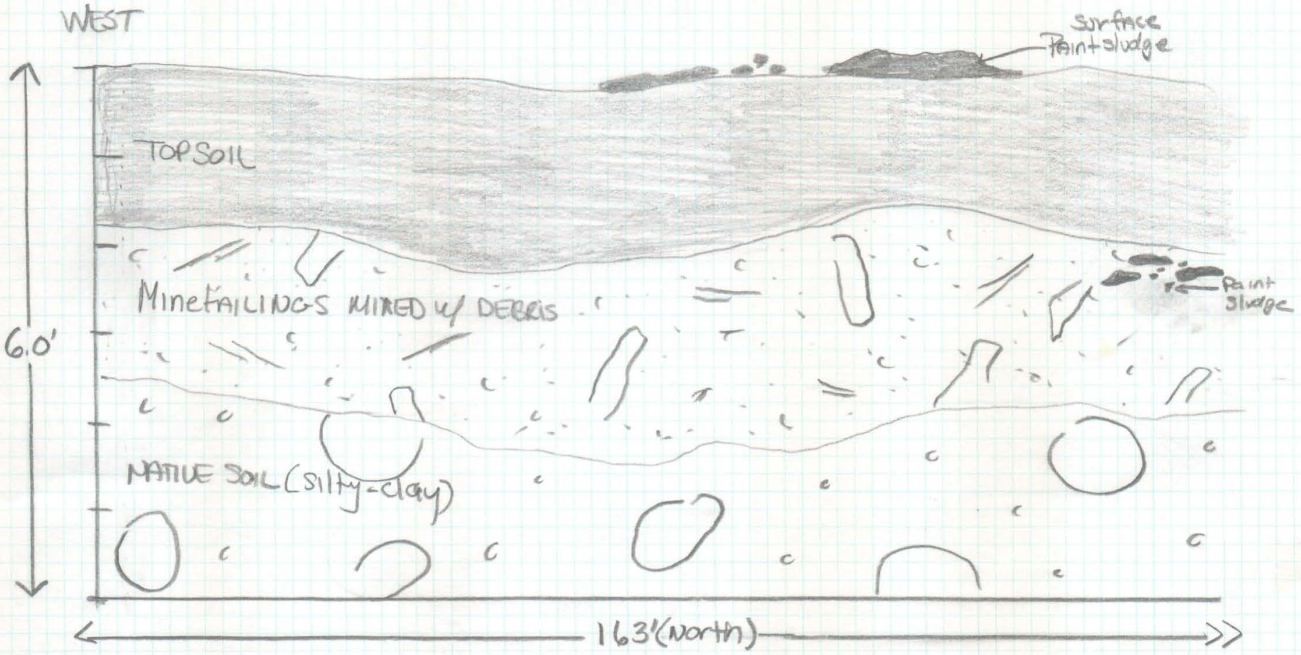
T1 - 1+33

5:1'






R2-0004832

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
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SUBJECT: O'Connor Trench Cross Sections
PROJECT: FORD Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

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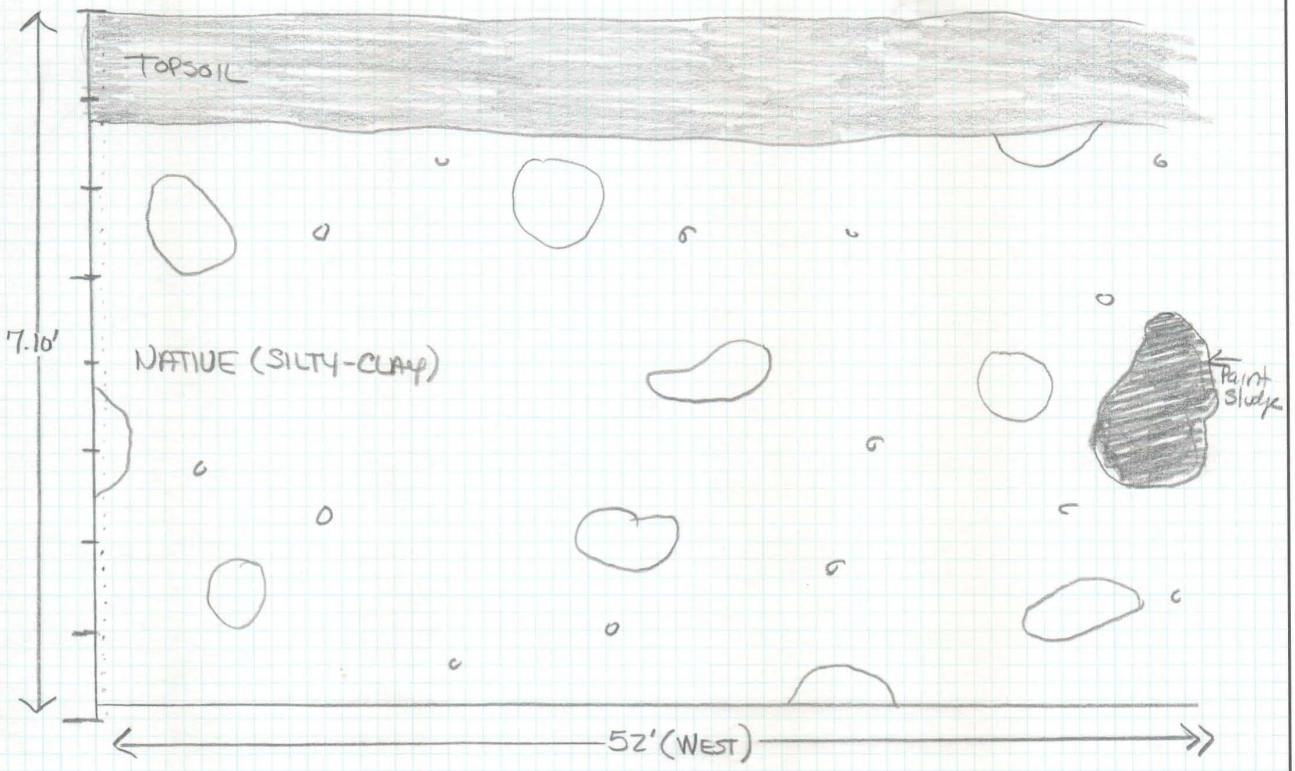
T8-0+00

5:1'

NORTH

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R2-0004833

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
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SUBJECT: O'Connor Trench Cross Section
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 01/21/10
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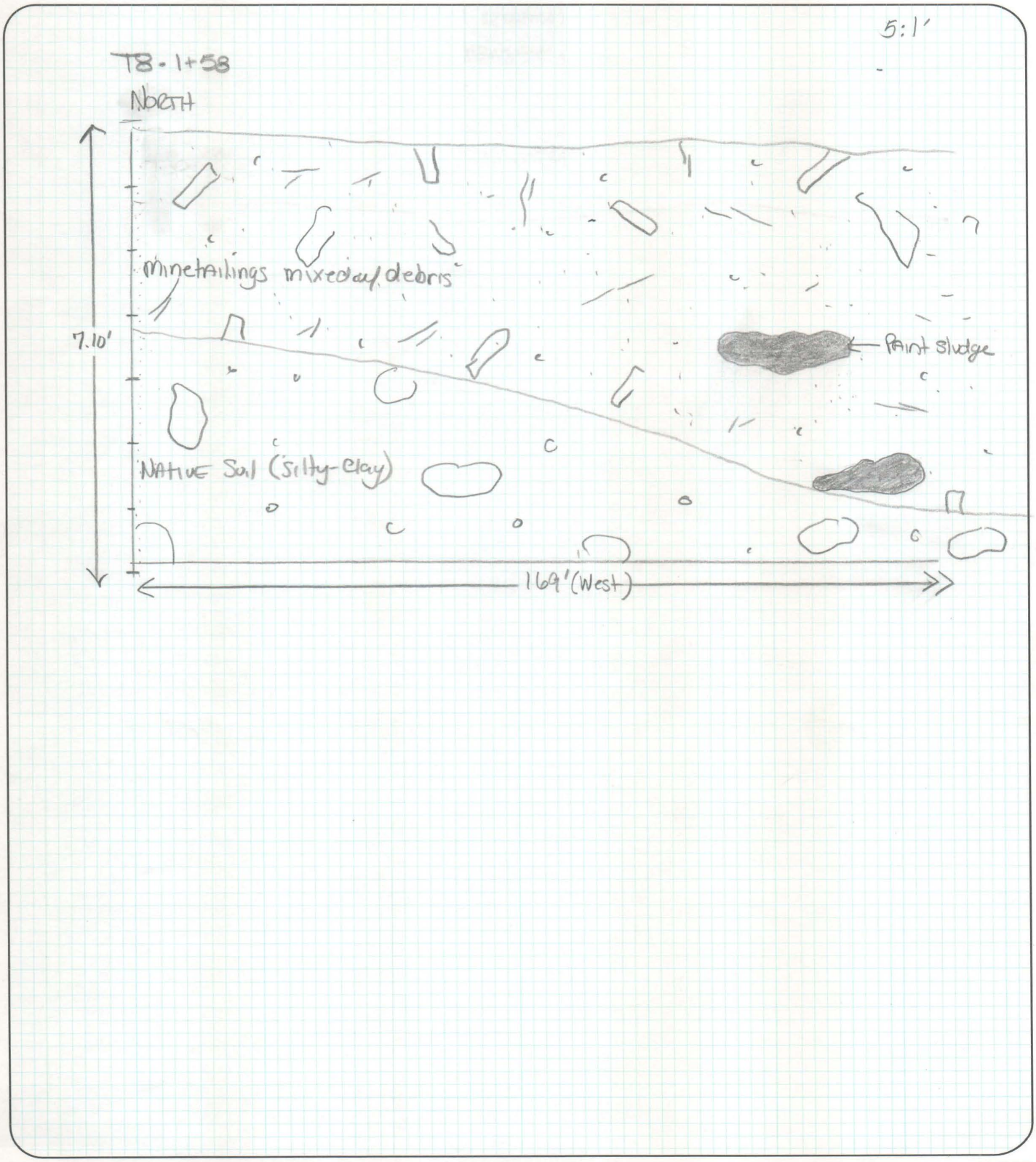


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AG 30-1-97

R2-0004834

Location Ringwood, NJ Date 01/25/10 1/6

Project / Client NJ000604.0035.00035/ FORD

07:00 ON-SITE

07:10 HEALTH and SAFETY
NOTE RAIN All day today + WIND

07:30 Calibration MultiRAE
SN-095-508367
CO-50, $H_2S$-25, LEL-50
Oxy-20.9, VOC-100

Royal greasing, gasing, and oiling excavator.

09:25 Continued Trenching at west end of T8 at T8-3+94

→ 10:00 Sample T8-3+94 (10.0-11.0) Collected from trench base with excavation bucket.

T8-3+94'
0-1.7' bsg. Topsoil, Silty sand, low plasticity, soft Consistancy, dry, medium



Location Ringwood, NJ Date 01/25/10 2/6

Project / Client NJ000604.0035, 00035/ FORD

Brown, roots, Vegetation and leaf litter on surface.

1.7'-6.2' bsg. Fill, Back wall north all minetailings, continuing towards Peters Mine Rd. Minetailings taper off in the north and south Sidewall until T8-3+82 where the minetailings Stop. Fill material becomes more dominant. Silty-Sand, loose, medium grain, poorly sorted, dry, medium to light Brown with Some 8" in diameter and Smaller Cobbles, Angular to Subangular and traces of boulders 2' by 3' and smaller in diameter, Subrounded. Metal Shavings 3.2' bsg.

R2-0004835

Location Ringwood, NJ Date 01/25/106 3/

Project / Client NJ000604.0035.00035/ FORD

6.2'-11.0' bsg NATIVE soil, silty-clay, medium to high plasticity, medium stiff, blocky, moist, light brown with gray mottles.

10:20 Backfilled T8-3+94' to T8-3+82' To support road from undermining.

→11:45 Sample T8-3+00 collected (10-11') at base of trench from excatation bucket.

T8-3+81' to T8-3+00'

0-1.4' bsg. Topsoil, Some silt, low plasticity, soft consistancy, dry, dark brown, roots. Some debris, bottles, tires and plastic bags on surface.

1.4-6.0' Fill material, silty-sand, low plasiticity,



Location Ringwood, NJ Date 01/25/106 4/

Project / Client NJ000604.0035.00035/ FORD

loose, well sorted, dry, medium brown, some 4" in diameter and smaller cobbles, Angular to subangular.

6.0'-11.0' bsg. NATIVE MATERIAL, silty-~~sand~~ clay, blocky, medium stiff consistancy, medium plasticity, moist, light brown with gray mottles.

→13:57 Sample south end paint sludge staging pile OC-PS-02. Sample composite collected in to no preserved 40-ml vials and one quart amber. Sent to EQ in Belleville, MI

→14:25 Sample T8-2+00 (9.5-10.5) collected

Location Ringwood, NJ Date 01/25/10 5/6

Project / Client NJ000604.0035.00035/ FORD

from base of trench with excavation bucket

T8-2+99' to T8 2+00

0-7.9' bsg. Fill material, sand. medium, poorly sorted, very loose, dry, medium brown to gray, no magnetic pull, some 6" in diameter and smaller cobbles, angular to subangular.

7.9'-10.3' bsg Native soil, silty-clay, some clay, medium plasticity, block, medium stiff, wet, light brown with gray mottles

5.11' to 7.4' bsg. Large pieces of scrap metal, metal rail and a small cart on wheels with axel, concrete



Location Ringwood, NJ Date 01/25/10 6/6

Project / Client NJ000604.0035.00035/ FORD

w/ rebarb.

Due to the absorbtion of the rain the trench walls were unstable continous sluffing into the trech occurred often. Depth of trench was minium into native due to this. Also measurements of lithology were estimated due to the stibility of sidewalls

16:00 Trench was backfilled ending the day at T8-2+00

16:30 Sample managment + photos 001 to 019. See photo log

17:00 OFF-site

01/25/10

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Section
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 01/28/10
CHKD: DATE:
REV: DATE:

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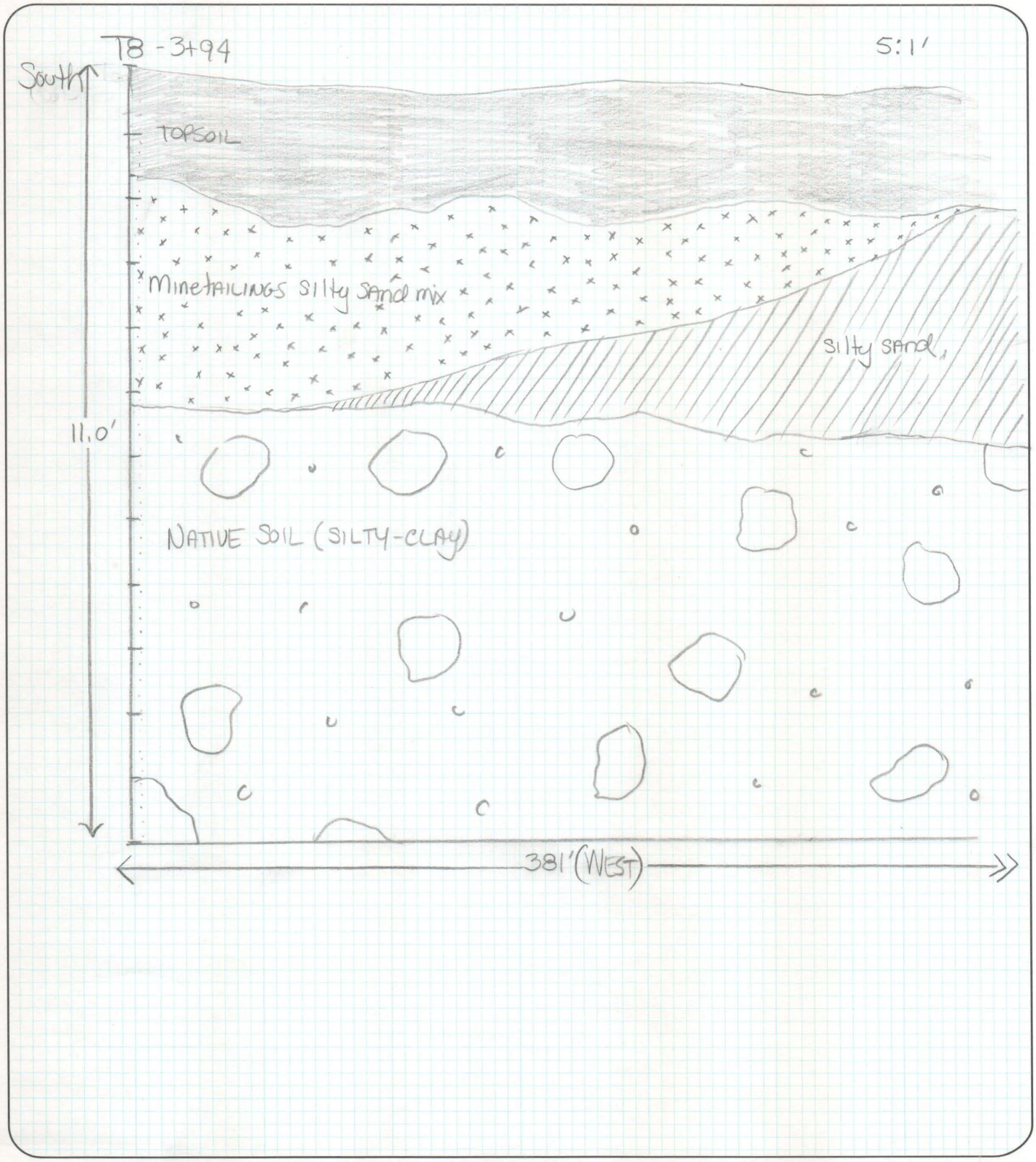


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AG 30-1-97

R2-0004838

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: FORD Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 01/25/10
CHKD: DATE:
REV: DATE:

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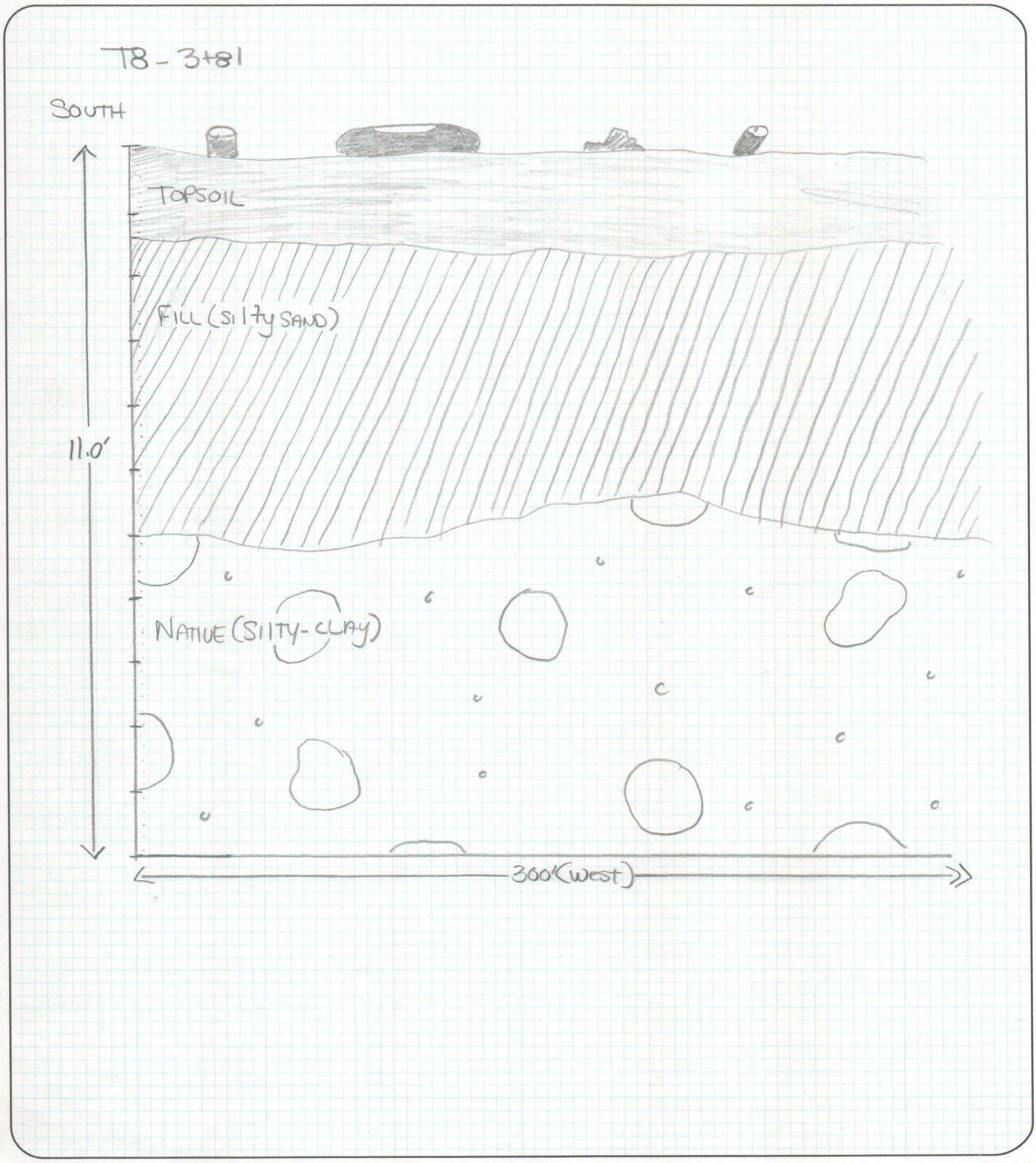


G&M Form 30 6-89

AG 30-1-97

R2-0004839

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Section
PROJECT: FORD RINGWOOD
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE:
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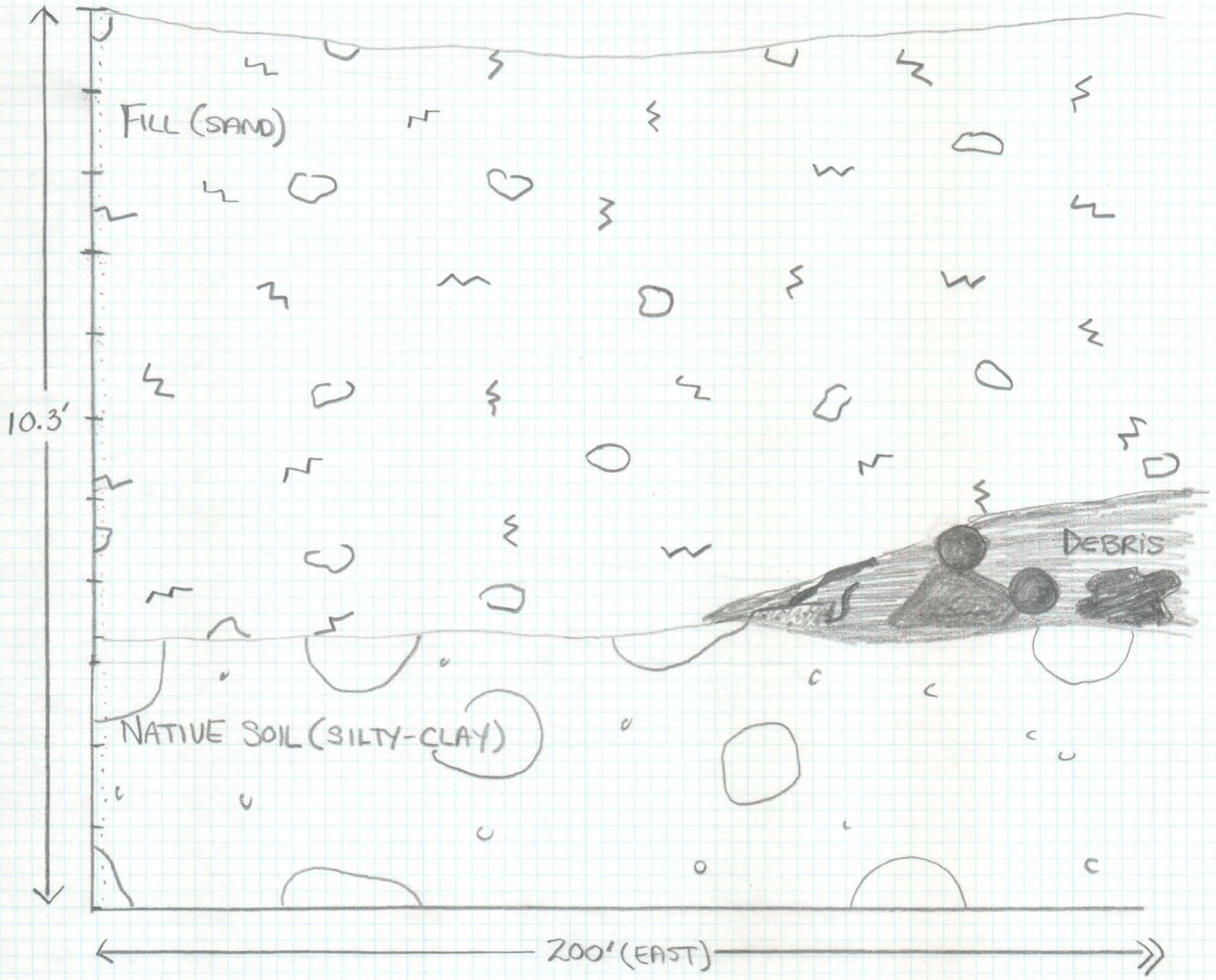
T8-2+99

SOUTH






R2-0004840

28

Location Ringwood, NJ Date 01/26/10

Project / Client NJ000604.0035.00035 FORD

07:00 on-site

07:10 Health and Safety meeting

07:30 Calibrated MultiRAE
SN-095-506205
CO-49, $H_2S$-25, LEL-50,
Oxy-20.9, VOC-100.0

0745 Continue excavating at the intersection of T8 and T1

08:10-T8-1+99 to T8+79

08:27 Paint sludge observed in NORTH AND SOUTH SIDEWALL 2.5' to 4.0' bsg.

08:15 Edwardo (Royal) temporarily restored by laying down Speed and hay in area that was already excavated.

Location Ringwood, NJ Date 01/26/10 2/1029

Project / Client NJ000604.0035.00035 FORD

T8-1+99' TO T8-3+94'

0-1.7' Topsoil, Some Silt, low plasticity, Soft consistancy, moist, dark brown, roots Some vegetation, leaf litter and paint sludge on surface.

1.0' to 2.5' bsg. Industrial debris; Scrap metal; metal spring, black plastic, cloth.

1.7'-5.9' bsg. FILL, Silty-sand, low plasticity, dense, well sorted, wet, medium brown, few 5" in diameter and smaller cobbles, Subangular to subrounded.

5.9'-8.2' NATIVE Soil, Some Silt w/ traces of clay, Soft consistency, medium plasticity, wet, ~~Hg~~ @

R2-0004841

Location Ringwood, NJ Date 01/26/10 3/10

Project / Client NJ000604.0035.00035/ FORD

light brown to gray. ~~Front~~ Water at base of trench due to filtration from surface.

08:45 Backfilled Trench T8 Completed EAST AND WEST TOTAL LENGTH 3+94'

08:50 (WITH Skidsheer, Edwardo (Royal) moved excavated paint sludge to paint sludge staging area.

V. Myers and D. Kirschner measured and staked at sampling points along the T1 transet. All Sample Stakes have red taped tops AND Sample ID is on stake for base Samples.



Location Ringwood, NJ Date 01/26/10 4/10

Project / Client ~~NJ~~ 000604.0035.00035/ FORD

08:50 - 09:05 T. Maffeo in O'Connor

09:15 Continued trenching at the intersection of T8 and T1 along the T1 transet in north direction.

T1-1+47' to T1-3+00'

0-0.6' bsg. Topsoil, some silt, low plasticity, soft consistency, moist, dark brown, roots, leaf litter on surface.

0.6'-9.6' bsg. Fill sand, low plasticity, well sorted, medium moist, medium brown, some 10" in diameter and smaller cobbles, angular to subangular. Looks like blast material due to pirolet holes

R2-0004842

in rock. Traces of concrete w/ rebarb.

9.6-10.5' bgs. Native soil, Silty-clay, medium plasticity, medium stiff, moist, light brown w/ traces of gray clay mottles.

09:22 Surveyor Eric from Barbas in O'Connor to survey sample points.

09:52 Difficult to get native soil. However it was observed before loose cobble stuffed into trench.

10:00 Paul From Accutest called and he is running late.

10:10 Called T. Maffeo in



reference of sidewall collesping into trench so no photo of native soil was collected. I see the native soil when the bucket pulls back stuff.

Conversation of sampling fill material from T. Maffeo came up. @ J. Gowers. The USEPA revised work plan to included a fill sample every 100'. Sample will be collected in either Atypical material or if non found then in fill material. Arcadis will go back a sample fill on already excavated areas.

11:24 J. Gowers (USEPA) in O'Connor

→ 11:20 Sample FTI-1496

R2-0004843

Location Ringwood, NJ Date 01/25/10 7/10

Project / Client NJ000604.0035.00035 / FERO

collected of fill material.

11:34 T1-2+78' hit resistance at base of trench a extremely large boulder. walls continue to collespe into trench. observed 11'' in diameter cobble w/ blast hole in center.

→ 13:12 Sample T1-3+00(8.0-9.0) collected at base of trench from excavator bucket.

13:15 KEN Petrone (NJDEP) in O'Connor.

Trench continue to have 10'' in diameter and smaller cobbles, Angular and sub-Angular, mixed w/ blast sand, medium to fine, loose, poorly sorted, dry, light brown w/ traces of



Location Ringwood, NJ Date 01/26/10 8/10

Project / Client NJ000604.0035.00035 / FERO

2'x3'x1' in diameter boulders at 7.0-8.0' bsg.

13:53 T1-3+75 to T1-3+82 change in lithology

0-7.7' bsg. Minetailings, fine some silty-sand, medium dense, loose, dry, medium brown, some 8'' in diameter and smaller cobbles Subrounded to rounded. Debris, Scrap metal, rusted car, schingles, plastic strapping, tires, plastic, bricks, cloth, plastic bags, bottle cap, rubber tubing (industrial debris)

7.7'-10.0' bsg. NATIVE SOIL, Silt, low plasticity, dense consistancy, stiff, moist, medium to light brown.

R2-0004844

Location Ringwood, NJ Date 01/26/10 9/10

Project / Client NJ000604.0035.00035/ FORD

14:15 Sample F-T1-3+42 collected from fill.

A sample at T1-4+03 was not collected due to minetailings falling into the native soil. The sample location will be stepped out to T1-4+10.

T1-4+08 - T1-3+83

0-4.7' bsg. Fill, Silty-sand, loose, dense, well-sorted, dry, medium brown, some Asphalt shingles, scrap metal, plastic wrap and minetailings as daily coat.

4.7'-9.8' bsg. Minetailings thick pocket.

9.8'-13.2' bsg. NATIVE soil, Silt, dense, low plasticity, stiff,



Location Ringwood, NJ Date 01/26/10 10/10

Project / Client NJ000604.0035-00035 FORD

moist, light brown.

14:30 Backfill Trench end at T1 ~~3+83~~ @ 4+03

14:45 Sample mangement, COC, Download photos, photo log.

17:00 OFF-SITE

Photos 001-029. See photo log for details.

01/26/10

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 01/26/10
CHKD: DATE:
REV: DATE:

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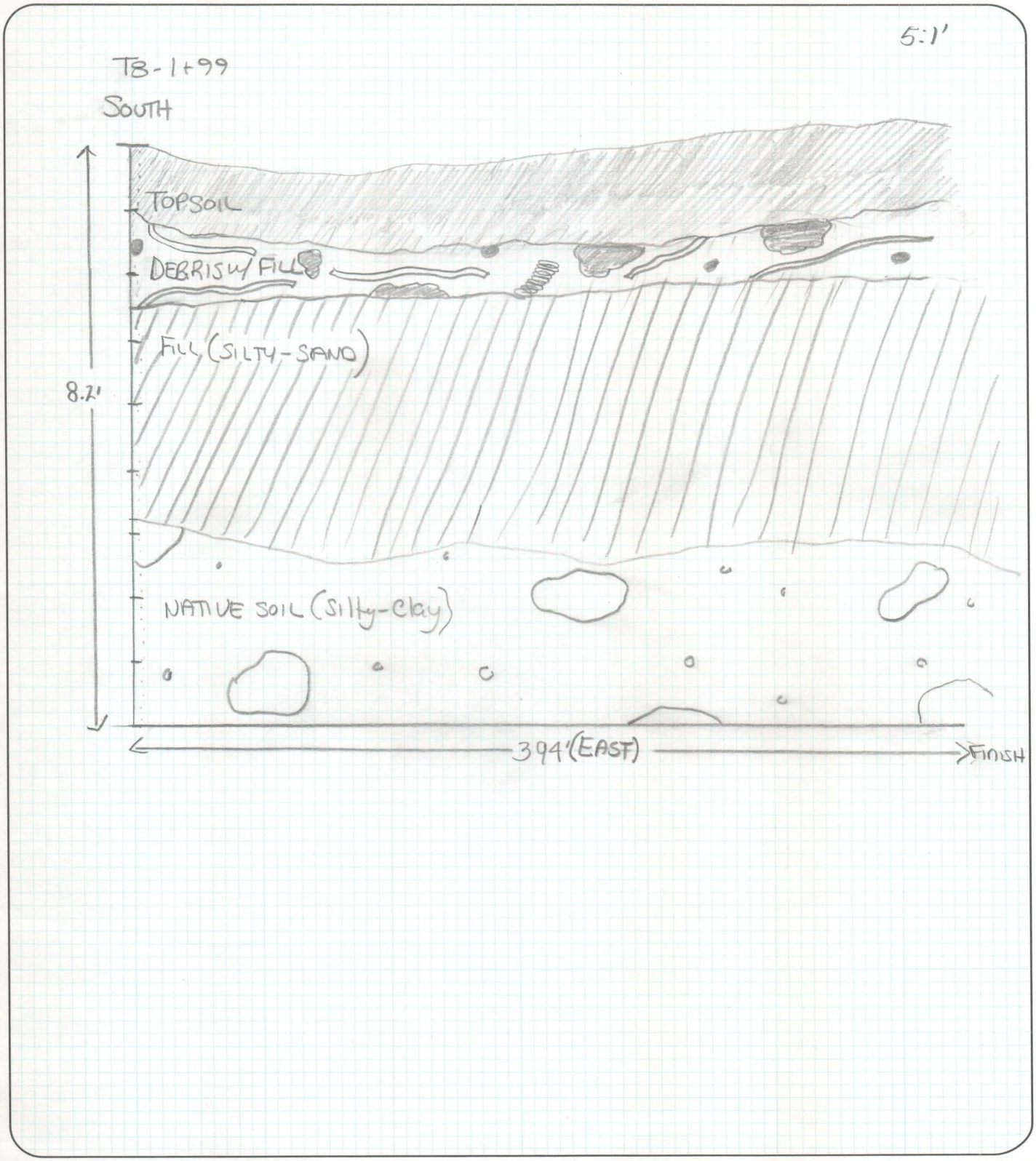




R2-0004846

GERAGHTY & MILLER, INC.
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SUBJECT: O'Connor Trench Cross Section
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 01/26/10
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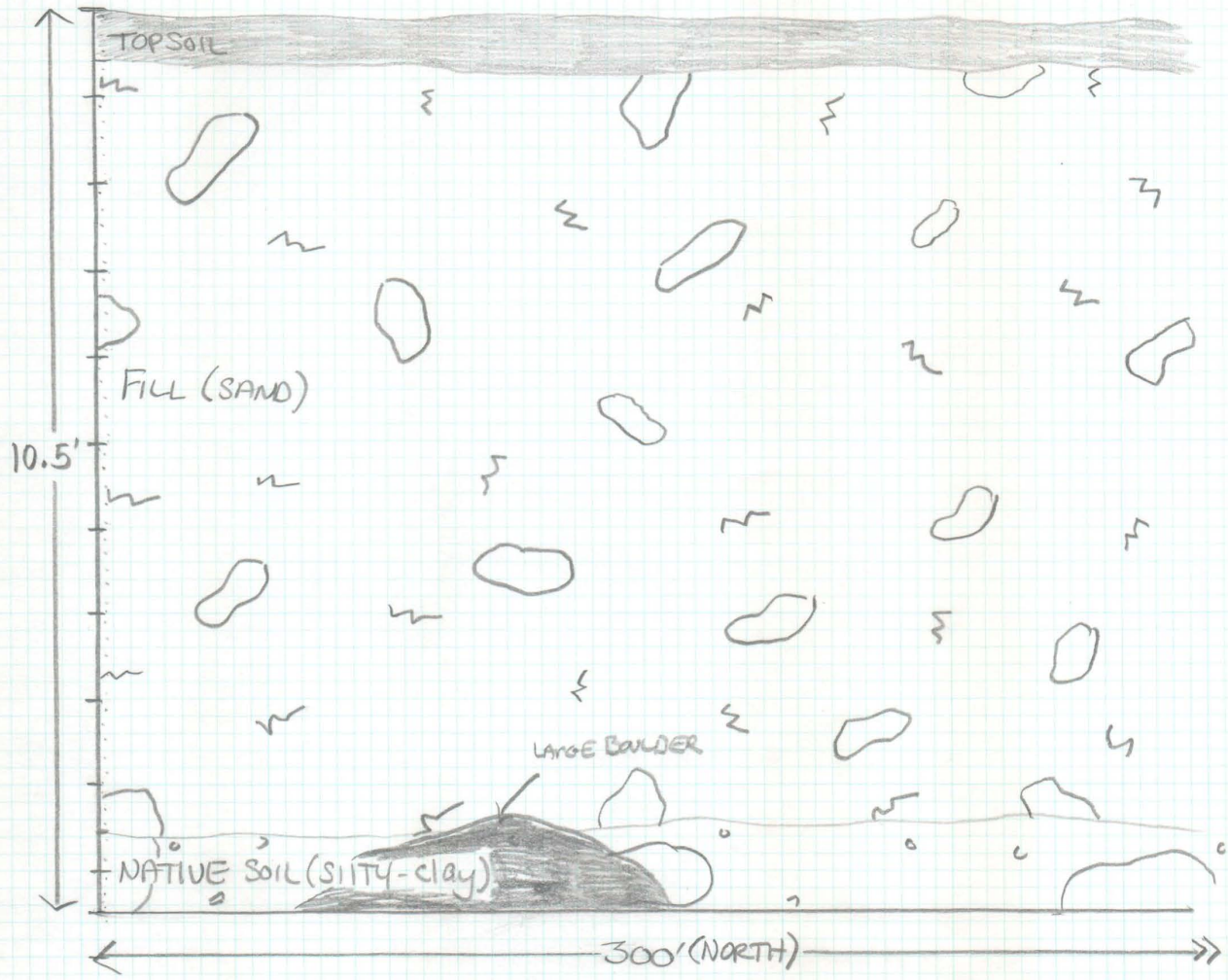
T1-1+47

WEST

5:1'

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AG 30-1-97

R2-0004847

GERAGHTY & MILLER, INC.
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PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

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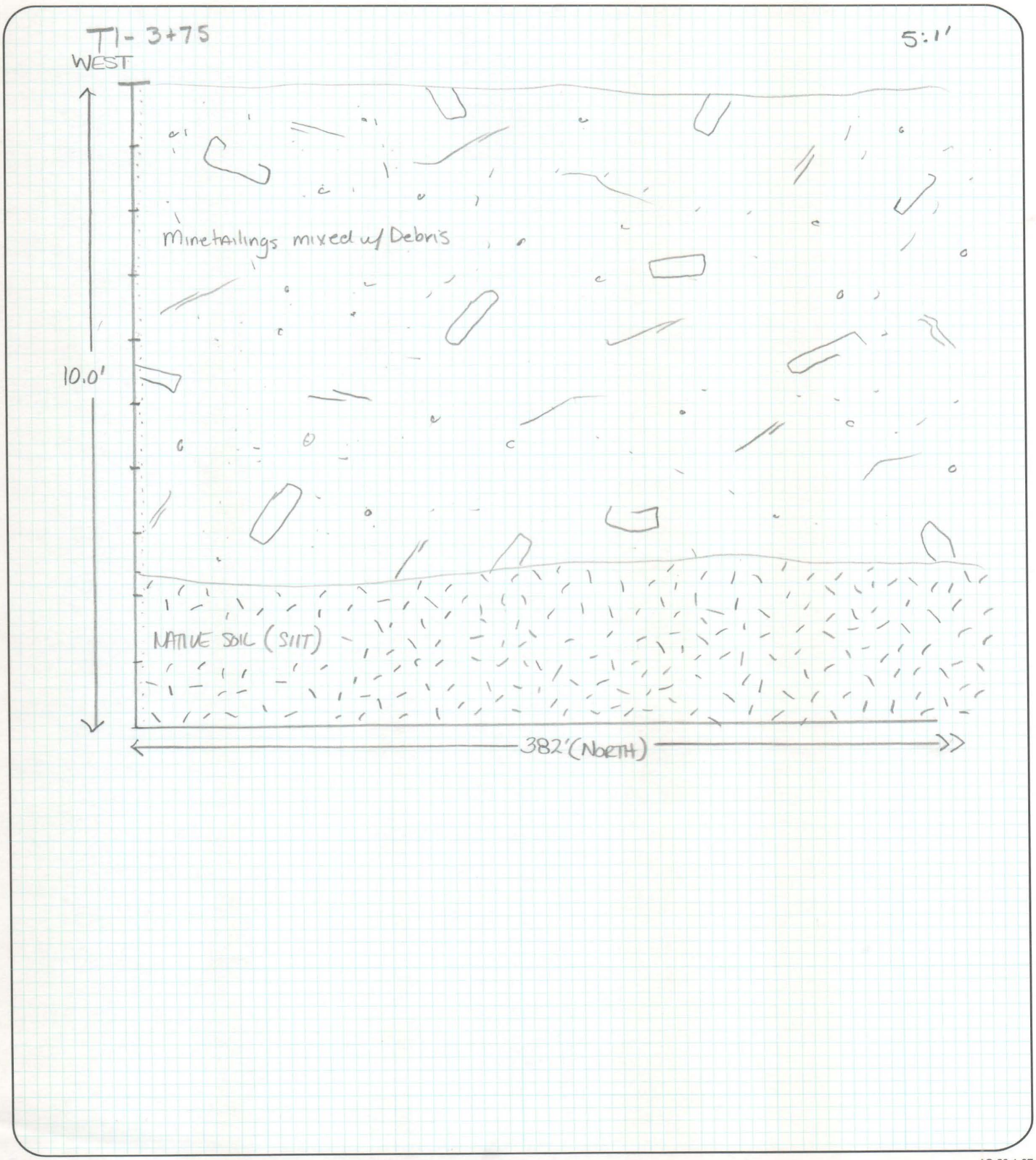


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R2-0004848

GERAGHTY & MILLER, INC.
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SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000 604.0036.00004

BY: VM DATE: 1/26/10
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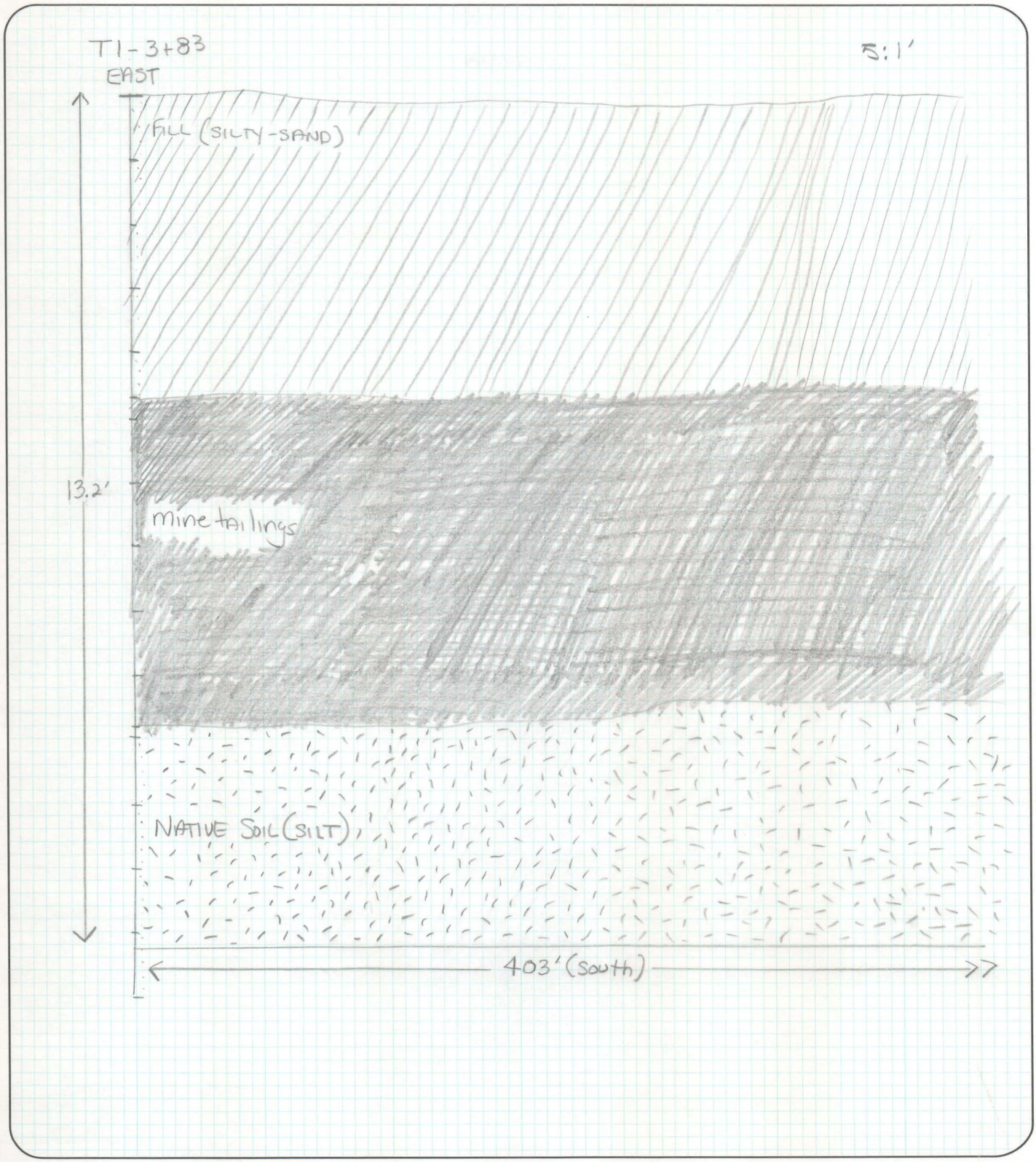


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AG 30-1-97

R2-0004849

Location Ringwood, NJ Date 01/27/10 1/6

Project / Client NJ000604.0035.00035/ FORD

09:00 ON-site

07:15 Health and Safety meeting

07:30 Calibration MultiRAE
SN-095-506205
CO-49, $H_2S$-25, LEL-50,
OXY-20.9, VOC-100

08:15 V. Myers & D. Kirschner staked in sampling points

TI-4+03 to TI-4+10

0-12.3' bsg. Fill ~~mixed~~ Silty-Sand, loose, poorly sorted, dry, medium brown, some mine tailings 85%, Few 6" in diameter and smaller cobbles layered with industrial debris; plastic strapping, plastic sheets, wood planks, scrap metal, plastic coated wire, green



Location Ringwood, NJ Date 01/27/10 2/6

Project / Client NJ000604.0035.00035/ FORD

Cones.

12.3'- 13.6' bsg. NATIVE, Silty-Clay, medium to high plasticity, soft consistency, moist, light brown w/ gray mottles.

→ 8:23 Sample TI-4+10(12.5-13.5') collected from base of trench from excavator bucket.

~~AT TI-4+15' to~~ TI-4+15 ~~to~~

09:16 Groundwater was observed called T. Maffeo to see if we should dig deeper. He spoke to R. Howe (ACoE) and said if NO Paint Sludge is encountered then dig 6" below groundwater and collect sample.

R2-0004850

Location Ringwood, NJ Date 9/27/10 3/6

Project / Client NJ000604.0035.00035/ FORD

T1-4+11 to T1-4+15

Same lithology as T1-4+10 except Fill layer was 0-15.3' bsg and Native layer was 15.3' to 16.5' bsg. And included dark Grey Sand under the Water Table no Clay.

→ 09:24 Sample F-T1-4+15 collected at (16.0-16.5)

09:30 Backfilled T1 to the intersection of T7 ending T1 AT 4+15

10:10 STARTED EXCAVATING T7-0+0 AT EAST END

→ 10:22 Sample T7-0+0 (10.0-11.0) collected at base of trench, with excavation Bucket.



Location Ringwood, NJ Date 01/27/10 4/6

Project / Client NJ000604.0035.00035/ FORD

T7-0+00 to T7-0+25

0-1.1' bsg, Top Soil, Some Silt, low plasticity, soft consistancy, moist, dark brown, roots, vegetation, leaf litter on surface.

1.1'-6.11' bsg Silty-sand, well sorted, very dense, medium moist, medium gray and light brown.

6.11-9.0' bsg. Silty-clay, high plasticity, soft consistancy, moist, dark gray to light gray.

→ 10:57 Sample F-~~T7~~ T7-0+94 Collected of fill.

→ 11:05 Sample T7-1+00 (9.5-10.5) collected from base of trench with Excavation Bucket.

R2-0004851

Location Ringwood, NJ Date 01/27/10 5/6

Project / Client NJ000604.0035.00035/ FORD

T7-0+25 to T7-2+92

0-9.4' bsg silty-sand poorly sorted, coarse to medium, loose, moist, light brown mixed with 80% minetailings layed with industrial waste; plastic strapping, plastic bags, plastic sheeting, fiberglass, wood planks, traces of scrap metal, carpet, cloth, netting, daily cover

9.4'-12.5' bsg. Silty-sand, medium well sorted, some clay stiff, medium plasticity wet, dark gray.

→ 13:33 Sample T7-2+00 (12.0-13.0) was collected at base of trench under groundwater with



Location Ringwood Date 01/27/10 6/6

Project / Client NJ000604.0035.00035/ FORD

excavator bucket.

→ 14:00 Sample F-T7-1+85 collected of fill material.

14:01 Backfilled

14:42 Continued excavating at T7-4+23 in a ~~east~~ ~~west~~ west direction towards Peters Mine Rd.

Trench ends at T7-3+40'
We ended the day at
17:15 T7-2+92

17:30 off-site

Photos 001-029

01/27/10

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Section
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 1/27/10
CHKD: DATE:
REV: DATE:

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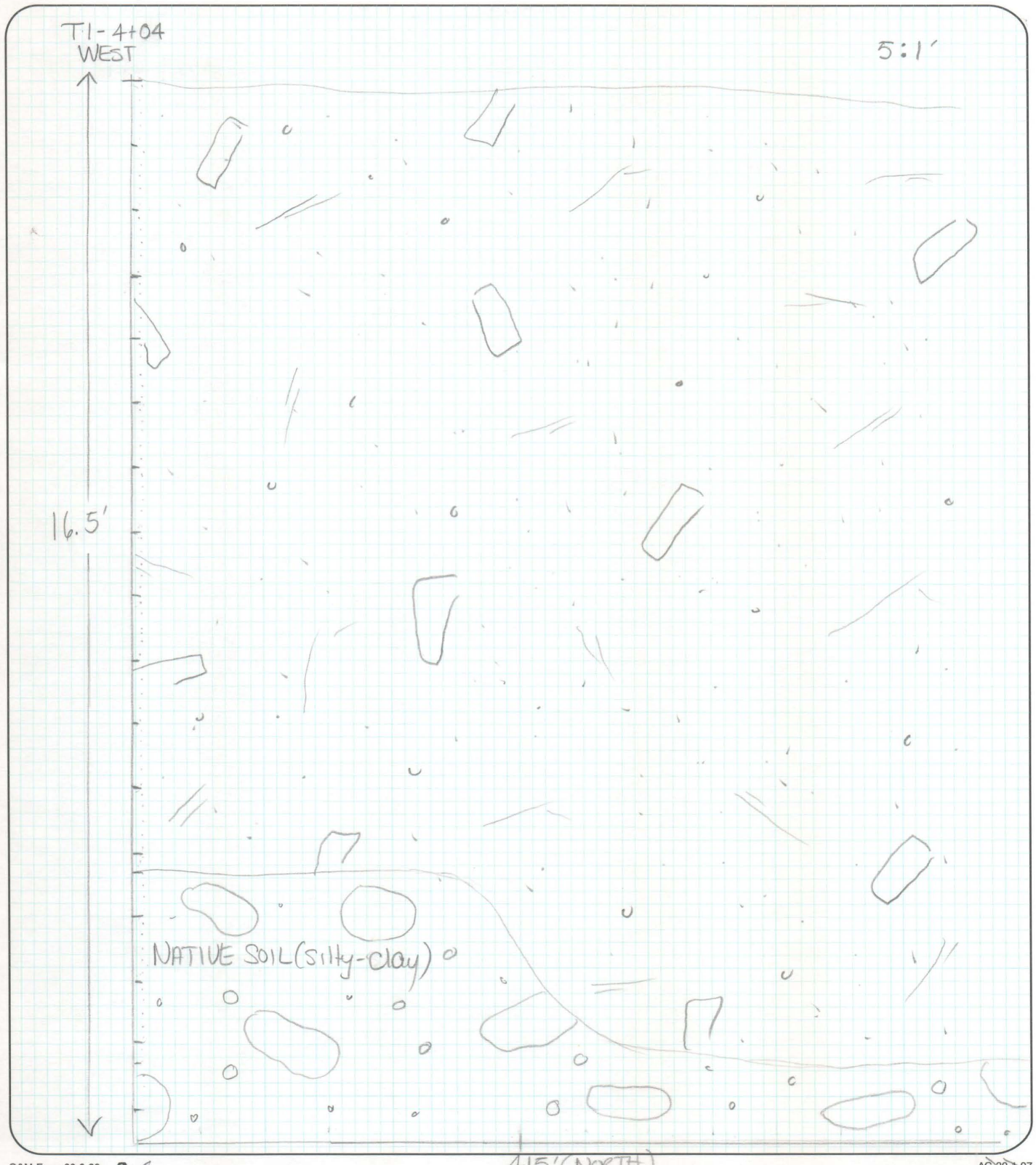


G&M Form 30 6-89

AG 30-1-97

R2-0004853

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ring-Wood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 1/27/10
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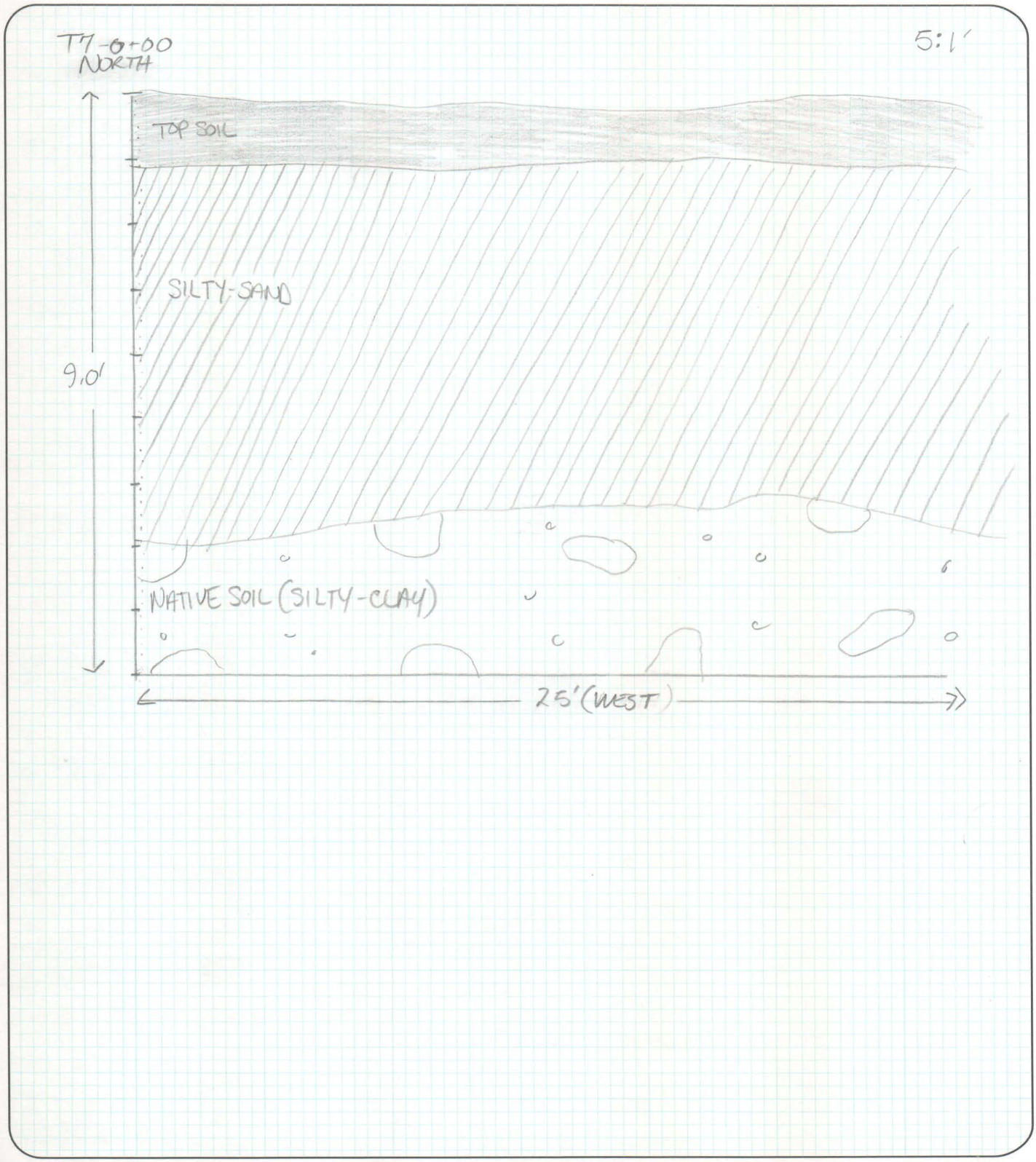




R2-0004854

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Section
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.0004

BY: VM DATE: 1/27/10
CHKD: DATE:
REV: DATE:

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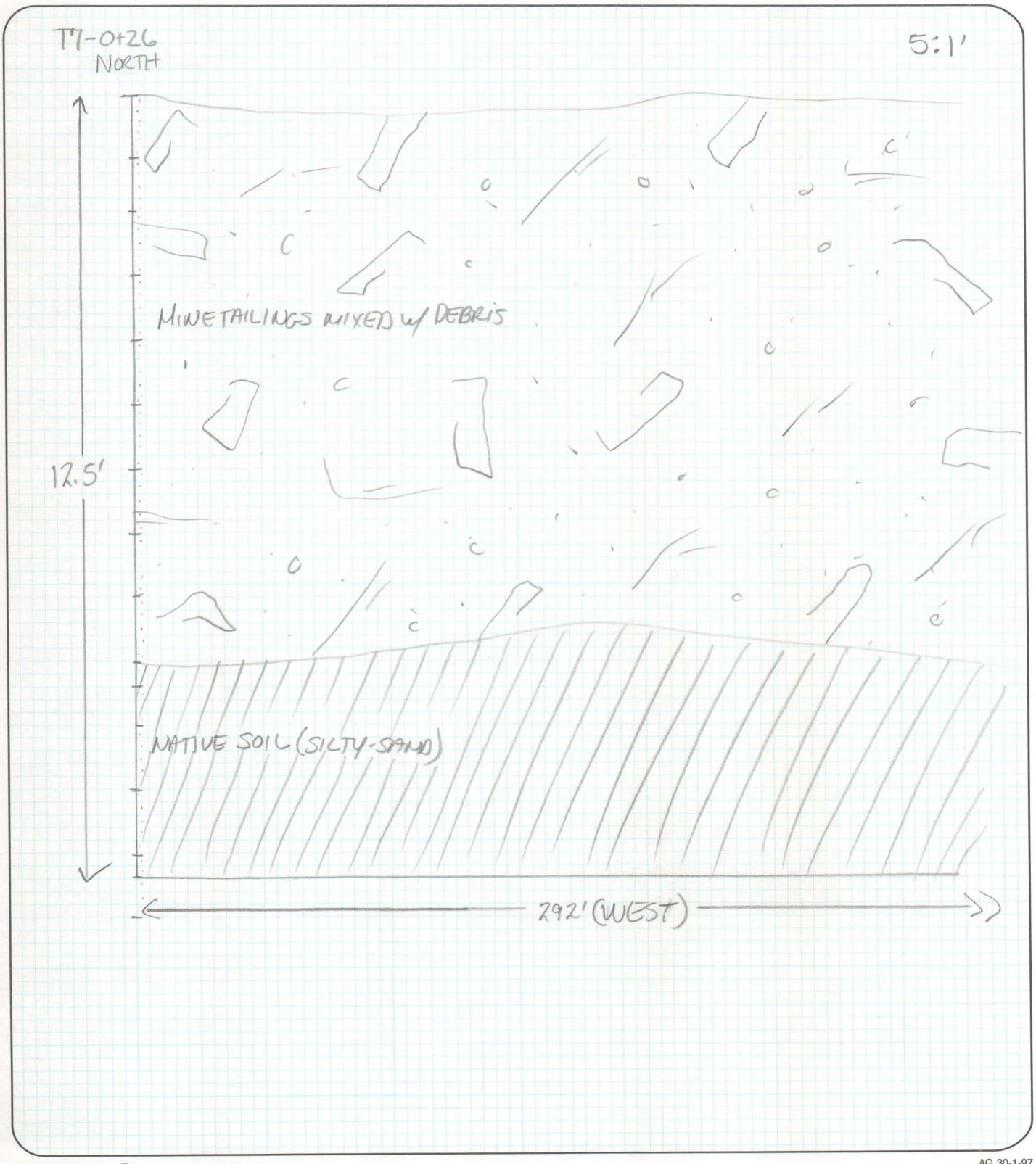


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AG 30-1-97

R2-0004855

Location Ringwood, NJ Date 01/28/15

Project / Client NJ000604.0035.00035/ FORD

07:00 on-site

07:15 Health & Safety Meeting

07:30 Calibrate MultiRAE SN-095-506205 CO-49, $H_2S$-25, LEL-50, OXY-20.9, VOC-100.1

07:45 Continue excavation of Trench at T7-2+92 To The end of T7-3+40

⇒ 08:10 Sample T7-3+00 (10.0-11.0) collected at base of trench w/ excavator bucket.

⇒ 08:15 Sample F-T7-3+00 Collected from fill

⇒ 08:20 Sample T7-3+40 collected from base of trench w/ excavator bucket.



Location Ringwood, NJ Date 01/28/15

Project / Client NJ000604.0035.00035/ FORD

08:25 Backfilled Trench

⇒ 09:52 Sample T1-5+10 (10.0-11.0) collected from base w/ excavator bucket.

⇒ 10:57 Sample F-T1-5+97 collected from fill Atypical material Flavance orange powder in brown paper 2016 bags

⇒ 11:07 Sample T1-6+10 (11.0-12.0) collected from base of trench from excavator bucket.

13:15 Cont. with trenching Starting @ T6-0+00 to T6-1+72

0-1.5' bsg Topsoil, Silty-Sand. poorly Sorted, medium, loose, moist, light brown

R2-0004856

Location Ringwood, NJ Date 01/28/10 3/5/10

Project / Client NJ000604.0035.00035/ FORD

mixed with industrial debris, plastic strapping, plastic sheeting, wood planks.

1.5'-6.0' bsg. Silty-sand, well-sorted, very dense, medium grain, wet, dark gray.

→ 13:57 Sample ~~T-6~~ T6-0+00 collected from base of trench w/ excavator bucket.

→ 14:42 Sample T6-1+00 (6.0-7.0) collected from base of trench w/ excavator bucket.

~~→ 15:05 @~~

15:05 T6-1+73

0-0.5

~~0-5~~ 0.5' bsg. Topsoil, Some Silty-sand, low plasticity,



Location Ringwood, NJ Date 01/28/10

Project / Client NJ000604.0035.00035/ FORD

soft consistency, medium, moist, medium brown, roots.

0.5-5.5' Fill, Silty-sand, poorly sorted, medium dense, moist, light brown some 4" in diameter and smaller cobbles, subrounded to rounded

5.5-12.0' bsg. Industrial debris, Scrap metal, wood planks, plastic sheets, plastic strapping, plastic cones (yellow, green and orange), blue plastic tabs.

12.0'-13.0' bsg. Silty sand medium well sorted, dense; wet with some clay, blocky, dense, ~~stiff~~ consistency Medium to high plasticity

Location Ringwood, NJ Date 01/28/10 5/5

Project / Client NJ000604.0035.00036 / FORD

→ 15:18 Sample T6-2+00 collected at base of trench w/excavator bucket

→ 15:28 Sample F-T6-0+84 collected from fill material

→ 15:40 Sample F-T6-1+99 collected from fill material.

15:50 Finished at T6-2+24 for the day

16:00 Sample management, recharge equipment, downloaded photos, photolog.

Photos are 001 to 016 see photo log for more detail

17:00 off site JV 01/28/10

R2-0004858

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 1/28/10
CHKD: DATE:
REV: DATE:

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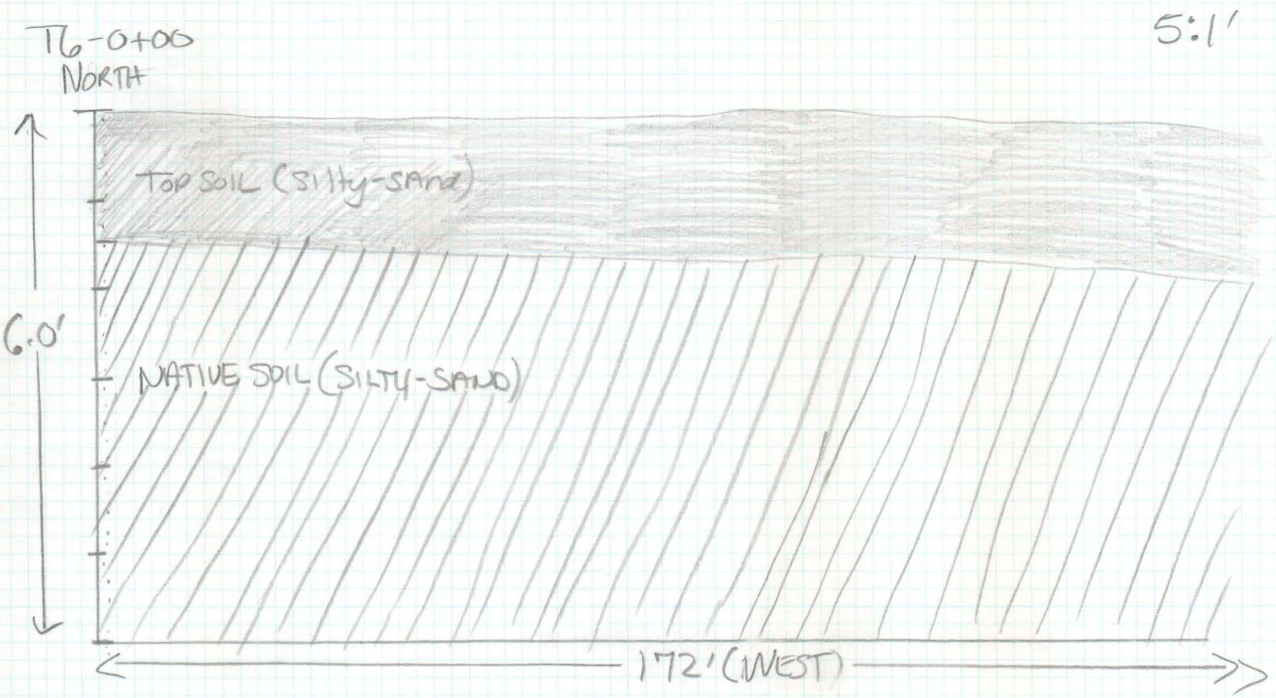




R2-0004859

GERAGHTY & MILLER, INC.
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SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 1/22/10
CHKD: DATE:
REV: DATE:

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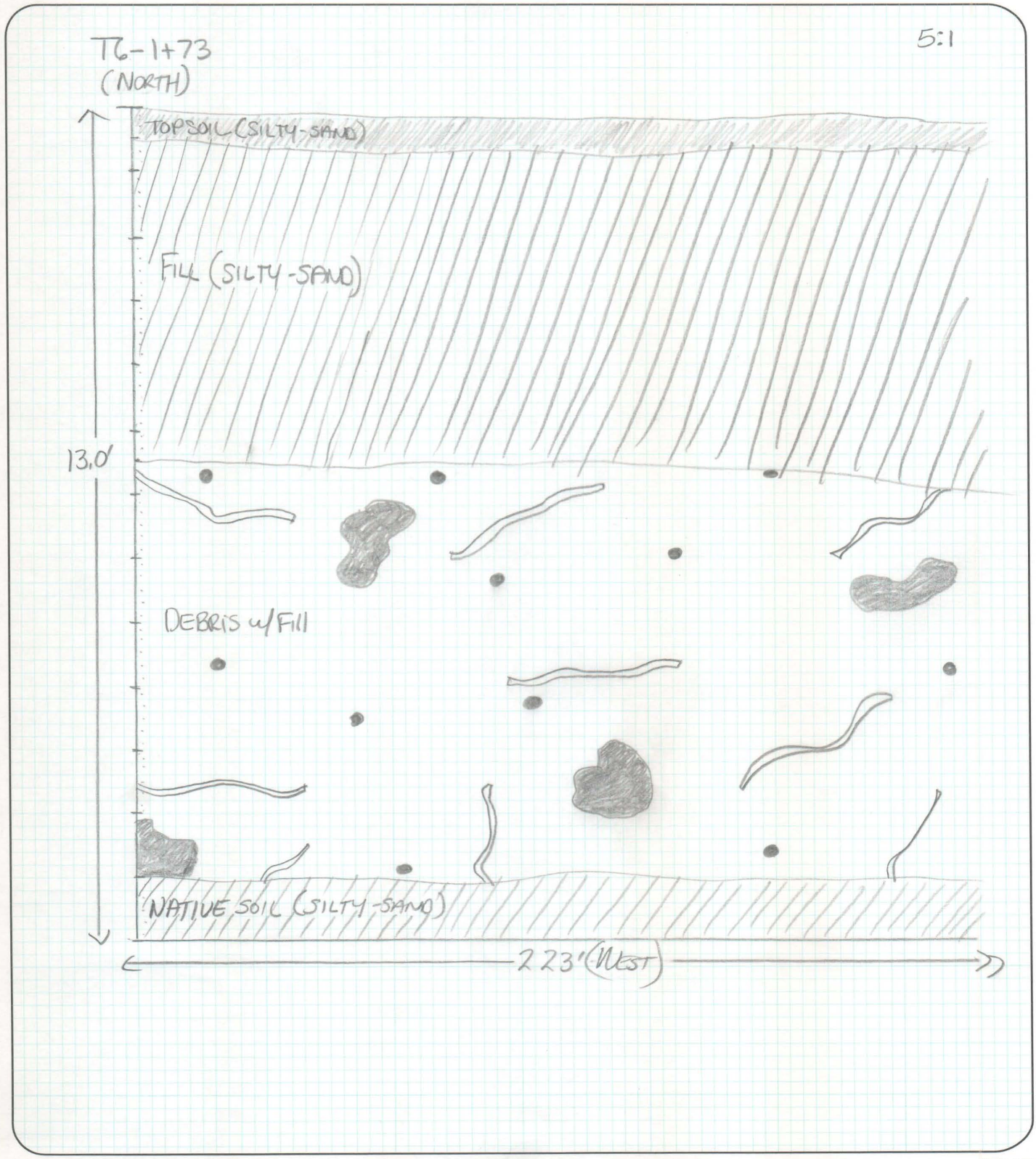


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AG 30-1-97

R2-0004860

Location Ringwood, NJ Date 02/01/10

Project / Client 177000604.0035.00035/ FORD

07:15 ON-SITE & Health & Safety meeting.

07:30 Changed out hydrolic hose on excavator and fixed track (Kayal)

07:30 Calibrated MultiRAE SN-095-508367 CO-49, $H_2S$-25, LEL-50, Oxy-20.9, VOC-100

→08:54 Sample OC-PS-03 collected of paint sludge staging pile for waste classification. To be analyed by EQ lab. Filled 2-40ml vials and 1 Quart amber.

09:50 Continued excavating trench at the top of TP6 at TP6-4+64 Stepped off the fence 2.5'

R2-0004861

Location Ringwood, NJ Date 02/01/10 4/7

Project / Client NJ000604.0035.00035/ Ford

T6-4+64 to T6-4+47

0-0.5' bsg. Topsoil, Silty-sand low plasticity, soft consistancy, moist, Medium brown, roots, vegetation, bushes, Some debris (household), tires, cans, rubber hose on surface.

0.5-1.5' bsg. Fill Silty-sand loose, poorly sorted, moist, medium to light brown

1.5'-3.5' bsg. Industrial debris, plastic sheeting, plastic and metal Strapping, wood planks, green cones.

3.5-6.5' bsg 9" in diameter and smaller cobble angular to subangular



Location Ringwood, NJ Date 02/01/10 3/7

Project / Client NJ000604.0035.00035/ FORD

blast rock mixed w/ minetailings 20%

6.5'-14.5' bsg. NATIVE MATERIAL, Silty-clay, medium plasticity, soft consistancy, moist, medium brown w/ medium gray mottles, 3/4" in diameter and smaller pebbles.

Backwall Traces of 1" in diameter and Smaller cobbles.

T6-4+64 to T6-4+60
6.5'-7.5' bsg minetailings in north and South wall

→10:10 Sample T6-4+64 (13.5-14.5) collected @ base of trench from excavation bucket

→ 10:34 Sample F-T6-4+52

R2-0004862

Location Ringwood, NJ Date 02/01/10 4/7

Project / Client NJ000604.0035.00035/ FORD

Collected from fill pile

T6-4+46 To T6-4+65

bsg.

0-0.5' TOPSOIL, Silty-Sand, low plasticity, Soft Consistency, moist, medium brown, roots, vegetation on surface.

0.5'-13.5' bsg, Industrial debris with daily cover. ; wood planks, plastic strapping, plastic sheeting, brick, rubber hose, traces of scrap metal, plastic caps (yellow, green, orange) layed with minetailings as daily coat,

At T6-4+06 to T6-4+25 3.5'-4.0' bsg 100% Minetailings thicker daily cover and debris continues



Location Ringwood, NJ Date 02/01/10 5/7

Project / Client NJ000604.0035.00035/ FORD

to 18.5' bsg.

→ 11:20 Sample T6-4+00 (19.0-20.0) collected from base of trench w/ excavator bucket.

T6-4+26 to T6-4+46 Industrial layer thicker w/ minetailings, Depth ~2.0' thick continues to 19.0' bsg.

→ 13:24 Sample collected 1' below groundwater T6-3+00 (19.0-20.0). Dark gray minetailings - magnetic pull. Groundwater at 19.5' bsg.

13:30 Drum located at T6-3+13' in middle of trench ~16.6' to 18.0' bsg. Drum had no PID readings 0.0 ppm 2/3 intact, rusted, no markings, Material inside Muddy light tan to

Location Ringwood, NJ Date 02/01/10 RO

Project / Client NJ000604.0035.00035 FOED

orange, hard, Drum, was taken by Skidsteer to Paint Sludge staging Area for overpack.

14:30 Finished T6

14:35 Backfilled T6-2+24 to T6-4+64

14:25 Helped Edwardo (Royal) Conduct a LPO on Backfilling Trench.

14:45 Sample managed and organized coolers

14:00 Field Blank was poured

1622 Complete 240' today

16:45 Downloaded photos and worked on photo log



Location Ringwood Date 02/01/10

Project / Client NJ000604.0035.00035 FOED

17:00 OFF-SITE

Photos 001-026 See photo log for details.

02/01/10

R2-0004864

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Section
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 2/1/10
CHKD: DATE:
REV: DATE:

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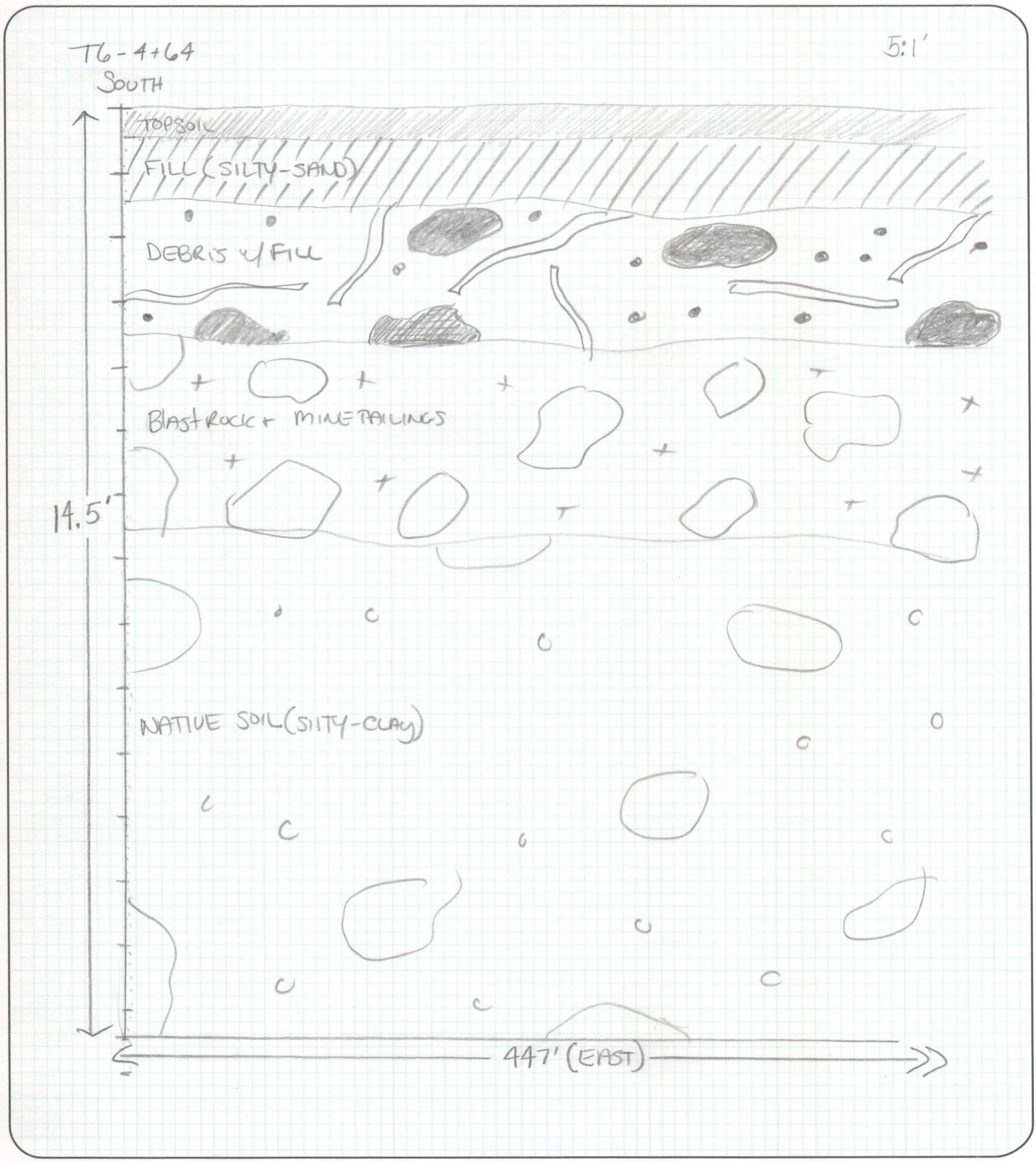




R2-0004865

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Sections
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00004

BY: VM DATE: 2/1/10
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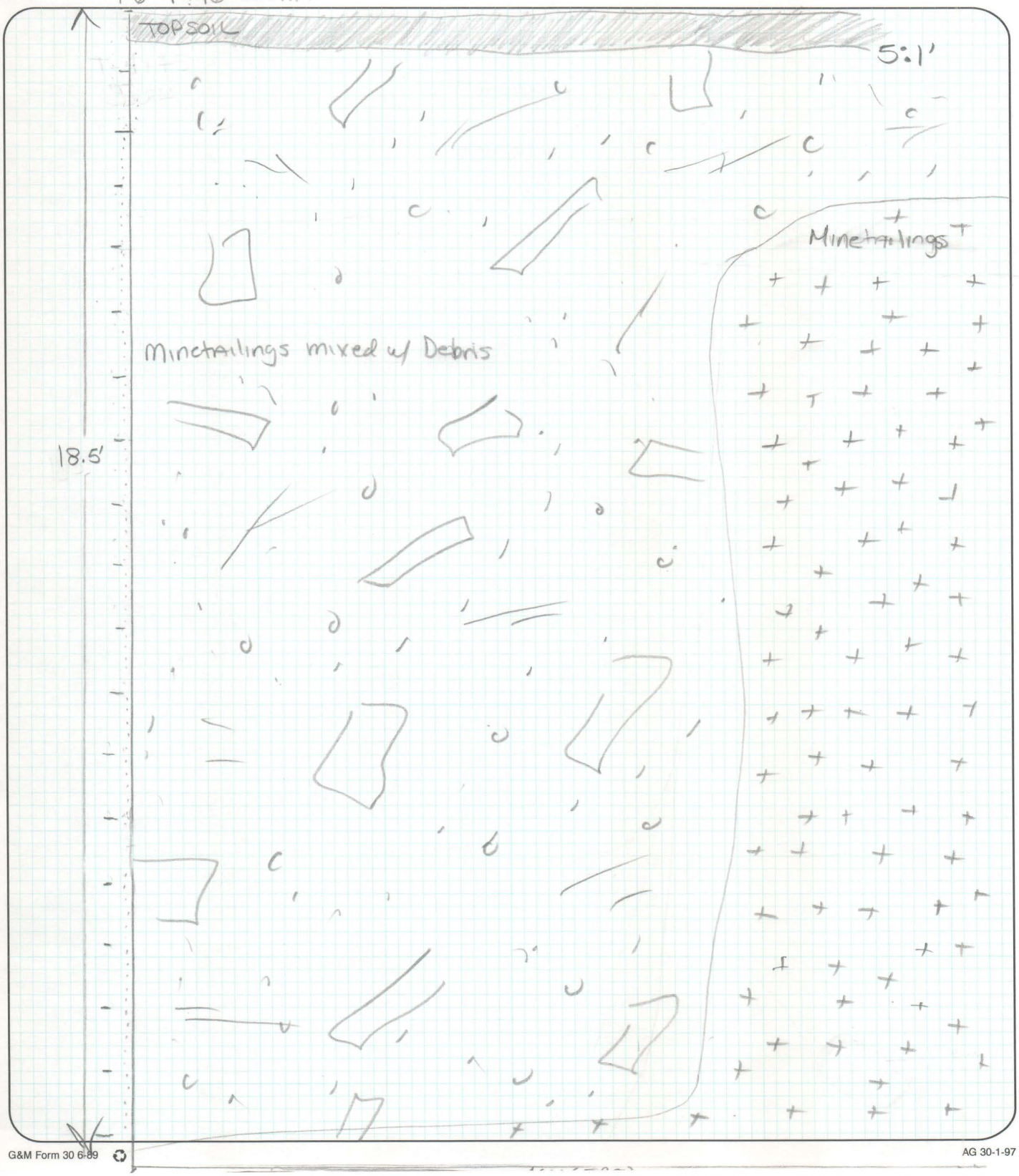
T6-4+46 SOUTH

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AG 30-1-97

R2-0004866

GERAGHTY & MILLER, INC.
*Environment and Infrastructure*
a heidemij company

SUBJECT: O'Connor Trench Cross Section
PROJECT: Ford Ringwood
CLIENT/PROJECT: NO: NJ000604.0036.00007

BY: VM DATE: 3/2/10
CHKD: DATE:
REV: DATE:

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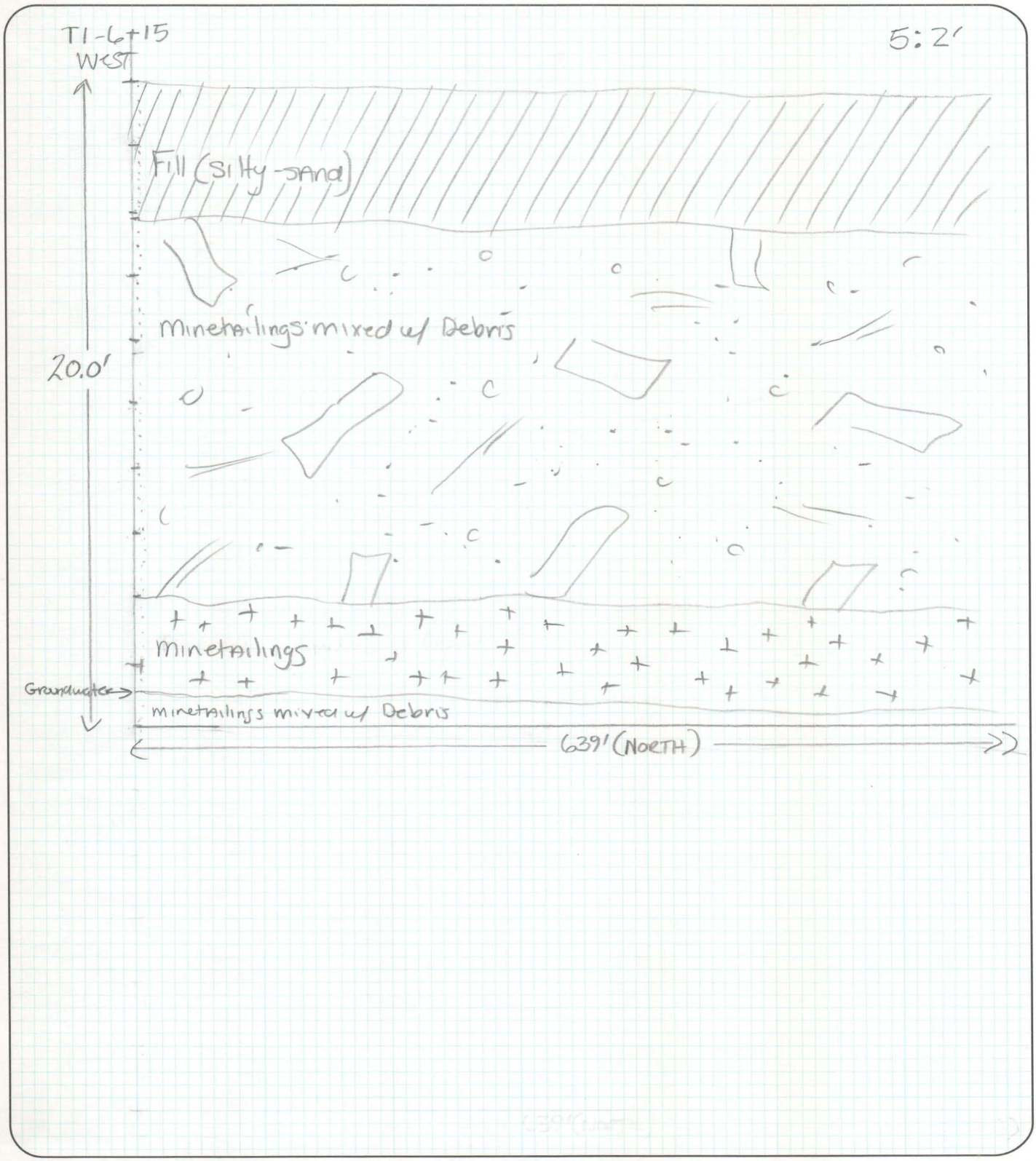


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AG 30-1-97

R2-0004867

ARCADIS BBL

SUBJECT: O'Connor Trench Cross Sections
FORD RINGWOOD
JOB NO: NJ000604.0036.00004

BY: VM DATE: 02/02/10
CHKD: DATE:

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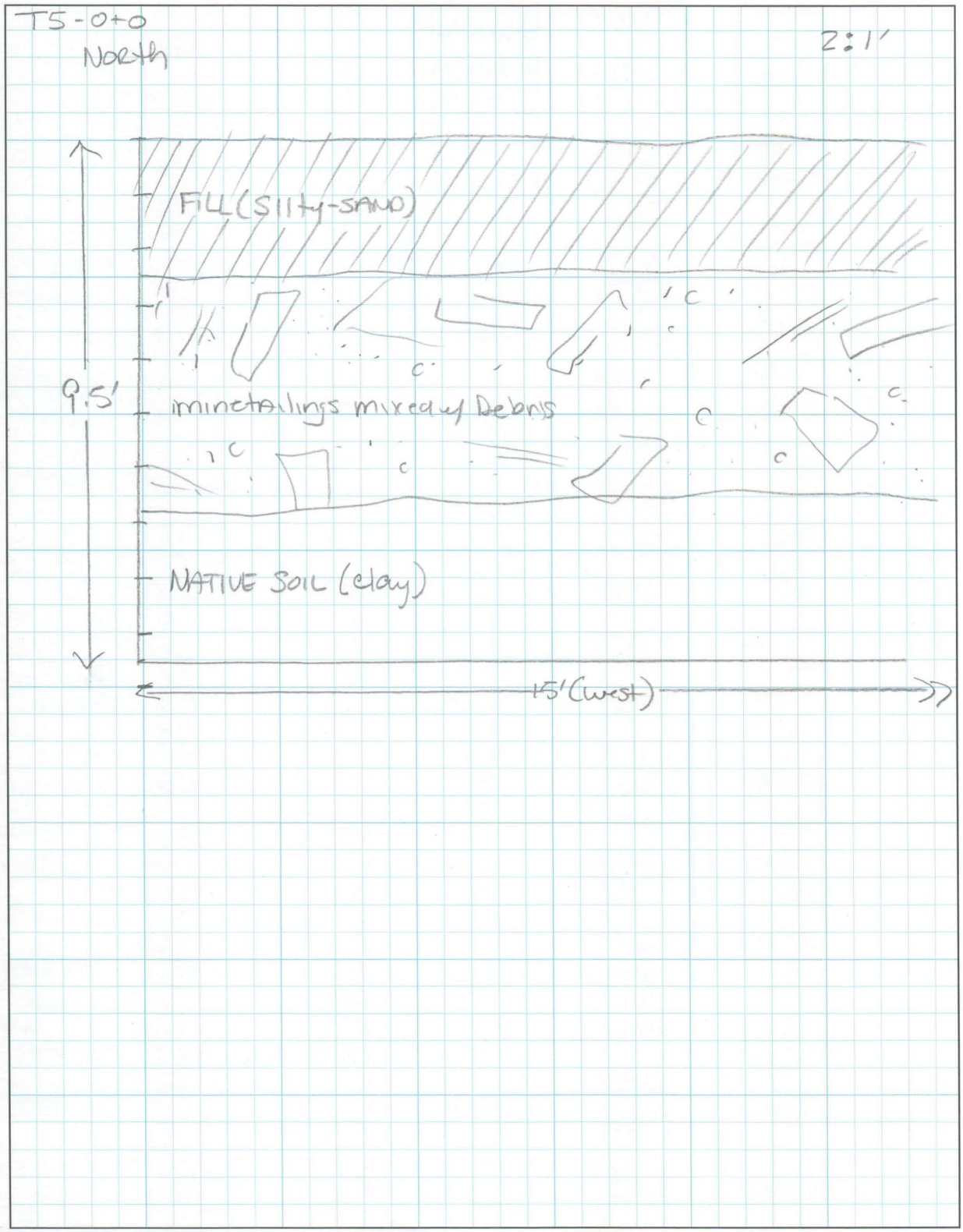


AGM Form 30
12-01

ARCADIS BBL

SUBJECT: O'Connor Trench Cross Sections
Ford Ringwood

JOB NO: NJ000604.0036.00004

BY: VM DATE: 02/03/10

CHKD: DATE:

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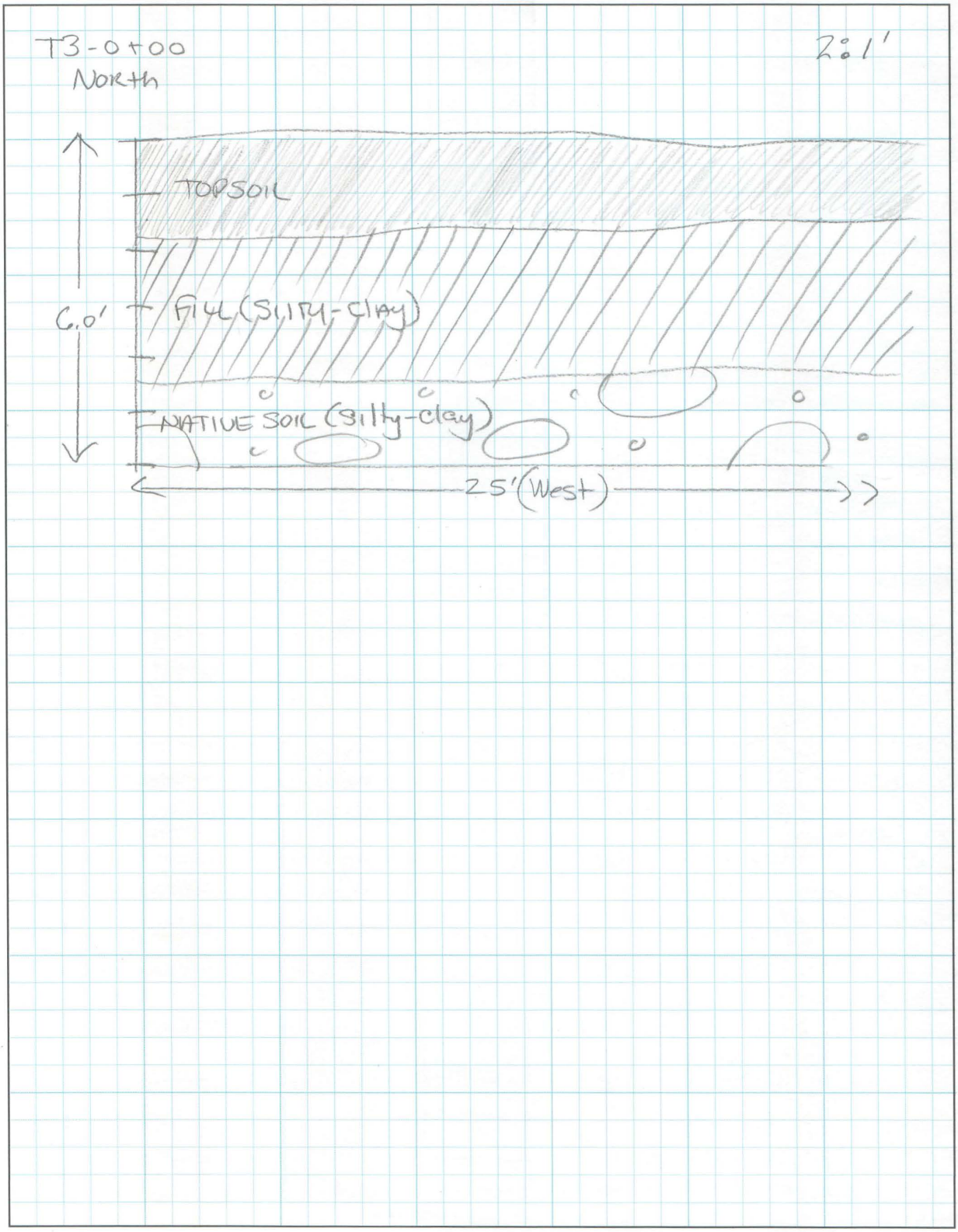


AGM Form 30
12-01

ARCADIS

SUBJECT: O'Connor Trench Cross Section
FORD RINGWOOD
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/3/10
CHKD: DATE:

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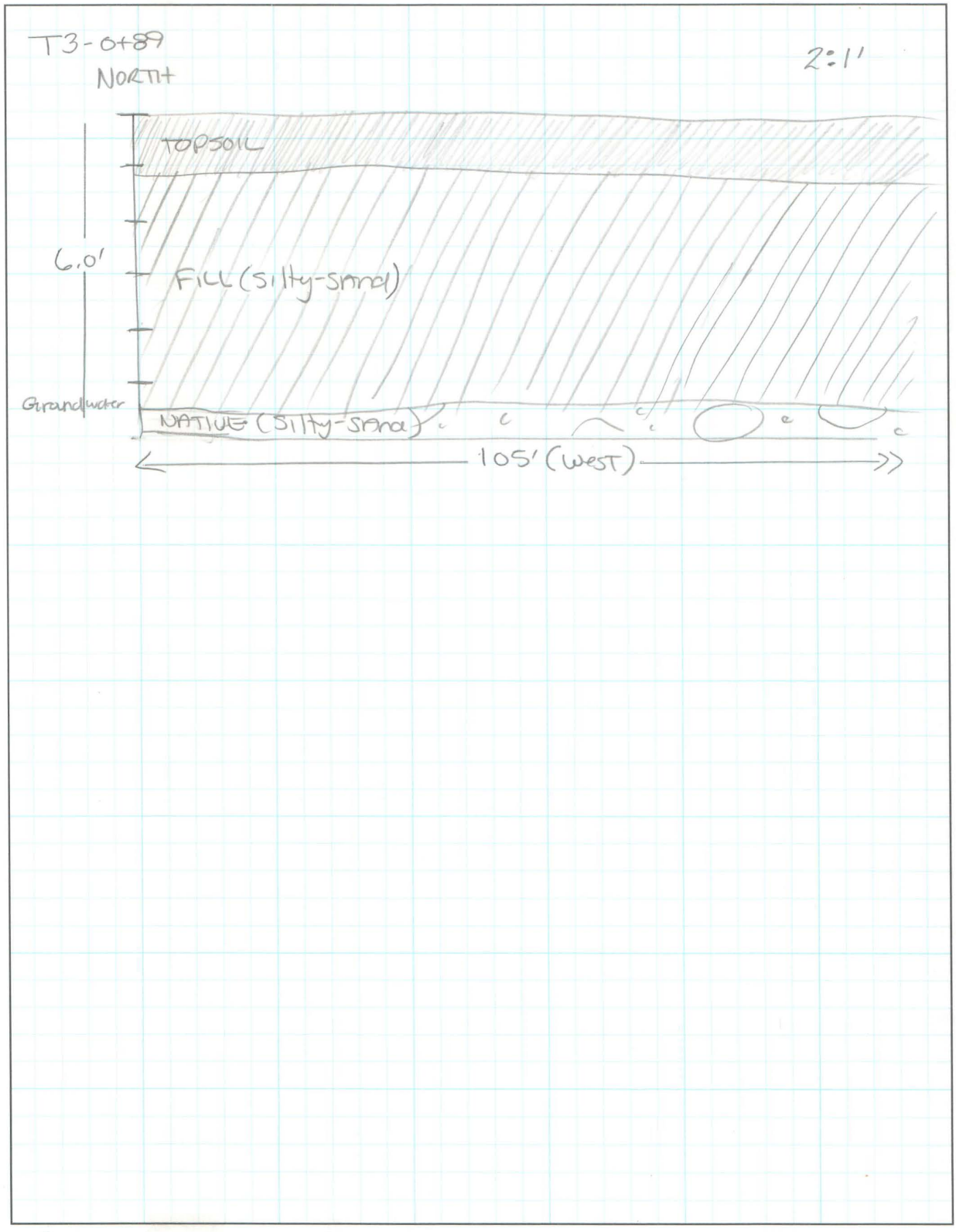



AGM Form 30 12-01

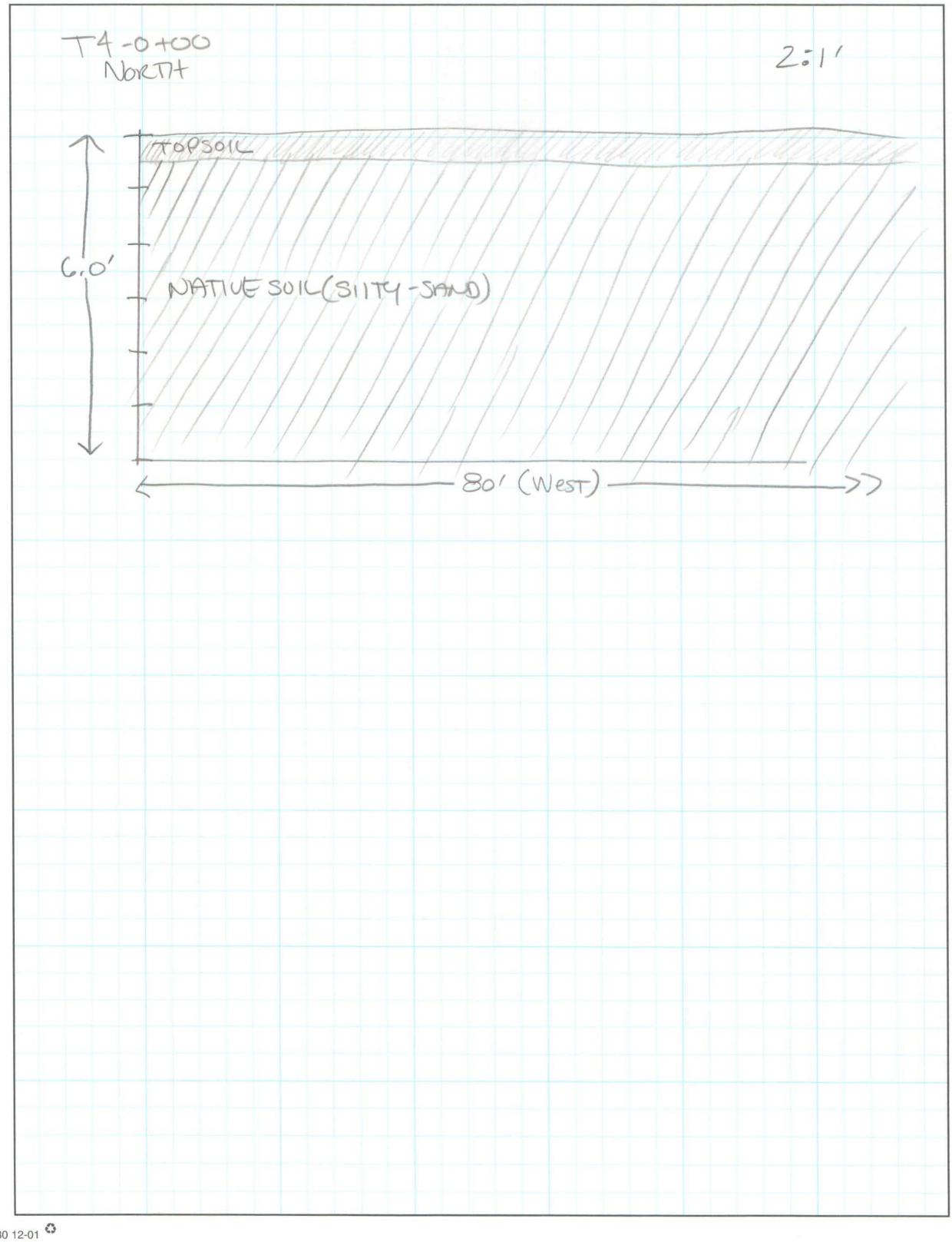
R2-0004870

ARCADIS

SUBJECT: O'Connor Trench Cross Sections
Ford Ringwood
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/3/10
CHKD: DATE:

PAGE 28
SHEET 1 /






R2-0004871

ARCADIS

SUBJECT: O'Connor Trench Cross-Section
Ford Ringwood

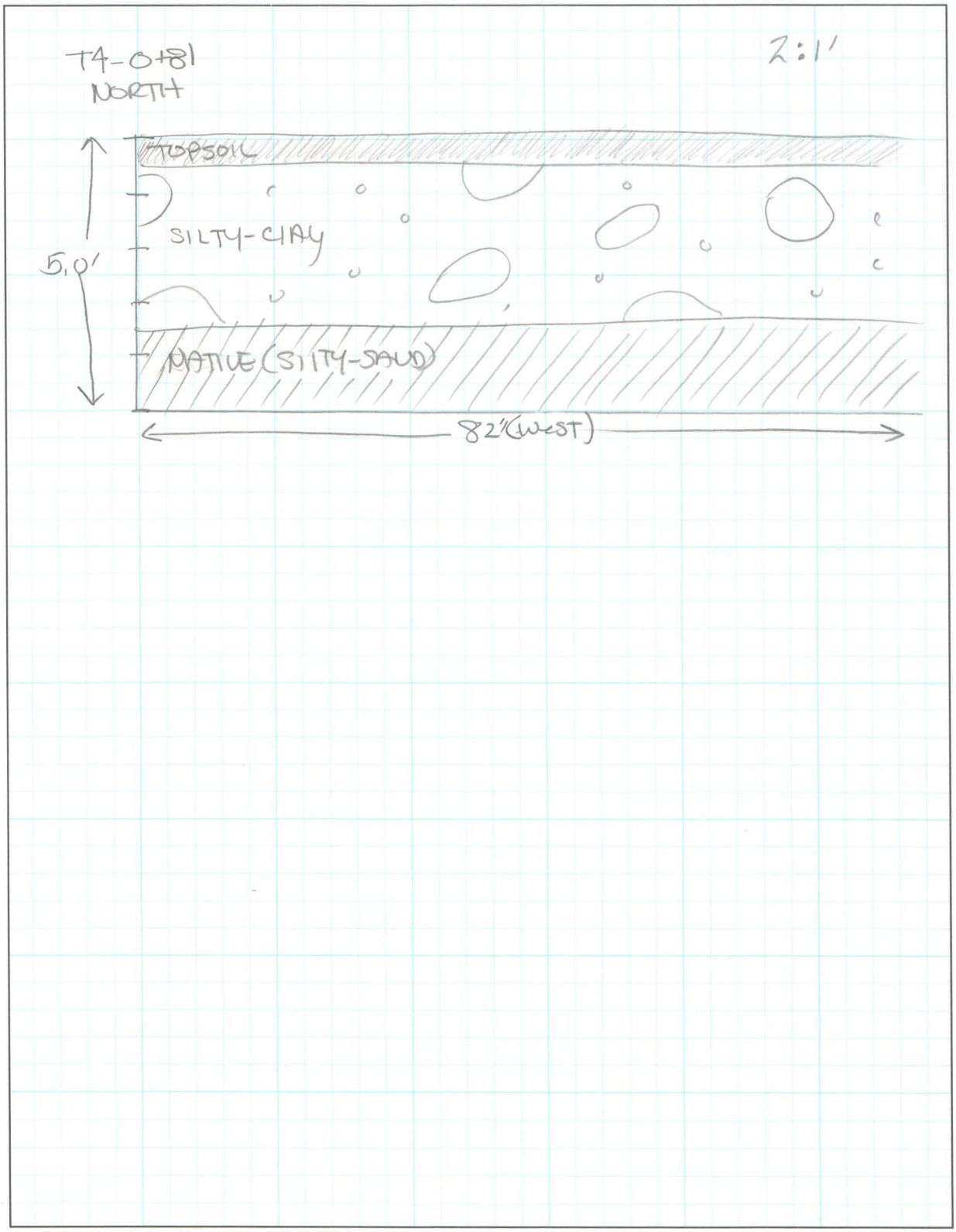
JOB NO: NJ000604.2036.00004

BY: VM DATE: 2/3/10

CHKD: DATE:

PAGE 29

SHEET 1/1




AGM Form 30 12-01

R2-0004872

ARCADIS

SUBJECT: O'Connor Trench Cross Sections
Ford Ringwood

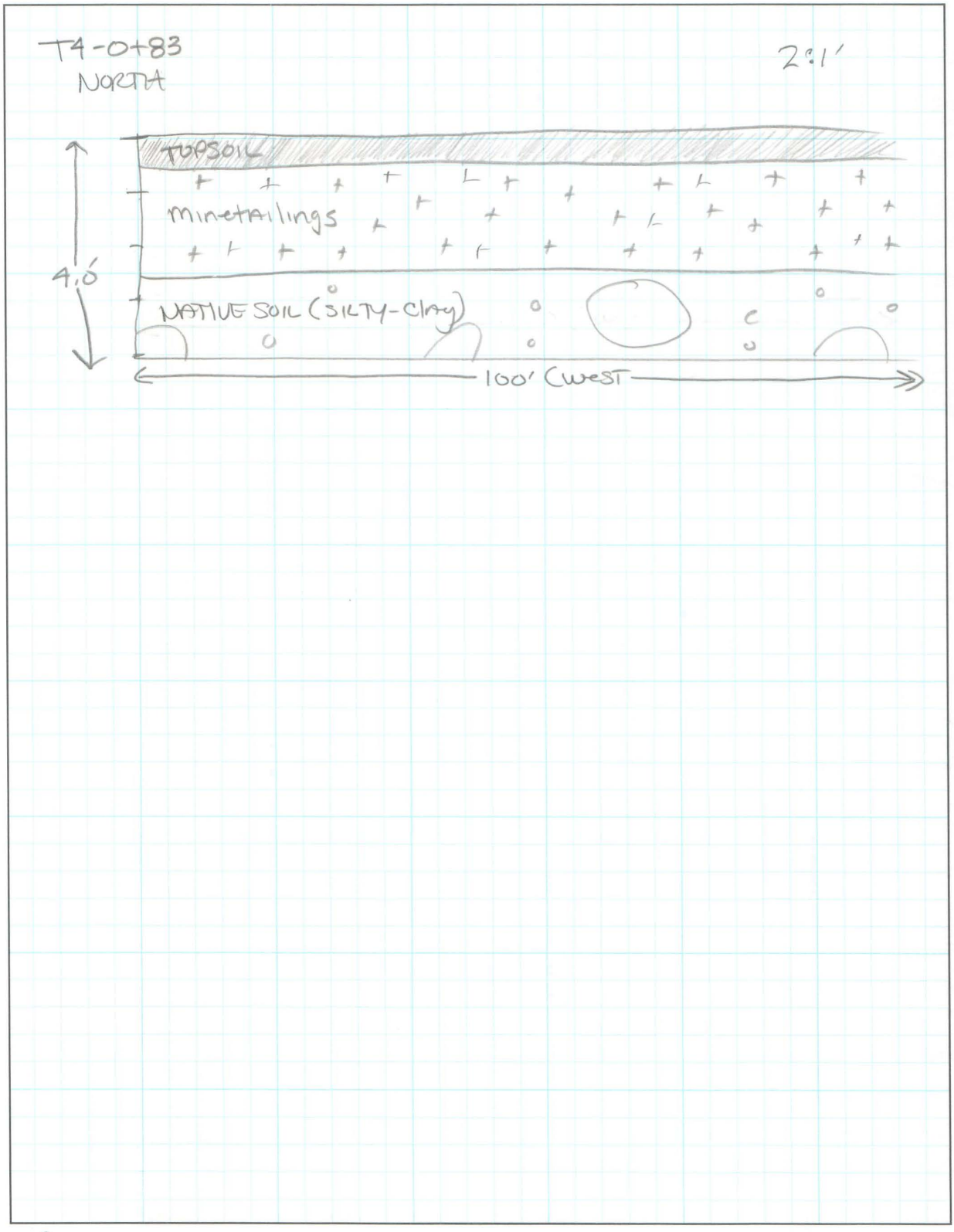
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/3/10

CHKD: DATE:

PAGE 30

SHEET 1/1



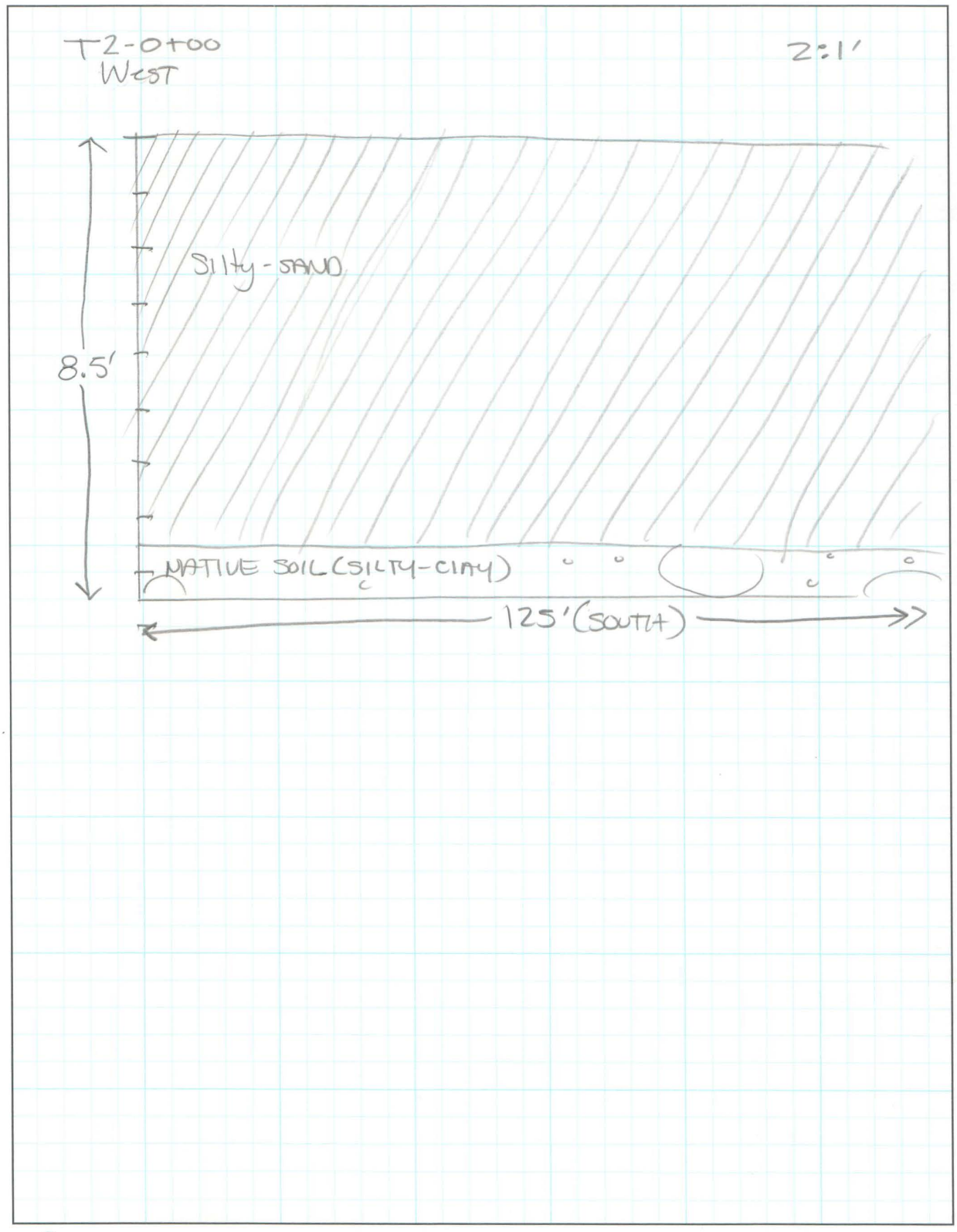

AGM Form 30 12-01

ARCADIS

SUBJECT: O'Connor Trench Cross Section
Ford Ringwood
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/3/10
CHKD: DATE:

PAGE 31
SHEET 1/1




AGM Form 30 12-01

R2-0004874

ARCADIS

SUBJECT: O'Connor Trench Cross Sections
FORD RINGWOOD

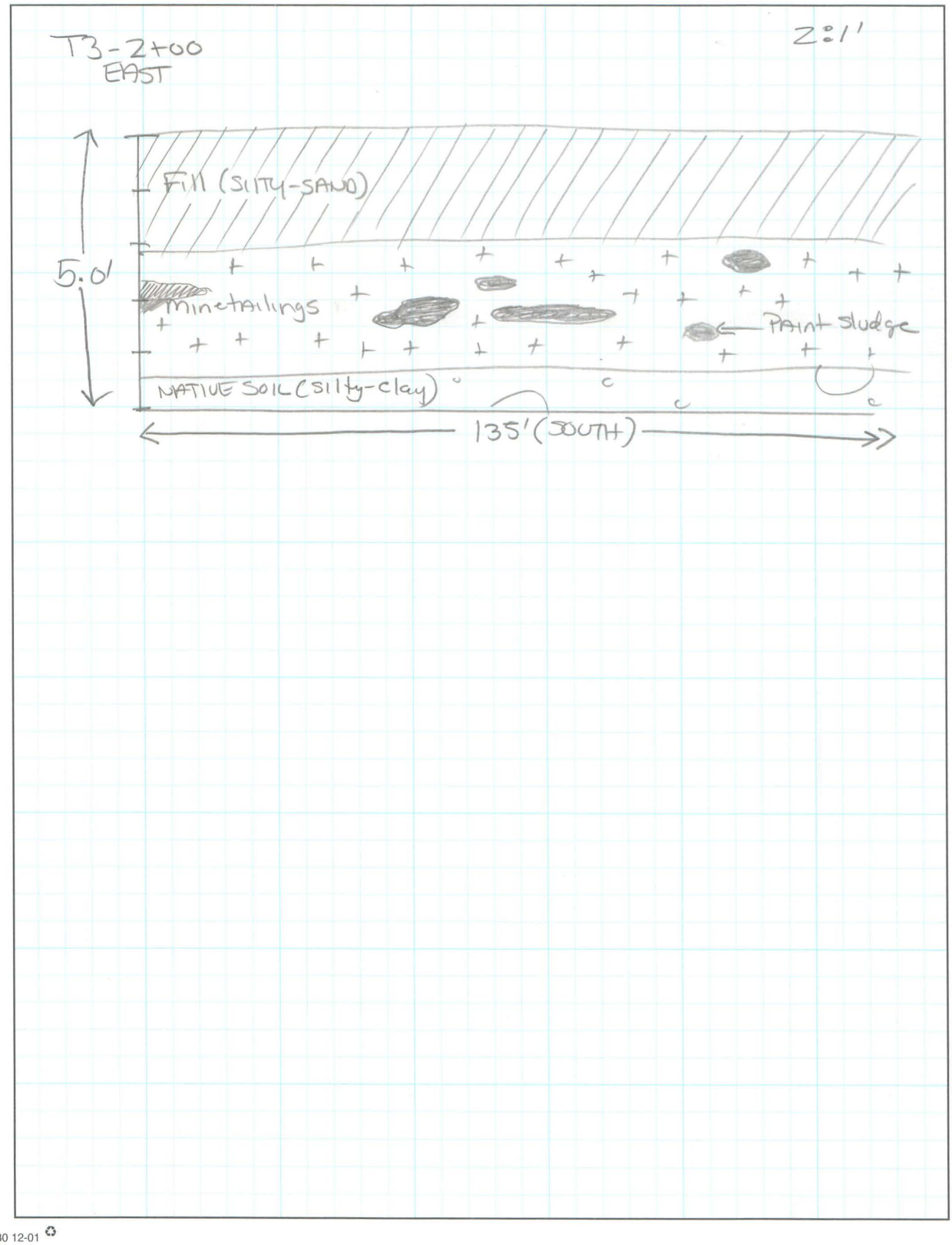
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/4/10

CHKD: DATE:

PAGE 32

SHEET 1/1




AGM Form 30 12-01

ARCADIS

SUBJECT: O'Connor Trench Cross Section
Ford Ringwood

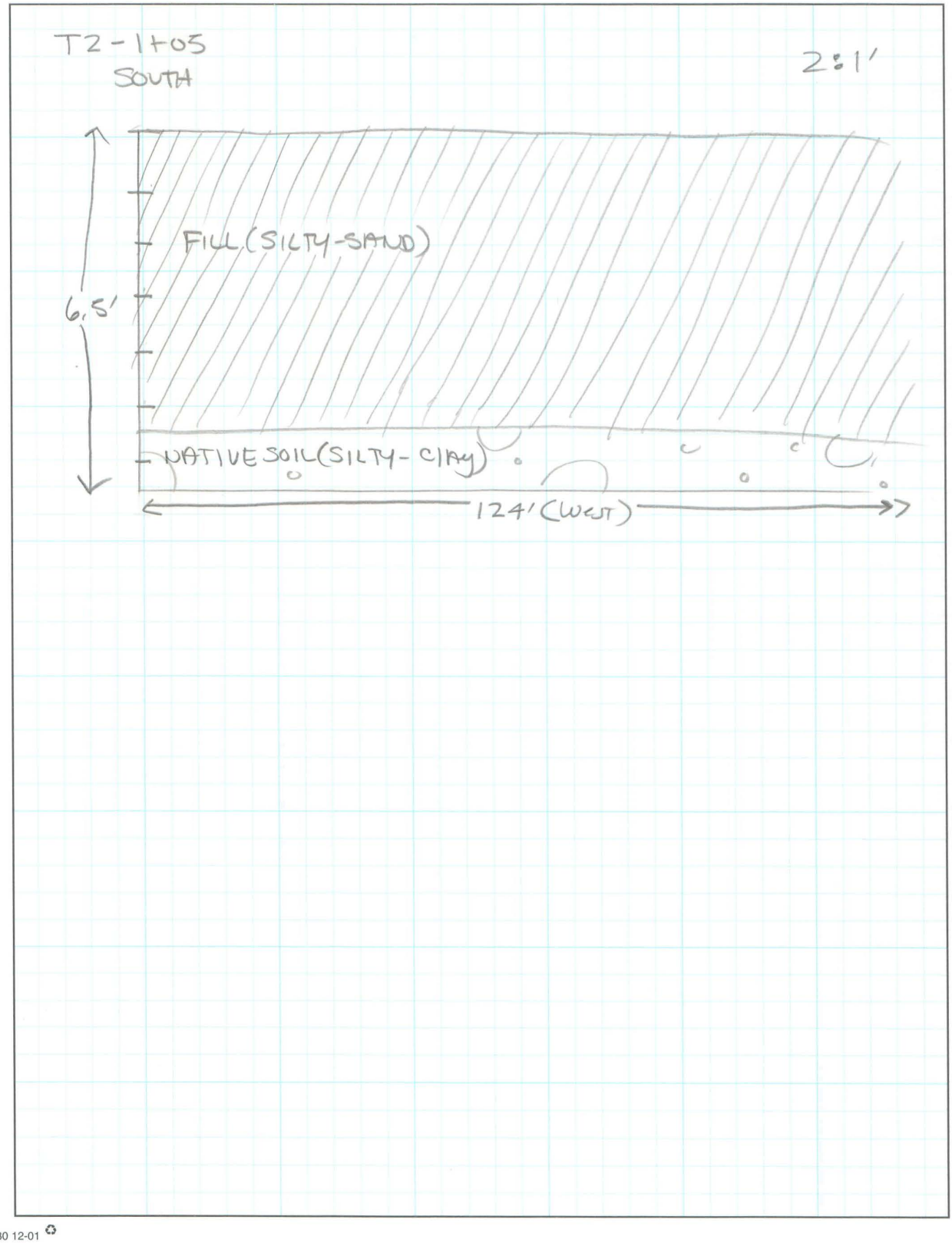
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/4/10

CHKD: DATE:

PAGE 33

SHEET 1/1




AGM Form 30 12-01

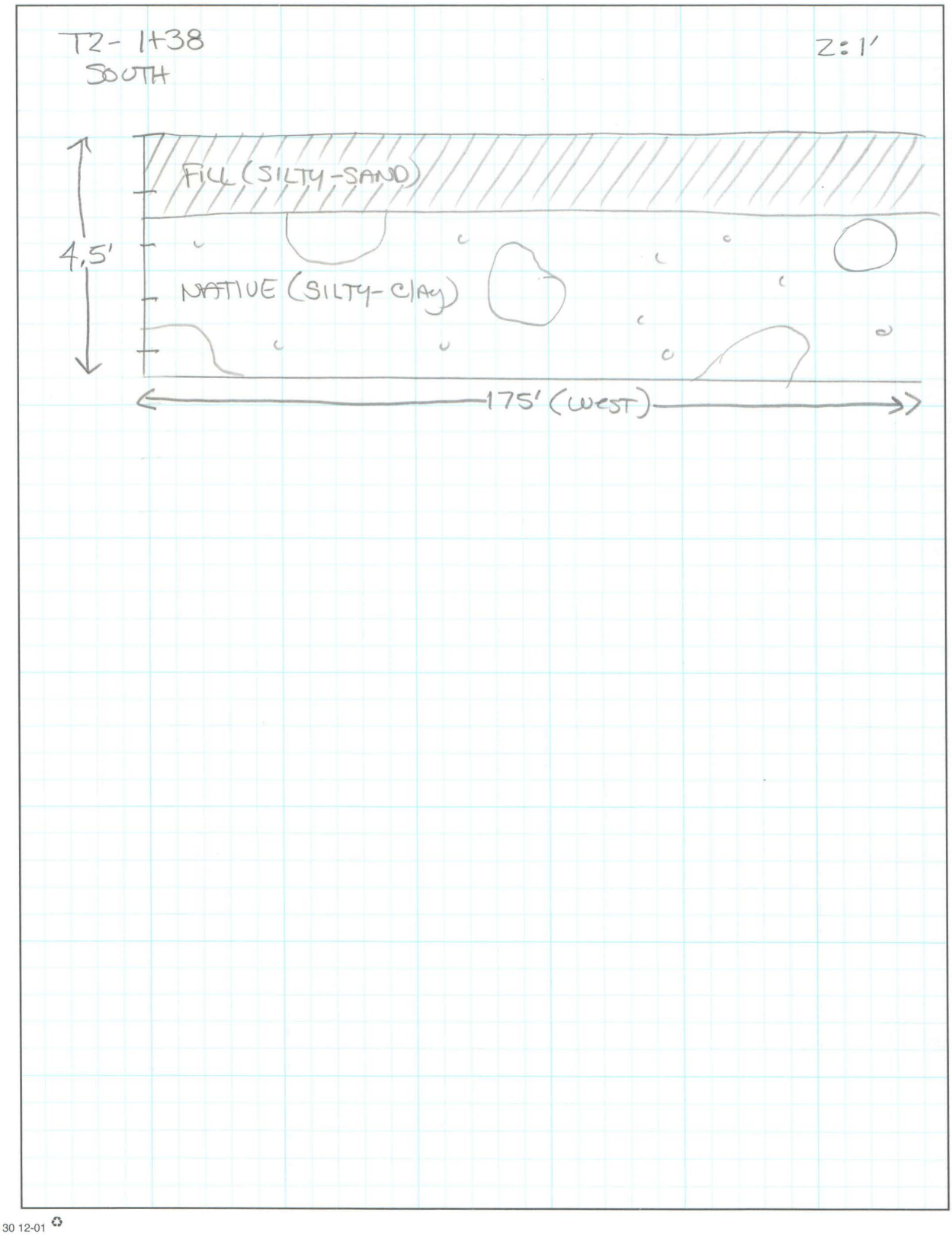
R2-0004876

ARCADIS

SUBJECT: O'Connor Trench Cross Section
Ford Ringwood
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/4/10
CHKD: DATE:

PAGE 34
SHEET 1 / 1




AGM Form 30 12-01

R2-0004877

ARCADIS

SUBJECT: O'Connor Trench Cross-Section
Ford Ringwood

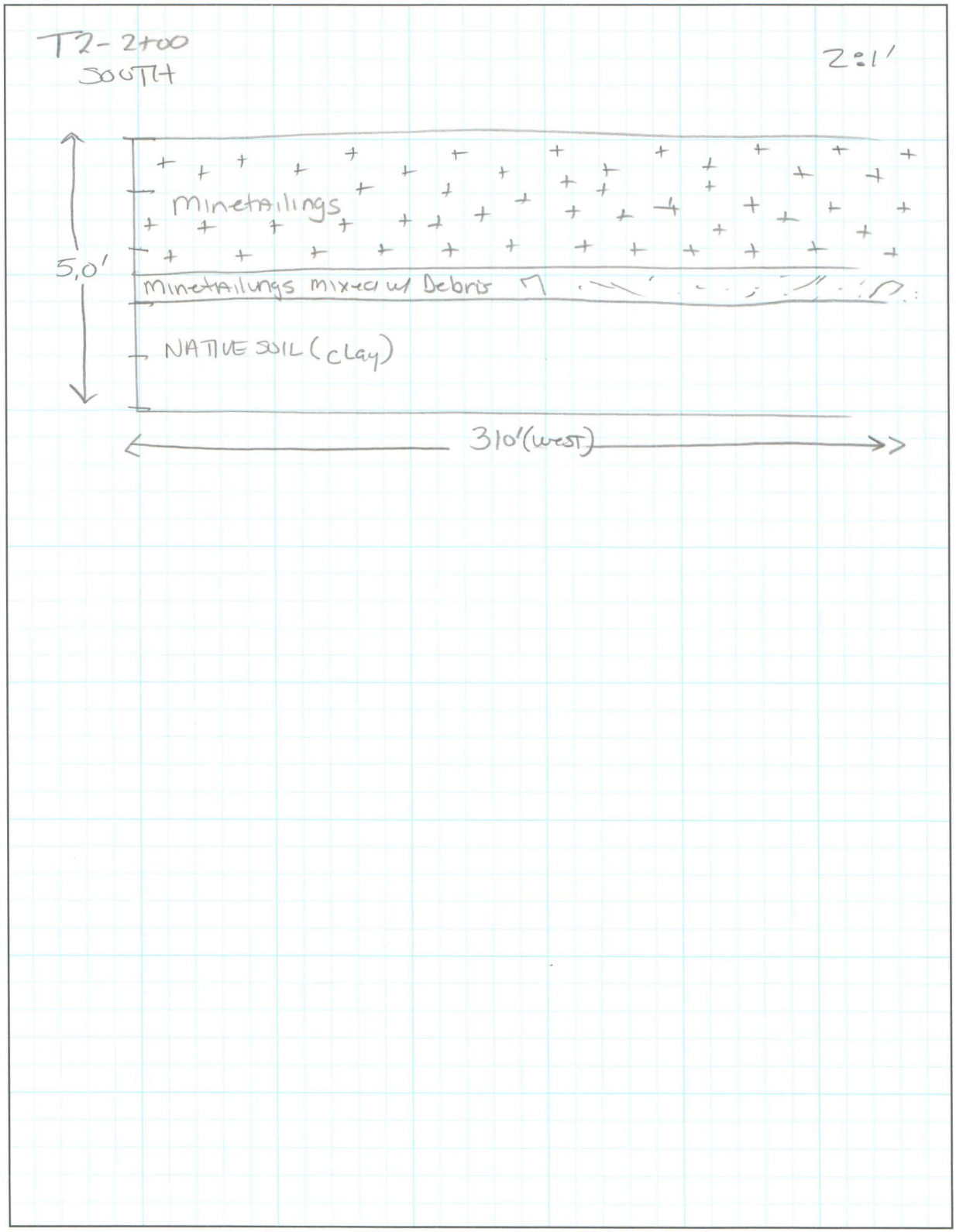
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/8/12

CHKD: DATE:

PAGE 35

SHEET 1/1




AGM Form 30 12-01

ARCADIS

SUBJECT: O'Connor Trench Cross Section
Ford Ringwood

JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/8/10

CHKD: DATE:

PAGE 36

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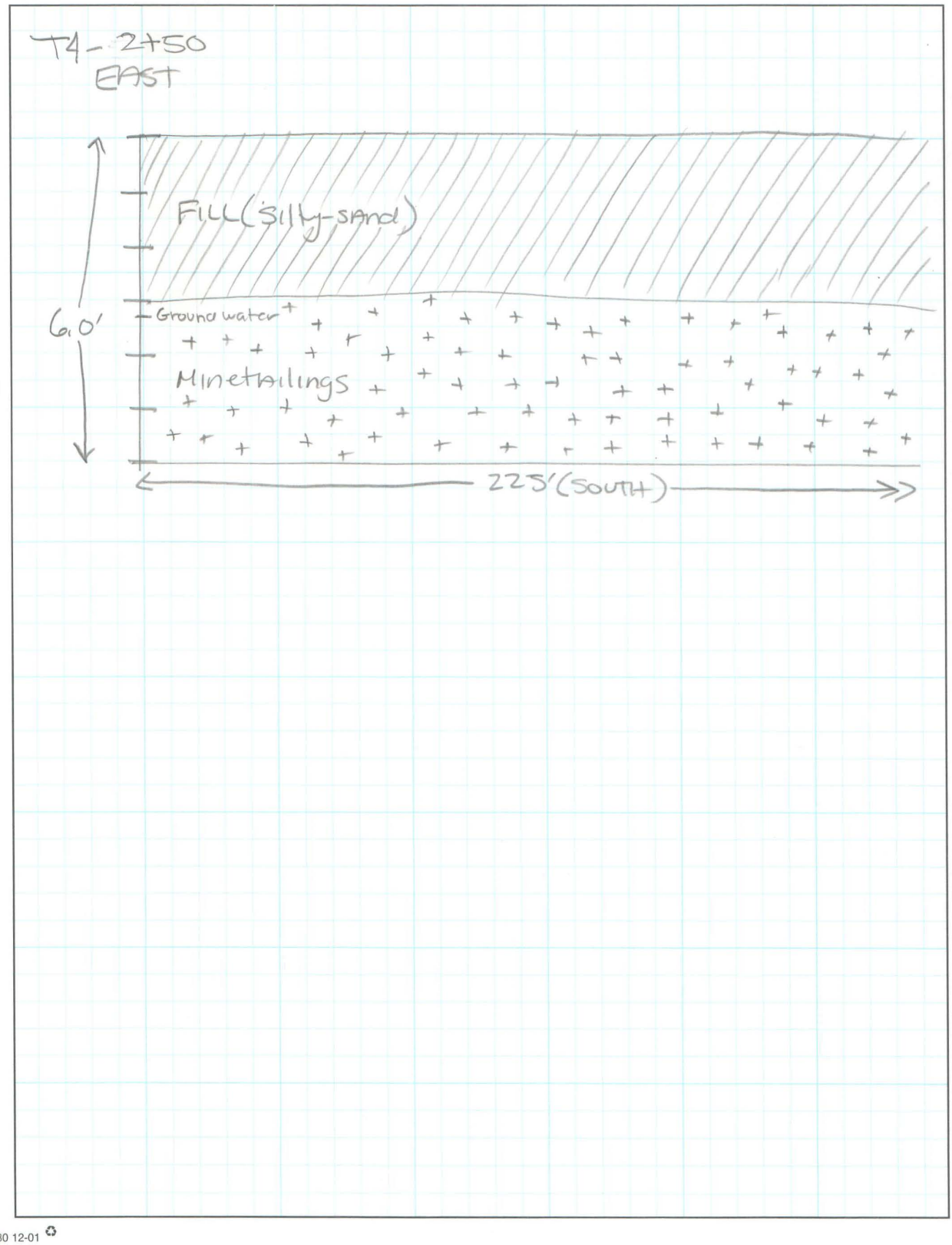


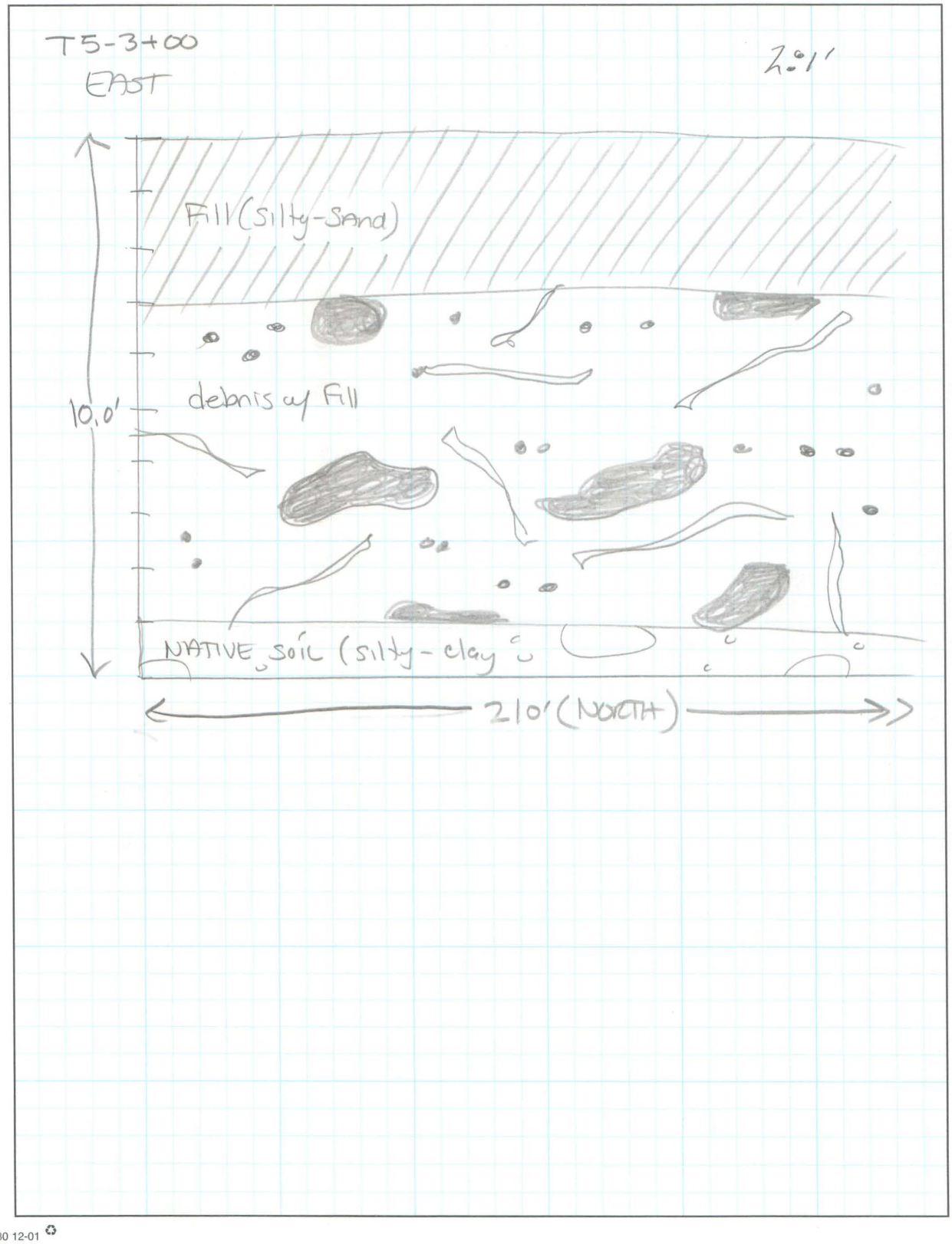

AGM Form 30 12-01

ARCADIS

SUBJECT: O'Connor Trench Cross Section
FORD RINGWOOD
JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/8/10
CHKD: DATE:

PAGE 37
SHEET 1/1






R2-0004880

ARCADIS

SUBJECT: O'Connor Trench Cross Sections
FORD Kirkwood

JOB NO: NJ000604.0036.00004

BY: VM DATE: 2/9/10

CHKD: DATE:

PAGE 38

SHEET 1/1

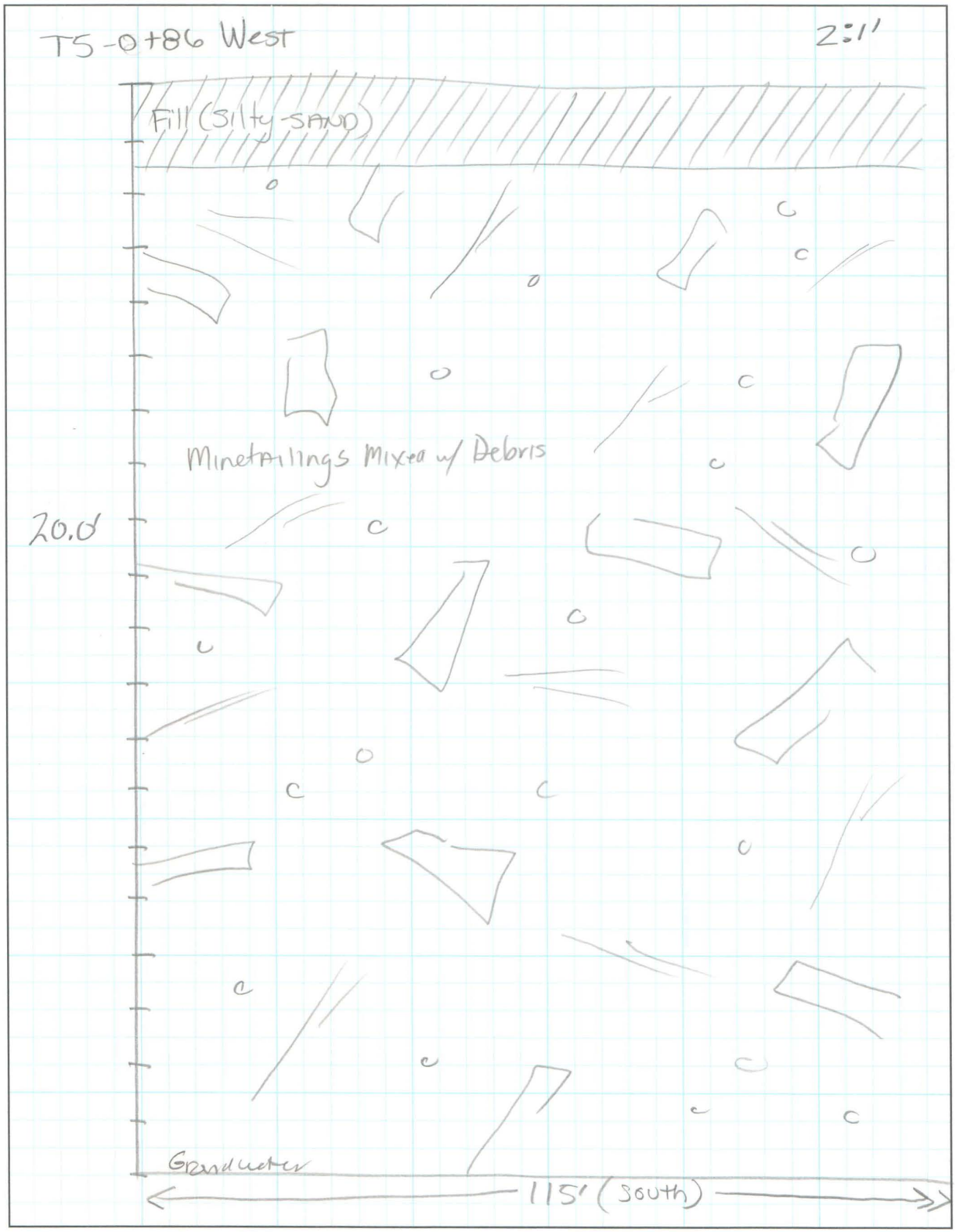
AGM Form 30 12-01

ARCADIS

SUBJECT: O'Connor Trench Cross Section
Ford Ringwood
JOB NO: NJ000604.0036.00004

BY: MH DATE: 2/21/10
CHKD: DATE:

PAGE 39
SHEET 1/1




AGM Form 30 12-01

ARCADIS

## Appendix D

Test Trench and Test Pit Cross Sections

SOUTH

T1

T8

HOUSEHOLD DEBRIS
SURFACE PAINT SLUDGE

SURFACE PAINT SLUDGE

MINE TAILINGS
MIXED WITH DEBRIS

FILL

FT1-1+50

PAINT SLUDGE

NATIVE SOIL

FT1-1+96

FILL (SAND)

FILL (SAND)
BLAST ROCK

SANDY SILT

DRUM - REMOVED DURING 2010

PAINT SLUDGE

T1-1+00 (6.0-7.5)

T1-2+00 (8.0-9.0)

NATIVE SOIL

NATIVE SOIL

BOULDER

T1-

T1-0+10 (11.0-12.0)

ELEVATION IN FEET ABOVE MEAN SEA LEVEL

514 512 510 508 506 504 502 500 498 496 494 492 490

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300

INTERSECTION OF T8
(SEE FIGURE 8)

MATCH LINE

T7

T6

FT1-3+42

FILL (SAND)
BLAST ROCK

MINE TAILINGS

MINE TAILINGS

FILL

FILL

FILL (SILTY-SAND)

DEBRIS/RUBBISH

DEBRIS/RUBBISH

MINE TAILINGS

MINE TAILINGS

NATIVE SOIL

DEBRIS/RUBBISH

DEBRIS/RUBBISH

MINE TAILINGS

NATIVE SOIL

MINE TAILINGS

DEBRIS/RUBBISH

DEBRIS/RUBBISH

MINE TAILINGS

T1-3+00 (8.0-9.0)

T1-5+10 (10.0-11.0)

T1-6+10 (1

FT1-4+15

T1-4+10 (12.5-13.5)

INTERSECTION OF T7
(SEE FIGURE 7)

INTERSECTION OF T6
(SEE FIGURE 6)

MATCH LINE

512 510 508 506 504 502 500 498 496 494 492 490

300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600

LEGEND:

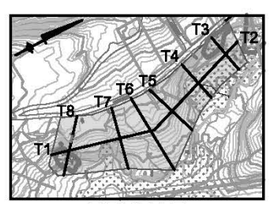
- GROUND SURFACE
- FILL SAMPLE LOCATION
- BASE SAMPLE LOCATION
- DEBRIS/RUBBISH
- MINE TAILINGS (GRAVEL, SAND & SILT SIZED ROCK FROM ORE PROCESSING AND MILLING)
- NATIVE SOIL
- NATIVE SOIL (COBBLES AND BOULDERS)
- SANDY SILT
- FILL (REWORKED SOIL AND/OR MINE TAILINGS)
- PAINT SLUDGE - REMOVED DURING 2010
- 55 GALLON DRUM - REMOVED DURING 2010
- WATER ENCOUNTERED

NOTE:

DEBRIS: CARPET, FOAM, RUBBER, GLASS, WOOD, METAL

0 8'
VERTICAL SCALE

0 20'
HORIZONTAL SCALE




KEYMAP

RINGWOOD MINE/LANDFILL SITE
RINGWOOD, NEW JERSEY

# CROSS SECTION OF O'CONNOR DISPOSAL AREA T1 (T1-0+00 TO T1-5+95)

ARCADIS

FIGURE
1a

CITY: (MAHWAH) SYRACUSE, NY GROUP: ENVCAD DB: (J. G. GONZALEZ) P.M.(Reqd) TM(Opt) LD: (J. G. GONZALEZ) LYR(Opt)(N=*OFF*;*REF*
G:\ENVCAD\Newjersey\ACTIVE\00084\0003\0002\0008\V07.dwg LAYOUT: 1A SAVED: 12/29/2011 11:38 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: -- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/29/2011 11:38 AM BY: WASLEWSKI, MATT
XREFS: 0003A06 PROJECTNAME: ---
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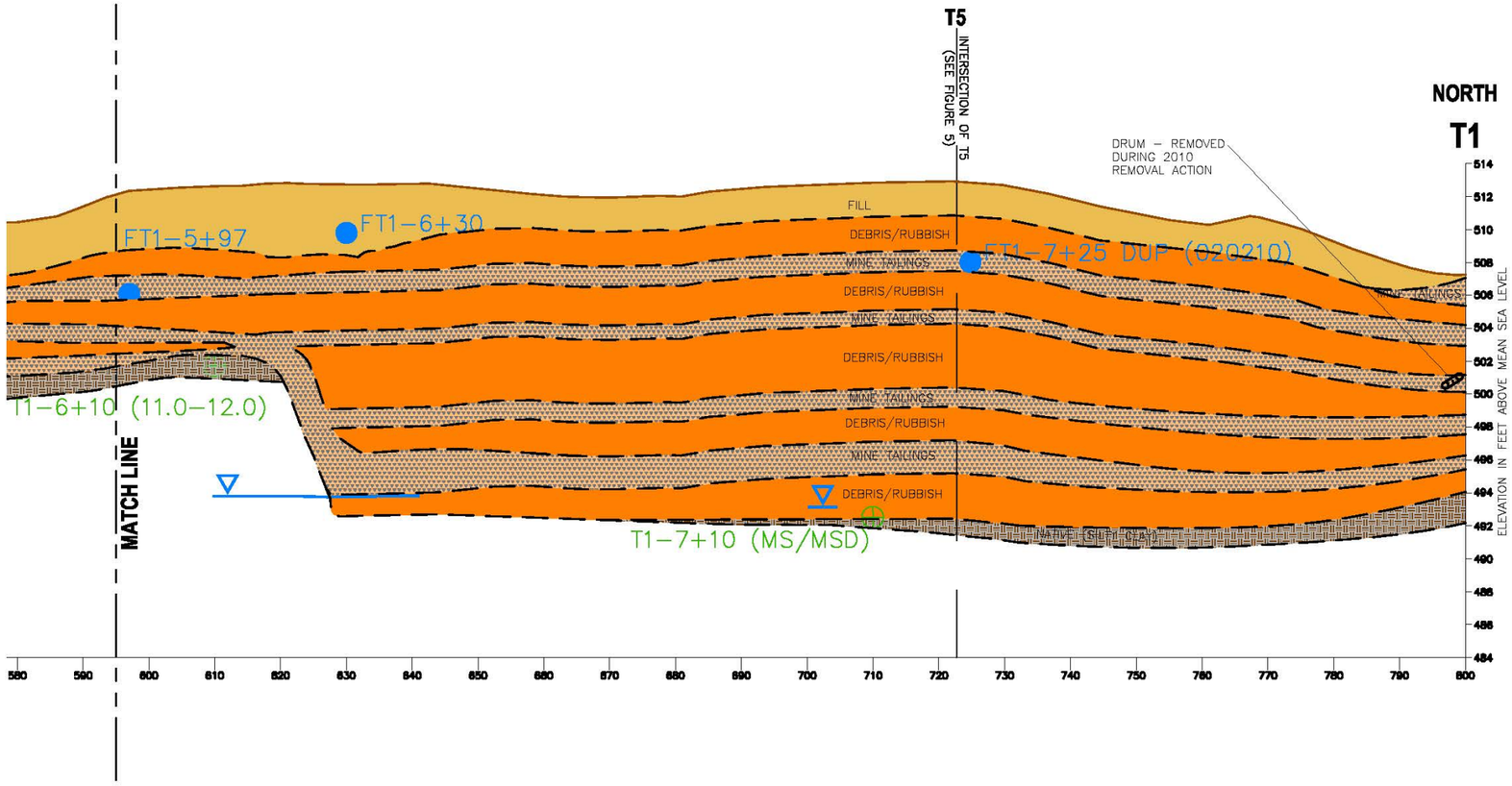



LEGEND:

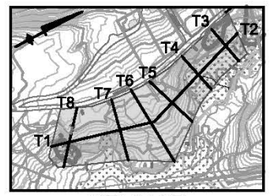
- GROUND SURFACE
- FILL SAMPLE LOCATION
- BASE SAMPLE LOCATION
- DEBRIS/RUBBISH
- MINE TAILINGS (GRAVEL, SAND & SILT SIZED ROCK FROM ORE PROCESSING AND MILLING)
- NATIVE SOIL
- NATIVE SOIL (COBBLES AND BOULDERS)
- SANDY SILT
- FILL (REWORKED SOIL AND/OR MINE TAILINGS)
- PAINT SLUDGE – REMOVED DURING 2010
- 55 GALLON DRUM – REMOVED DURING 2010
- WATER ENCOUNTERED

NOTE:

DEBRIS: CARPET, FOAM, RUBBER, GLASS, WOOD, METAL

0 8'
VERTICAL SCALE

0 20'
HORIZONTAL SCALE




KEYMAP

RINGWOOD MINE/LANDFILL SITE
RINGWOOD , NEW JERSEY

# CROSS-SECTION OF O'CONNOR DISPOSAL AREA T1 (T1-5+95 TO T1-8+00)

ARCADIS

FIGURE
1b

CITY: (MAHWAH) SYRACUSE, NY GROUP: ENVCAD DB: (J. G ONZALEZ), P. LISTER LD: (J. G ONZALEZ) PM:(Reed) TM:(Dgt) LYR:(OnXH="OFF-*REF*
G:\ENVCAD\New\mwh\ACTIVE\00004\40335\0022\0000AW07.dwg LAYOUT: 1B SAVED: 02/25/2011 12:23 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/29/2011 12:25 PM BY: WASILEWSKI, MATT
XREFS: 0000A00B
IMAGES: PROJECTNAME ---

SOUTH

T2

T4 INTERSECTION OF T4 (SEE FIGURE 4)

7 DRUMS– REMOVED DURING 2010 REMOVAL ACTION

FT2–4+88

NATIVE (SILTY CLAY)

DRUM – REMOVED DURING 2010 REMOVAL ACTION

FT2–3+45 DUP (020910)

FT2–2+50

+06

@T2–5+00

MINE TAILINGS

DEBRIS/RUBBISH

NATIVE (SILTY CLAY)

T2–4+00

T2–3+00

T2–3+00

NATIVE (CLAY)

T2–2

ELEVATION IN FEET ABOVE MEAN SEA LEVEL

514 512 510 508 506 504 502 500 498 496 494 492

510 500 490 480 470 460 450 440 430 420 410 400 390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210

MATCH LINE

NORTH

T2

T3 INTERSECTION OF T3 (SEE FIGURE 3)

FT2–1+78

FILL (SILTY SAND)

FT2–0+65

NATIVE (SILTY CLAY)

NATIVE SOIL

T2–0+00

+00

T2–1+00

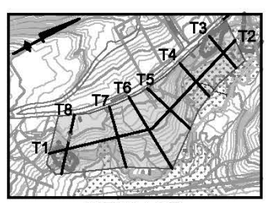
514 512 510 508 506 504 502 500 498 496 494 492

210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0

MATCH LINE

LEGEND:

- GROUND SURFACE
- FILL SAMPLE LOCATION
- BASE SAMPLE LOCATION
- DEBRIS/RUBBISH
- MINE TAILINGS (GRAVEL, SAND & SILT SIZED ROCK FROM ORE PROCESSING AND MILLING)
- MINE BLAST ROCK (ANGULAR, BROKEN ROCK FROM MINING ACTIVITIES)
- NATIVE SOIL
- NATIVE SOIL (COBBLES AND BOULDERS)
- SANDY SILT
- FILL (REWORKED SOIL AND/OR MINE TAILINGS)
- PAINT SLUDGE – REMOVED DURING 2010
- 55 GALLON DRUM – REMOVED DURING 2010
- WATER ENCOUNTERED
- PLASTIC SHEETING




KEYMAP

0 8' VERTICAL SCALE

0 20' HORIZONTAL SCALE

NOTE:

DEBRIS: CARPET, FOAM, RUBBER, GLASS, WOOD, METAL

RINGWOOD MINE/LANDFILL SITE
RINGWOOD , NEW JERSEY

# CROSS SECTION OF O'CONNOR DISPOSAL AREA - T2 (T2-0+00 TO T2-5+06)

ARCADIS

FIGURE 2

CITY:AMHWAH DIVGROUP:ENVCAD DB:JG LD:(Opt) PIC:(Opt) PM:(Req'd) TM:(Opt) LYR:(On)ON=*OFF=*REF*
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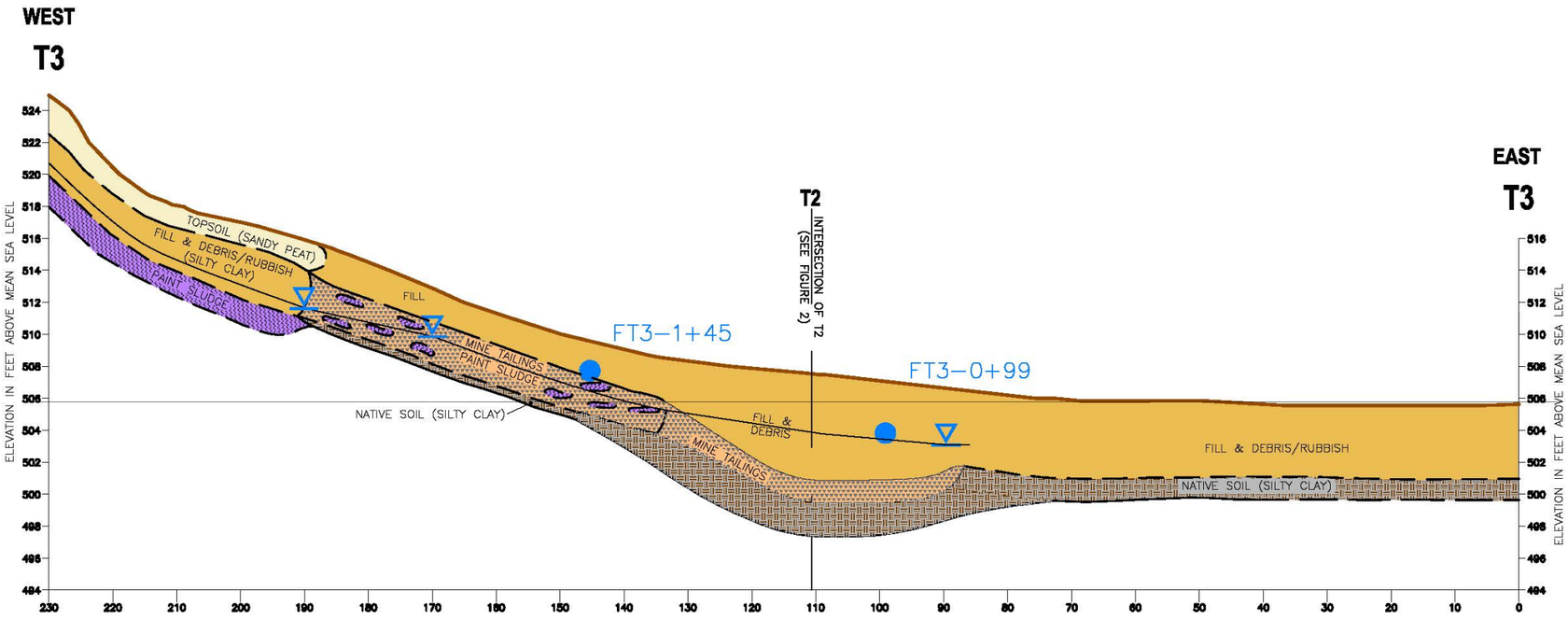
R2-0004886




LEGEND:

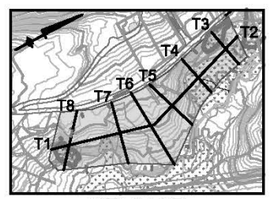
- GROUND SURFACE
- FILL SAMPLE LOCATION
- BASE SAMPLE LOCATION
- DEBRIS/RUBBISH
- MINE TAILINGS (GRAVEL, SAND & SILT SIZED ROCK FROM ORE PROCESSING AND MILLING)
- MINE BLAST ROCK (ANGULAR, BROKEN ROCK FROM MINING ACTIVITIES)
- NATIVE SOIL
- NATIVE SOIL (COBBLES AND BOULDERS)
- SANDY SILT
- FILL (REWORKED SOIL AND/OR MINE TAILINGS)
- PAINT SLUDGE – REMOVED DURING 2010
- 55 GALLON DRUM – REMOVED DURING 2010
- WATER ENCOUNTERED
- PLASTIC SHEETING

NOTE:

DEBRIS: CARPET, FOAM, RUBBER, GLASS, WOOD, METAL

0 8'
VERTICAL SCALE

0 20'
HORIZONTAL SCALE




KEYMAP

RINGWOOD MINE/LANDFILL SITE
RINGWOOD , NEW JERSEY

**CROSS SECTION OF O'CONNOR DISPOSAL AREA - T3 (T3-0+00 TO T3 - 2+30)**

ARCADIS

FIGURE
3

CITY:(MAHWAH, NJ) SYRACUSE, NY GROUP: ENVCAD DB: W.JONES, P. LISTER PM: E. ZIMMERMAN TM: K. BEIER LYR: ON=*;OFF=REF, (FRZ)
G:\ENVCAD\Newtown\ACT\NJ000604\0035\00022\00604V04.dwg LAYOUT: 3 SAVED: 12/29/2011 1:27 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/29/2011 1:28 PM BY: WASILEWSKI, MATT
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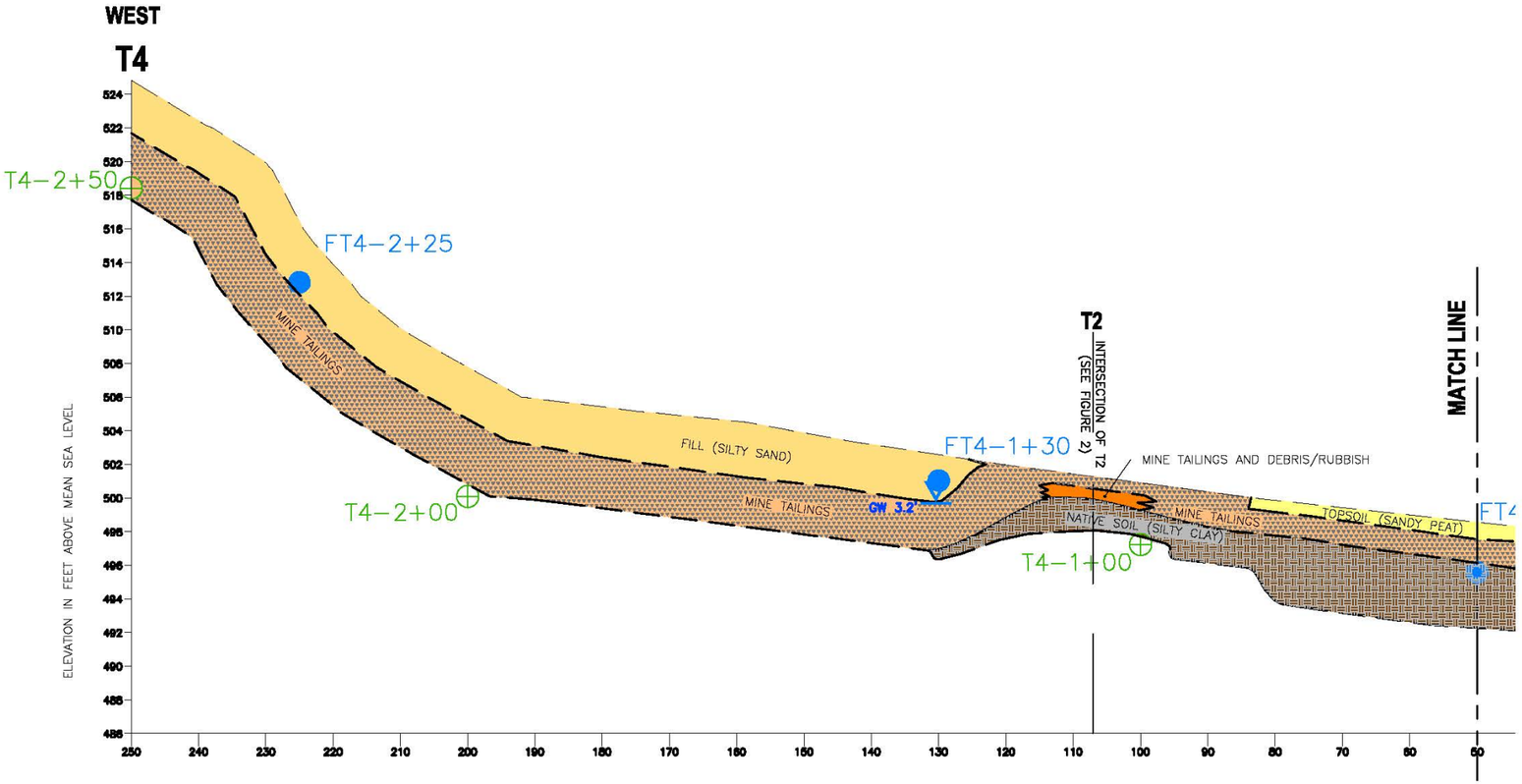
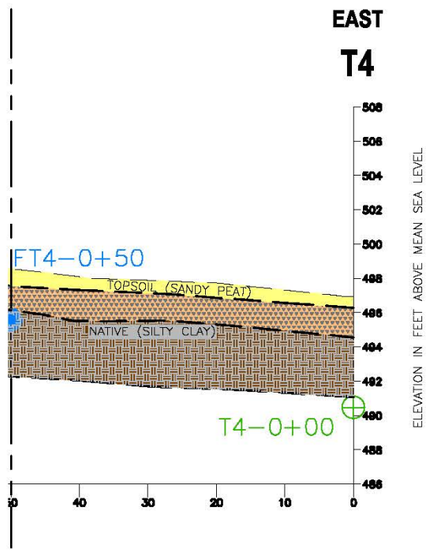
R2-0004887



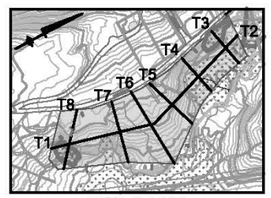




LEGEND:

- GROUND SURFACE
- FILL SAMPLE LOCATION
- BASE SAMPLE LOCATION
- DEBRIS/RUBBISH
- MINE TAILINGS (GRAVEL, SAND & SILT SIZED ROCK FROM ORE PROCESSING AND MILLING)
- MINE BLAST ROCK (ANGULAR, BROKEN ROCK FROM MINING ACTIVITIES)
- NATIVE SOIL
- NATIVE SOIL (COBBLES AND BOULDERS)
- TOPSOIL
- FILL (REWORKED SOIL AND/OR MINE TAILINGS)
- PAINT SLUDGE – REMOVED DURING 2010
- 55 GALLON DRUM
- WATER ENCOUNTERED
- PLASTIC SHEETING

0 2'
VERTICAL SCALE

0 30'
HORIZONTAL SCALE




KEYMAP

RINGWOOD MINE/LANDFILL SITE
RINGWOOD , NEW JERSEY

**CROSS SECTION OF O'CONNOR DISPOSAL AREA - T4 (T4-0+00 TO T4-2+50)**

ARCADIS

FIGURE 4

CITY: (MAHWAH) SYRACUSE, NY GROUP: ENVCAD DB: (J. G GONZALEZ) P.M.(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\Newcnvr\ACTIVE\00008400\8400\22000\8400V02.dwg LAYOUT: 4 SAVED: 12/29/2011 1:27 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: — PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/29/2011 5:37 PM BY: WASILEWSKI, MATT
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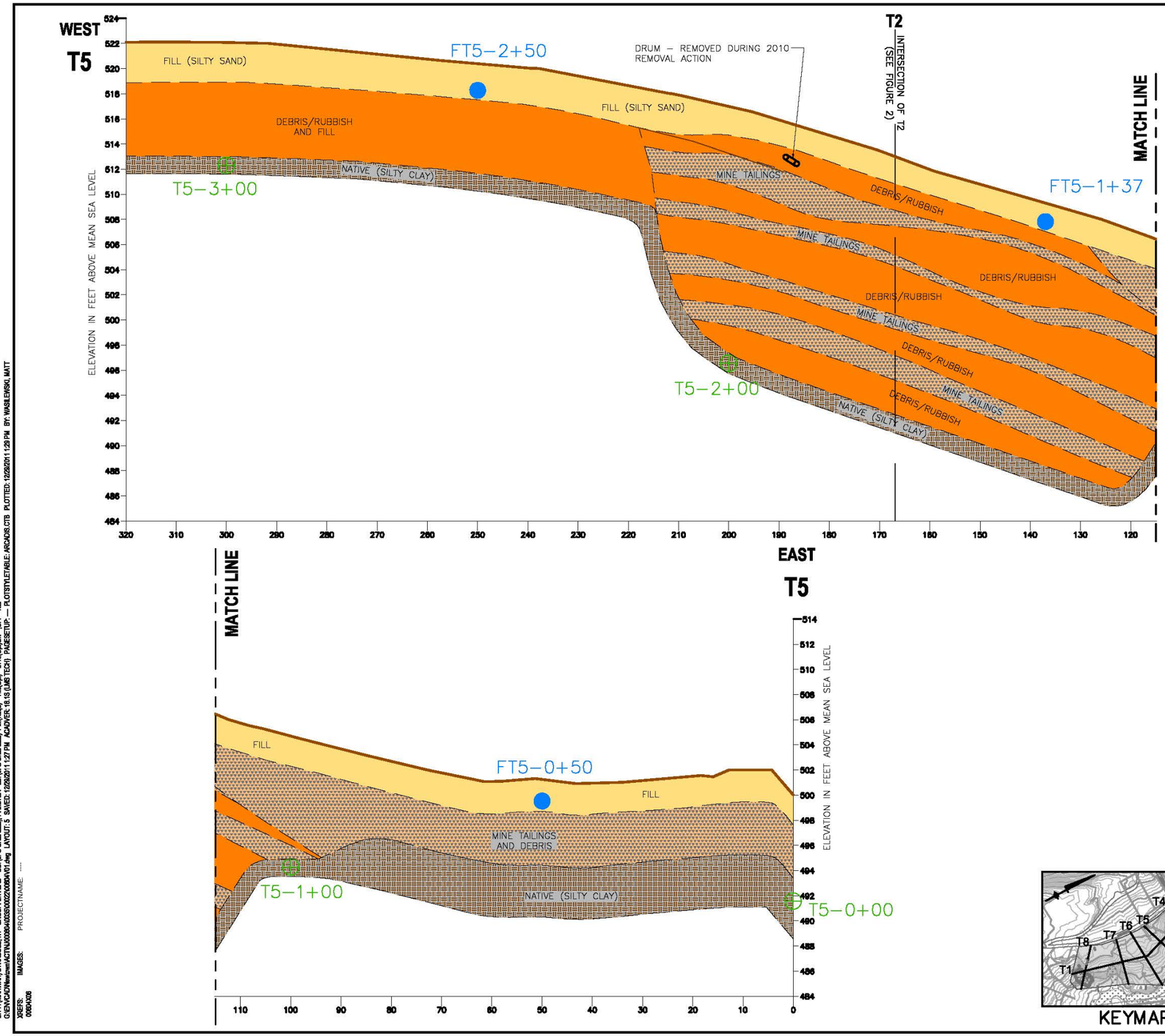



LEGEND:

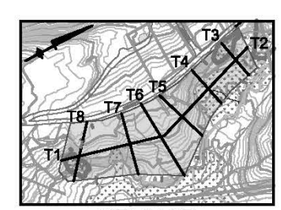
- GROUND SURFACE
- FILL SAMPLE LOCATION
- BASE SAMPLE LOCATION
- DEBRIS/RUBBISH
- MINE TAILINGS (GRAVEL, SAND & SILT SIZED ROCK FROM ORE PROCESSING AND MILLING)
- NATIVE SOIL
- NATIVE SOIL (COBBLES AND BOULDERS)
- SANDY SILT
- FILL (REWORKED SOIL AND/OR MINE TAILINGS)
- PAINT SLUDGE – REMOVED DURING 2010
- 55 GALLON DRUM – REMOVED DURING 2010
- WATER ENCOUNTERED

NOTE:

DEBRIS: CARPET, FOAM, RUBBER, GLASS, WOOD, METAL

0 8'
VERTICAL SCALE

0 20'
HORIZONTAL SCALE




KEYMAP

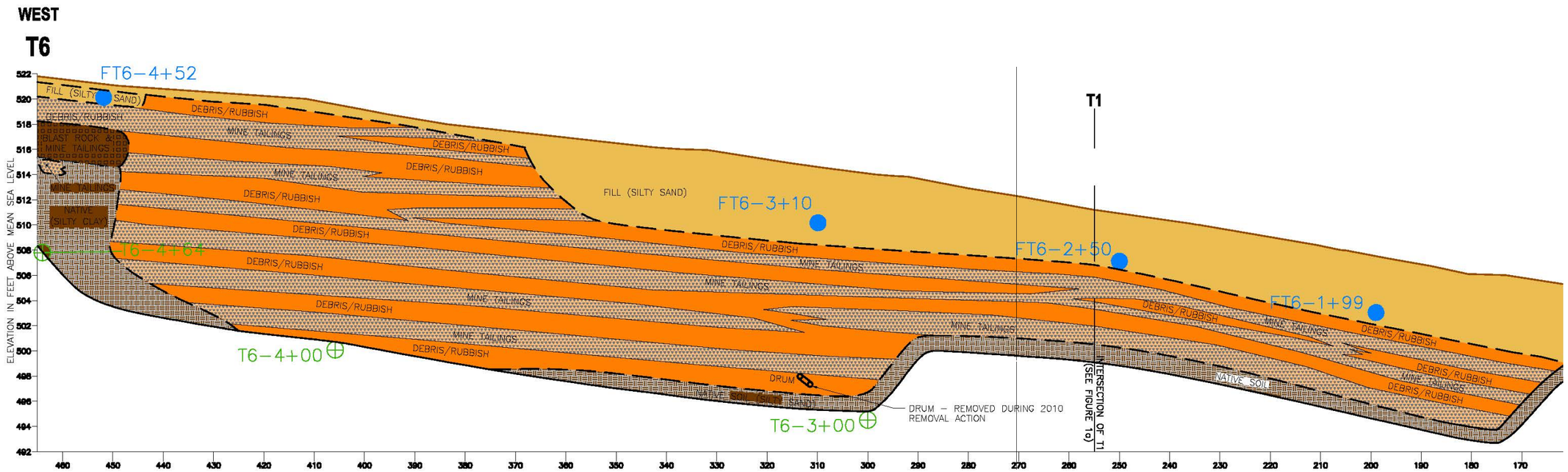
RINGWOOD MINE/LANDFILL SITE
RINGWOOD, NEW JERSEY

**CROSS SECTION OF O'CONNOR DISPOSAL AREA - T5 (T5-0+00 TO T5-3+20)**

ARCADIS

FIGURE 5

R2-0004889




RINGWOOD MINE/LANDFILL SITE
RINGWOOD, NEW JERSEY

**CROSS SECTION OF O'CONNOR DISPOSAL AREA T6 (T6-0+00 TO T6-4+65)**

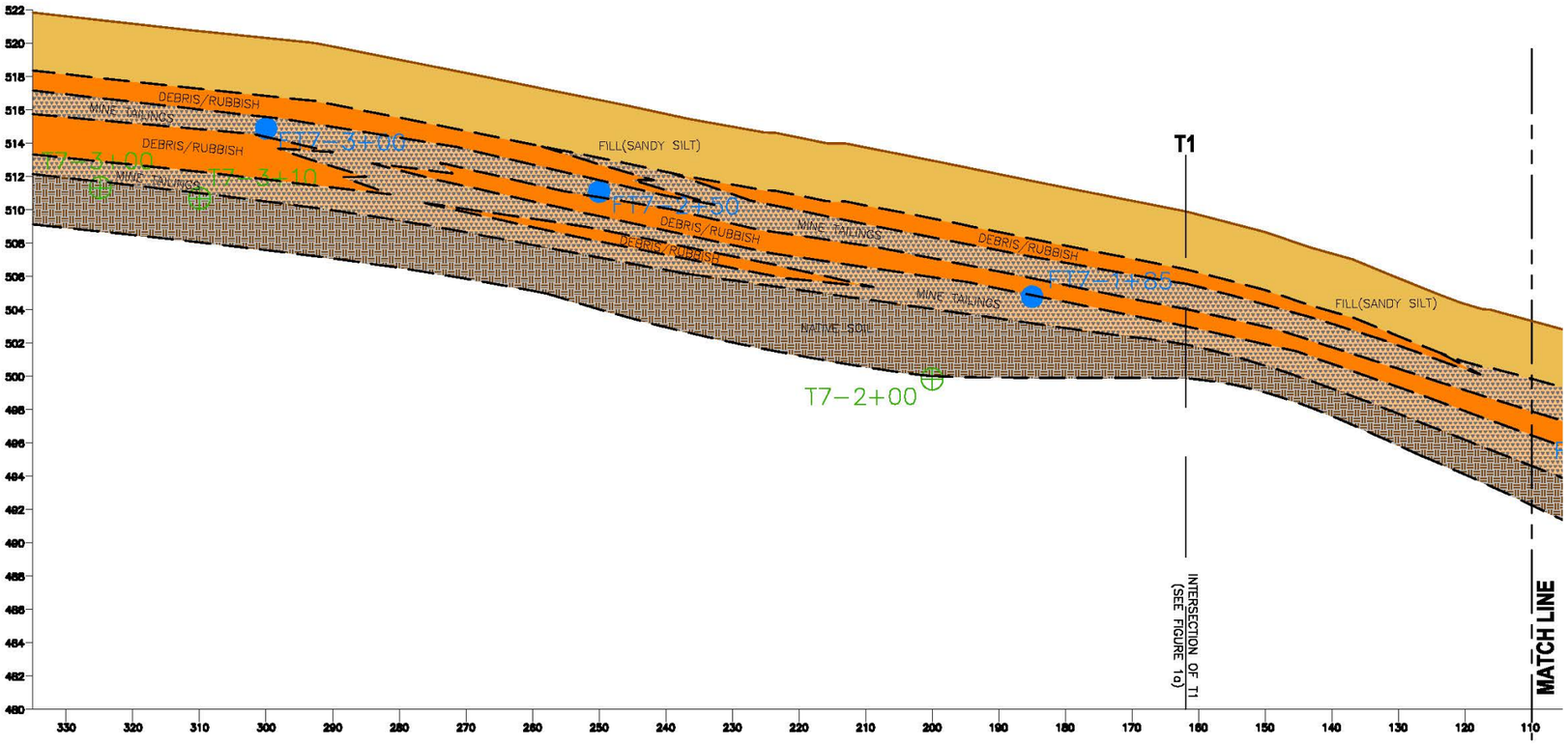
ARCADIS

FIGURE 6

R2-0004890

WEST

T7




LEGEND:

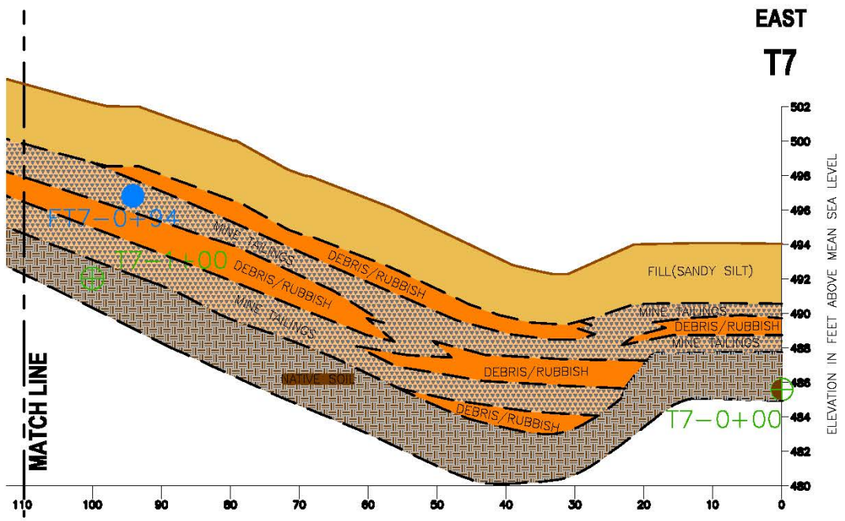
- GROUND SURFACE
- FILL SAMPLE LOCATION
- BASE SAMPLE LOCATION
- DEBRIS/RUBBISH
- MINE TAILINGS (GRAVEL, SAND & SILT SIZED ROCK FROM ORE PROCESSING AND MILLING)
- MINE BLAST ROCK (ANGULAR, BROKEN ROCK FROM MINING ACTIVITIES)
- NATIVE SOIL
- NATIVE SOIL (COBBLES AND BOULDERS)
- SANDY SILT
- FILL (REWORKED SOIL AND/OR MINE TAILINGS)
- PAINT SLUDGE – REMOVED DURING 2010
- 55 GALLON DRUM – REMOVED DURING 2010
- WATER ENCOUNTERED

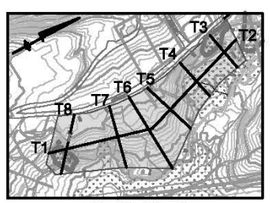
NOTE:

DEBRIS: CARPET, FOAM, RUBBER, GLASS, WOOD, METAL

EAST

T7




KEYMAP

0 8'

VERTICAL SCALE

0 20'

HORIZONTAL SCALE

RINGWOOD MINE/LANDFILL SITE
RINGWOOD , NEW JERSEY

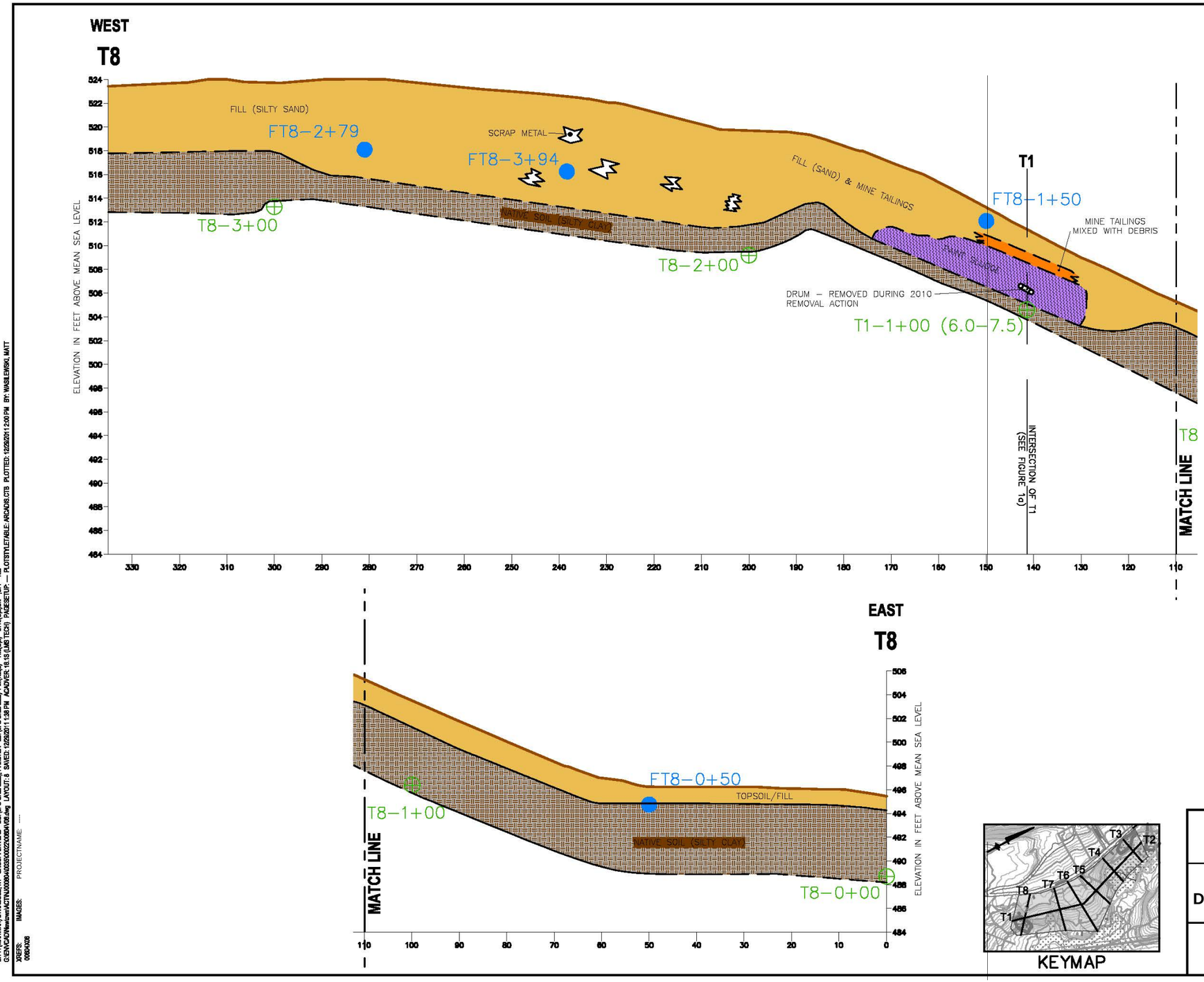
# CROSS SECTION OF O'CONNOR DISPOSAL AREA T7 (T7-0+00 TO T7-3+35)

ARCADIS

FIGURE 7

CITY: (MAHWAH) SYRACUSE, NY GROUP: EMCAD DB: (J. GONZALEZ) LD: (J. GONZALEZ) PM: (Reed) TM: (DK) LYR: (CONDOM*OFF*REF*
G:\EMCAD\Mahwah\ACTIVE\00880035\0035200\0035200-001.dwg LAYOUT: 7 SAVED: 12/29/2011 1:58 PM ACADVER: 18.1S (LMS TECH) PASSETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/29/2011 1:59 PM BY: WASILEWSKI, MATT
XREFS: IMAGES: PROJECTNAME: ---
0035200

R2-0004891




RINGWOOD MINE/LANDFILL SITE
RINGWOOD , NEW JERSEY

# CROSS SECTION OF O'CONNOR DISPOSAL AREA T8 (T8-0+00 TO T8-3+35)

ARCADIS

FIGURE 8

CITY: (NAHWAH) SYRACUSE, NY GROUP: ENVCAD DB: (J. G GONZALEZ) LD: (J. G GONZALEZ) PW:(Rand) TM:(Opt) LYR:(On)=(Xref*-OFF-FREF* G:\ENVCAD\Newcrnew\ACTIVE\00004008\000220\00004008VW08.dwg LAYOUT: 8 SAVED: 12/29/2011 1:38 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 12/29/2011 2:00 PM BY: WASILEWSKI, MATT

XREFS: 00004008
IMAGES: PROJECTNAME: ---

R2-0004892

ARCADIS

## Appendix E

Test Trench and Test Pit Photographs

Photograph location: OC-ITT-01
Photo taken of the east sidewall, from the north end showing rubbish in the trench wall

Photograph location: OC-ITT-01
Photo taken of the east sidewall from the middle of the trench showing a tire in the sidewall

Photograph location: OC-ITT-01
Photo taken from the end of the trench, north to south, showing fill over native soil.

Photograph location: OC-ITT-01A
Photo taken to show paint sludge at the base of the trench

Photograph location: OC-ITT-01A
Photo taken to show native soil below a paint sludge layer

Photograph location: OC-ITT-01A
Photo taken of west end of trench, showing paint sludge at the bottom of the trench

Photograph location: OC-ITT-02
Photo taken of the east wall, showing contact between mine waste rock/tailings and native soil

Photograph location: OC-ITT-02
Photo taken of east wall, showing contact between mine waste rock/tailings and native soil

Photograph location: OC-ITT-02
Photo showing south end of trench

Photograph location: OC-ITT-02
Photo taken at the north end of the trench, looking east

Photograph location: OC-ITT-03
Photo taken of south side wall, native soil (tan) at base of trench.

Photograph location: OC-ITT-03
Photo taken of a layer of tires at the west end of the trench

Photograph location: OC-ITT-03
Photo looking toward east end of trench

Photograph location: OC-ITT-04
Photo taken of the north wall at the west end of the trench, showing fill and rubbish

Photograph location: OC-ITT-04
Photo taken of the north wall at the east end, showing fill overlaying mine tailings overlaying native soil

Photograph location: OC-ITT-04
Photo taken of the south wall, from the west end to the middle of the trench, to show fill overlaying mine tailings overlaying native soil

Photograph location: OC-ITT-04
Photo taken of the trench bottom, looking west to east

Photograph location: OC-ITT-04
Photo taken of OC-ITT-04, east end

Photo taken of a rubbish pile in the O'Connor Disposal Area

Photograph Location: OC-ITT-05

Photos taken at west end of OC-ITT-05 to show the contact between fill and mine tailings

Photograph Location: OC-ITT-05
Photo taken of the north wall, looking at east end to show fill overlaying mine tailings

Photograph location: OC-ITT-05
Photo taken of the north wall from the eastern end to show fill overlaying mine tailings

Photograph location: OC-ITT-05
Photo taken of the north wall of the trench, looking east to west

Photograph location: OC-ITT-05
Photo taken of the south wall at the east end of the trench to show fill overlaying mine tailings

Photograph location: OC-ITT-05

Photo taken of the OC-ITT-05 stockpile to show fill material with rubbish mixed with mine tailings

Photograph locations: OC-ITT-05

Photo taken of the base of the trench, looking west

Photograph location: OC-ITT-06
Photo taken of western end of the trench, showing mine tailings in berm under Peters Mine Road.

Photograph location: OC-ITT-06
Photo taken of the north wall of the trench, showing mine tailings

Photograph location: OC-ITT-06
Photo taken of a tire in OC-ITT-06 in the stockpile

Photograph location: OC-ITT-07
Photo taken of the south end of the trench, showing surficial rubbish and mine waste rock fill to base of the trench

Photograph location: OC-ITT-07
Photo taken of the mine waste rock in the spoils stockpile.

Photograph location: OC-ITT-07
Photo taken of the west wall, showing surficial rubbish to a depth of 2 feet.

Photograph location: OC-ITT-07
Photo taken of the west wall from the middle of the trench, showing rubbish in sidewall.

Photograph location: OC-ITT-08
Photo taken of the north wall, east end of the trench, showing mine tailings

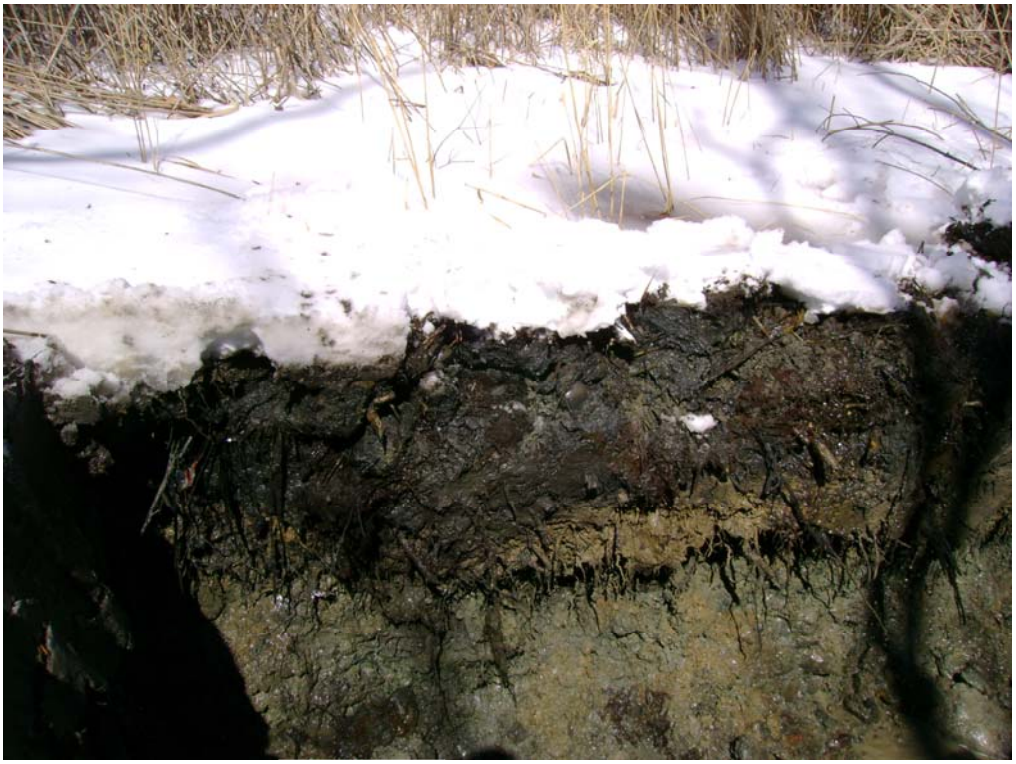
Photograph location: OC-ITT-08
Photo taken of the east end of the trench, showing mine tailings and tree roots

Photograph location: OC-ITT-08
Photo taken showing the excavator bucket filled with fine sandy to medium sandy mine tailings.

Photograph location: OC-ITT-09
Photo taken of the north wall of the trench, looking to the east end, showing mine tailings in a berm and peat over native soil

Photograph location: OC-ITT-09
Photo taken of the north sidewall from the middle of the trench showing debris and rubbish at the top of the trench

Photograph location: OC-ITT-09
Photo taken of the west end of the trench, showing a tire in spoils stockpile



Photograph location: OC-ITT-10
Photo taken of the west end of the trench showing the north wall, which is composed of mine tailings and peat overlaying native soil

Photograph location: OC-ITT-10
Photo taken of the north wall, looking east

Photograph location: OC-ITT-11
Photo taken of the north wall, showing mine tailings overlaying native soil

Photograph location: OC-ITT-11
Photo taken of the north wall of the trench, looking west

Photograph location: OC-ITT-11
Photo taken of the north wall, showing mine tailings overlaying native soil

Photograph location: OC-ITT-11
Photo taken of the trench, looking west to east

Photograph location: OC-ITT-11
Photo taken of the south wall of the trench

Photograph location: OC-ITT-12
Photo taken of the base of the trench showing mine tailings (top) and native soil (bottom) contact

Photograph location: OC-ITT-12
Photo taken of the trench looking east, showing mine tailings overlying native soil

Photograph location: OC-ITT-12
Photo taken of the northwest sidewall showing mine tailings overlying native soil

Photograph location: OC-ITT-13
Photo taken of a beaver lodge and pond outside the berm near TT-13

Photograph location: OC-ITT-13
Photo taken of the trench looking east, showing contact of sandy mine tailings overlying "slime" tailings at lower right

Photograph location: OC-ITT-13
Photo taken of south wall at west end of trench

Photograph location: OC-ITT-13
Photo taken of spoils stockpile showing “slime” tailings (clay-sized fraction)

side

Photograph location: OC-ITT-14
Photo taken of west end of trench, showing tires in trench wall and native soil at the bottom

Photograph location: OC-ITT-14
Photo taken of paint sludge chunk in spoils stockpile

Photograph location: OC-ITT-14
Photo taken of the north sidewall at the west end of the trench, showing tires and rubbish in trench wall

Photograph location: OC-ITT-14
Photo taken of north sidewall at the west end of the trench, showing native soil (tan, light brown)

Photograph location: OC-ITT-14
Photo showing paint sludge chunk in south wall with tires and metal debris

Photograph location: OC-ITP-01
Photo taken of the east end of the pit, showing paint sludge

Photograph location: OC-ITP-01
Photo taken of the east end the pit, showing a fill layer of broken rock and a fill layer with debris (including paint sludge) overlaying native soil (tan).

Photograph location: OC-ITP-02
Photo looking east to show mine waste rock (angular)

Photograph location: OC-ITP-02
Photo taken at base of the test trench (flash on), to show mine waste rock.

Photograph location: OC-ITP-02
Looking northeast, mine waste rock

Photograph location: OC-ITP-03
Cars buried in berm below OC-ITP-03

Photograph location: OC-ITP-03
Photo taken of the east end showing the north wall, native fill with a metal plate, and broken rock in sidewall.

Photograph location: OC-ITP-03
Photo taken of base of pit, looking from east end, showing rusted steel cable in east end wall

Photograph location: OC-ITP-04
Photo taken at base of test pit looking south, filled with groundwater

Photograph location: OC-ITP-04
Photo taken of west wall showing rubbish/refuse at top of the test pit

Photograph location: OC-ITP-05
Photo taken at north end showing fill soil and mine tailings mixed with rubbish/refuse

Photograph location: OC-ITP-05
Photo taken of north end of pit showing fill and mine tailings mixed with rubbish/refuse.
Photo shows plastic sheeting in sidewall and spoils stockpile

Photograph location: OC-ITP-05
Photo of south sidewall showing a fill layer mixed with soil and rubbish/refuse overlying mine tailings mixed with rubbish/refuse

Photograph location: OC-ITP-06
Photo taken of north end of test pit and base, showing fill and rubbish

Photograph location: OC-ITP-06
Photo taken of base of pit filling with groundwater

Photograph location: OC-ITP-06
Photo taken of base of pit with fill and rubbish in sidewalls down to water table

Photograph location: OC-ITP-07
Photo taken of the north end showing fill mixed with rubbish /refuse and some mine tailings

Photograph location: OC-ITP-07
Photo taken of base of pit showing ground water infiltration

Photograph location: OC-ITP-08
Photo taken of the north sidewall, showing fill overlaying mine tailings

Photograph location: OC-ITP-09
Photo of the southwest end of the pit, showing a peat layer overlaying clayey silt with cobbles and boulders

Photograph location: OC-ITP-09
Photo taken of the northwest sidewall showing peat overlaying mine tailings overlaying native soil

Photograph location: OC-ITP-10
Photo taken of south end of pit, showing 1’ clean fill with native soil underlying to base of pit

Photograph location: OC-ITP-10
Photo taken of the west wall, showing 1’ above base is that start of cobble/boulder layer

Photograph location: OC-ITP-10
Photo taken of the north end of the pit

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 1/19/2010 | 10:45 | T1-0+88 transit. Excavation pile lifted from trench displaying subsurface household trash. | |
| 1/20/2010 | 13:20 | T1-1+16 transit. Lithology of trench on east sidewall. Deposit of debris mixed with minetailing in gray area. | |

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 1/25/2010 | 15:10 | T8-2+00 transit. 5.11 to 7.4 feet bsg. tires and axel. | |
| 1/25/2010 | 15:10 | T1-2+00 transit. Excavation pile lifted from trench displaying non-native backfill of blast material. | |

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 1/26/2010 | 11:30 | T1-2+78 transit. Excavation pile lifted from trench displaying non-native backfill of blast material. | |
| 1/27/2010 | 8:50 | T1-4+10 transit. Excavation pile lifted from trench displaying non-native backfill of blast material and household debris. | |

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 1/27/2010 | 11:20 | T7-1+00 transit. Lithology of west sidewall approximately 9.5-10.5 feet bsg displaying household/industrial debris with a daily coat layer. | |
| 1/27/2010 | 11:21 | T7-1+00 transit. Lithology of east sidewall approximately 9.5-10.5 feet bsg displaying household/industrial debris with a daily cover layer. | |

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 1/28/2010 | 11:07 | T1-6+10 transit. Excavation pile lifted from trench displaying subsurface household/ industrial debris. | |
| 2/1/2010 | 11:48 | T6-4+00 transit. Excavation pile lifted from trench displaying subsurface household/ industrial. | |

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 2/1/2010 | 13:15 | T6-3+00 transit. Excavation pile lifted from trench displaying subsurface household/ industrial debris. | |
| 2/2/2010 | 9:49 | T1-7+10 transit. Lithology of west sidewall displaying household and industrial debris with daily cover layer. | |

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 2/2/2010 | 11:11 | T1-7+97 transit. Excavation pile lifted from trench displaying subsurface household/ industrial debris. | |
| 2/8/2010 | 15:35 | T5-3+00 transit. Excavation pile lifted from trench displaying subsurface household/ industrial cover layer. | |

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 2/9/2010 | 7:57 | T5-1+90 transit. Lithology of west sidewall displaying household and industrial debris with daily cover layer. | |
| 2/9/2010 | 7:57 | T5-1+90 transit. Excavation pile lifted from trench displaying subsurface household/ industrial cover layer. | |

Photo Log
Trenching Activities in O'Connor Disposal Area
January through February 2010
Ford Ringwood, Ringwood, New Jersey

| Date | Time | Description | Photo |
|---|---|---|---|
| 2/9/2010 | 7:57 | T2-4+90 transit. Lithology of west sidewall displaying household and industrial debris with daily cover layer. | |

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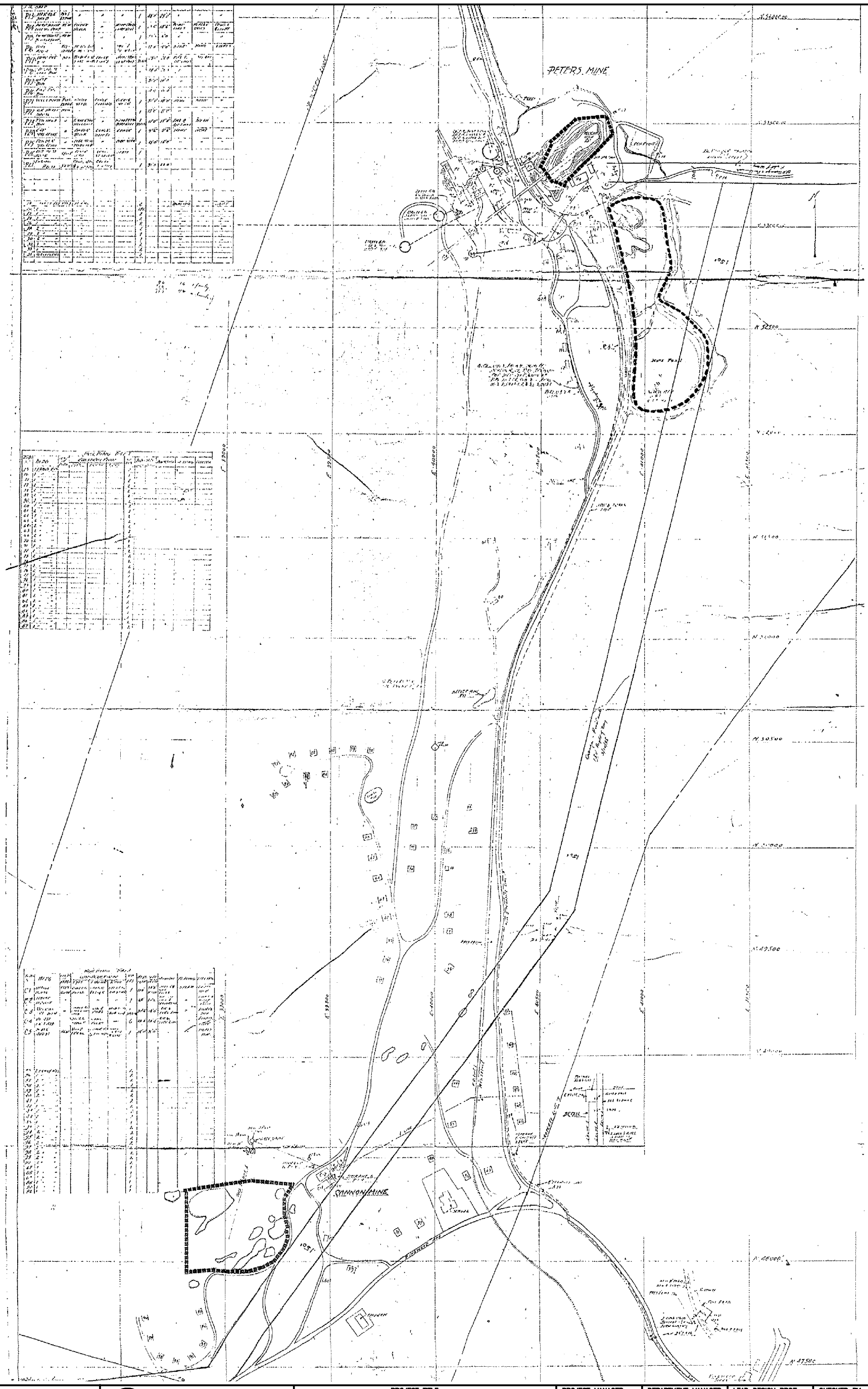
## Appendix F

Mine Maps

Acad version : R16.2s (LMS Tech)
User Name : pinnacle2

Date\Time : Thu, 18 May 2006 – 3:04pm
Path\Name : G:\Drafting\RINGWOOD\Mine Tailings Workplan\Fig 1 Historic Site Figure.dwg – Layout Tab : HISTORIC

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0 50
SCALE IN FEET

ARCADIS
1200 MacArthur Boulevard
Mahwah, NJ 07430
Tel: 201-236-2233 Fax: 201-236-5110
www.arcadis-us.com

PROJECT TITLE

RINGWOOD MINES/LANDFILL
RINGWOOD, NEW JERSEY

| PROJECT MANAGER | DEPARTMENT MANAGER | LEAD DESIGN PROF. | CHECKED BY |
|---|---|---|---|
| E. ZIMMERMAN | E. CARMAN | T. CONNORS | E. ZIMMERMAN |
| SHEET TITLE: HISTORIC SITE FIGURE SHOWING "SLIME POND" IN O'CONNOR DISPOSAL AREA | | TASK/PHASE NUMBER 00001 | DRAWN BY LMC |
| | | PROJECT NUMBER NJ000593.0020 | DRAWING NUMBER 1 |

ARCADIS

## Appendix G

Drum Log and Analytical Results

ARCADIS
Infrastructure, environment, facilities

# Photo Log

| | | | |
|---|---|---|---|
| Location | O'Connor Disposal Area | Project Name | Ringwood Mines/Landfill Site |
| Date | Februrary 21, 2010 | Project Number | NJ604.36 |
| Personnel | V. Myers | Area/Site | O'Connor Disposal Area |

Photo # 1

Drum Number 1

Photo # 2

Drum Number 2.

**Comments**

ARCADIS
Infrastructure, environment, facilities

# Photo Log

| | | | |
|---|---|---|---|
| Location | O'Connor Disposal Area | Project Name | Ringwood Mines/Landfill Site |
| Date | Februrary 21, 2010 | Project Number | NJ604.36 |
| Personnel | V. Myers | Area/Site | O'Connor Disposal Area |

Photo # 3

Drum Number 3.

Photo # 4

Drum Number 4.

**Comments**

R2-0004948

ARCADIS
Infrastructure, environment, facilities

# Photo Log

| | | | |
|---|---|---|---|
| Location | O'Connor Disposal Area | Project Name | Ringwood Mines/Landfill Site |
| Date | Februrary 21, 2010 | Project Number | NJ604.36 |
| Personnel | V. Myers | Area/Site | O'Connor Disposal Area |

Photo # 5

Drum Number 5

Photo # 6

Drum Number 6.

**Comments**

Technical Report for

Arcadis

Ringwood, NJ

NJ000604.0036.00004

Accutest Job Number: JA42294

Sampling Date: 03/18/10

Report to:

Arcadis Geraghty & Miller

VMyers@arcadis-us.com

ATTN: Veronica Myers

Total number of pages in report: **51**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

David N. Speis
VP Ops, Laboratory Director

Client Service contact: Marie Meidhof 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, PA, RI, SC, TN, VA, WV

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Test results relate only to samples analyzed.



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Accutest LabLink@554135 09:24 30-Apr-2010

# Sample Summary

Arcadis

**Job No:** JA42294

Ringwood, NJ
Project No: NJ000604.0036.00004

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| JA42294-1 | 03/18/10 | 15:23 | VM | 03/19/10 | SO | Solid | OC-DR-2 |
| JA42294-2 | 03/18/10 | 15:38 | VM | 03/19/10 | SO | Solid | OC-DR-3 |
| JA42294-3 | 03/18/10 | 15:07 | VM | 03/19/10 | SO | Solid | OC-DR-4 |
| JA42294-4 | 03/18/10 | 15:03 | VM | 03/19/10 | SO | Solid | OC-DR-5 |
| JA42294-5 | 03/18/10 | 15:30 | VM | 03/19/10 | SO | Solid | OC-DR-6 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# CASE NARRATIVE / CONFORMANCE SUMMARY

| | | | |
|---|---|---|---|
| **Client:** | Arcadis | **Job No** | JA42294 |
| **Site:** | Ringwood, NJ | **Report Date** | 4/6/2010 9:37:18 AM |

On 03/19/2010, 5 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 3.8 C. Samples were intact and properly preserved, unless noted below. An Accutest Job Number of JA42294 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix:** LEACHATE **Batch ID:** GP52915

- Sample(s) JA42294-1LS were used as the QC samples indicated.

**Matrix:** LEACHATE **Batch ID:** VL5741

- JA41817-4MSD for Chlorobenzene: Outside control limits due to matrix interference.
- JA41817-4MSD for Carbon tetrachloride: Outside control limits due to matrix interference.
- JA41817-4MSD for Benzene: Outside control limits due to matrix interference.
- JA41817-4MSD for 1,1-Dichloroethene: Outside control limits due to matrix interference.
- JA41817-4MS for 2-Butanone (MEK): Outside control limits due to matrix interference.
- VL5741-BS for 1,1-Dichloroethene: High percent recoveries and no associated positive found in the QC batch.

**Matrix:** LEACHATE **Batch ID:** VL5742

- VL5742-BS for 1,1-Dichloroethene: High percent recoveries and no associated positive found in the QC batch.

## Extractables by GCMS By Method SW846 8270C

**Matrix:** LEACHATE **Batch ID:** OP42776

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-1LS were used as the QC samples indicated.

**Matrix:** LEACHATE **Batch ID:** OP42777

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-3LS were used as the QC samples indicated.

## Extractables by GC By Method OQA-QAM-025

**Matrix:** SO **Batch ID:** OP42729

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-5MS, JA42294-5MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Total PHC are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- RPD(s) for MSD for Total PHC are outside control limits for sample OP42729-MSD. Probable cause due to sample homogeneity.
- Sample(s) JA42294-1, JA42294-3, JA42294-4, JA42294-5, OP42729-MS, OP42729-MSD have surrogates outside control limits. Probable cause due to matrix interference.
- JA42294-1 for o-Terphenyl: Outside control limits due to matrix interference.
- JA42294-5 for o-Terphenyl: Outside control limits due to matrix interference.
- OP42729-MS for Tetracosane-d50: Outside control limits due to matrix interference.
- OP42729-MSD for Tetracosane-d50: Outside control limits due to matrix interference.
- OP42729-MSD for o-Terphenyl: Outside control limits due to matrix interference.
- JA42294-4 for o-Terphenyl: Outside control limits due to matrix interference.
- OP42729-MSD for Total PHC: Outside control limits due to high level in sample relative to spike amount.
- JA42294-1 for Tetracosane-d50: Outside control limits due to matrix interference.
- OP42729-MS for o-Terphenyl: Outside control limits due to matrix interference.
- JA42294-5 for Tetracosane-d50: Outside control limits due to matrix interference.
- JA42294-4 for Tetracosane-d50: Outside control limits due to matrix interference.
- JA42294-3 for o-Terphenyl: Outside control limits due to matrix interference.

## Extractables by GC By Method SW846 8081A

**Matrix:** LEACHATE **Batch ID:** OP42779

- All samples were extracted within the recommended method holding time.
- Sample(s) JA42294-1LS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

**Matrix:** LEACHATE **Batch ID:** OP42780

- All samples were extracted within the recommended method holding time.
- Sample(s) JA42294-3LS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Extractables by GC By Method SW846 8082

**Matrix:** SO **Batch ID:** OP42728

- All samples were extracted within the recommended method holding time.
- Sample(s) JA42291-7MS, JA42291-7MSD, OP42728-MSMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-4 have surrogates outside control limits. Probable cause due to matrix interference.
- JA42294-5 for Aroclor 1254: Reported from 2nd signal due to interference on 1st signal.
- JA42294-4 for Decachlorobiphenyl: Outside control limits due to matrix interference.

**Matrix:** SO **Batch ID:** OP42813

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42651-7MS, JA42651-7MSD, OP42813-MSMSD were used as the QC samples indicated.
- Sample(s) JA42294-4 have surrogates outside control limits. Probable cause due to matrix interference.

## Extractables by GC By Method SW846 8151

**Matrix:** LEACHATE **Batch ID:** OP42784

- All samples were extracted within the recommended method holding time.
- Sample(s) JA42294-1LS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

**Matrix:** LEACHATE **Batch ID:** OP42785

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-3LS were used as the QC samples indicated.

## Metals By Method SW846 6010B

**Matrix:** LEACHATE **Batch ID:** MP51927

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-1MS, JA42294-1MSD, JA42294-1SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic, Cadmium, Chromium, Selenium, Barium are outside control limits for sample MP51927-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP51927-SD1 for Barium: Serial dilution indicates possible matrix interference.

**Matrix:** LEACHATE **Batch ID:** MP51929

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-3MS, JA42294-3MSD, JA42294-3SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic, Chromium, Lead, Silver are outside control limits for sample MP51929-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- JA42294-3 for Cadmium: Elevated detection limit due to dilution required for high interfering element.

## Metals By Method SW846 7470A

| Matrix: | LEACHATE | Batch ID: | MP51945 |
|---|---|---|---|

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-1MS, JA42294-1MSD were used as the QC samples for metals.

| Matrix: | LEACHATE | Batch ID: | MP51946 |
|---|---|---|---|

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-3MS, JA42294-3MSD were used as the QC samples for metals.
- JA42294-4 for Mercury: Elevated sample detection limit due to difficult sample matrix.

## Wet Chemistry By Method SM18 2540G

| Matrix: | SO | Batch ID: | GN35795 |
|---|---|---|---|

- The data for SM18 2540G meets quality control requirements.

## Wet Chemistry By Method SW846 CHAP7

| Matrix: | SO | Batch ID: | GN35759 |
|---|---|---|---|

- Sample(s) JA42294-2DUP were used as the QC samples for Corrosivity as pH.

## Wet Chemistry By Method SW846 CHAP7/9012 B

| Matrix: | SO | Batch ID: | GP52910 |
|---|---|---|---|

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42190-1DUP were used as the QC samples for Cyanide Reactivity.

## Wet Chemistry By Method SW846 CHAP7/9034

| Matrix: | SO | Batch ID: | GP52909 |
|---|---|---|---|

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42190-1DUP, JA42190-1MS were used as the QC samples for Sulfide Reactivity.
- The following samples were run outside of holding time for method SW846 CHAP7/9034: JA42294-1, JA42294-2, JA42294-3, JA42294-4, JA42294-5

## Wet Chemistry By Method SW846 CHAP7/ASTM D93

| Matrix: | SO | Batch ID: | GN35777 |
|---|---|---|---|

- Sample(s) JA42364-1DUP were used as the QC samples for Ignitability (Flashpoint).
- JA42294-1 for Ignitability (Flashpoint): Flashpoint testing started at 68 deg. F.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-2 | | |
| **Lab Sample ID:** | JA42294-1 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8260B SW846 1311 | **Percent Solids:** | 63.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | L235917.D | 5 | 03/24/10 | MAH | 03/22/10 | GP52915 | VL5742 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**VOA TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | D018 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | D035 | 200 | 0.10 | 0.0081 | mg/l | |
| 56-23-5 | Carbon tetrachloride | ND | D019 | 0.50 | 0.0050 | 0.0013 | mg/l | |
| 108-90-7 | Chlorobenzene | ND | D021 | 100 | 0.0050 | 0.0019 | mg/l | |
| 67-66-3 | Chloroform | ND | D022 | 6.0 | 0.0050 | 0.0012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.0050 | 0.0014 | mg/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | D028 | 0.50 | 0.0050 | 0.0017 | mg/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | D029 | 0.70 | 0.0050 | 0.0020 | mg/l | |
| 127-18-4 | Tetrachloroethene | ND | D039 | 0.70 | 0.0050 | 0.0013 | mg/l | |
| 79-01-6 | Trichloroethene | ND | D040 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 75-01-4 | Vinyl chloride | ND | D043 | 0.20 | 0.025 | 0.0022 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 115% | | 76-120% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 124% | | 64-135% |
| 2037-26-5 | Toluene-D8 | 108% | | 76-117% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | | 72-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-2 | | |
| **Lab Sample ID:** | JA42294-1 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8270C SW846 3510C | **Percent Solids:** | 63.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M72162.D | 1 | 03/25/10 | KLS | 03/24/10 | OP42776 | EM2742 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 1.0 ml |
| Run #2 | | |

**ABN TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 95-48-7 | 2-Methylphenol | ND | D023 | 200 | 0.020 | 0.011 | mg/l | |
| | 3&4-Methylphenol | 0.0226 | D024 | 200 | 0.020 | 0.010 | mg/l | |
| 87-86-5 | Pentachlorophenol | ND | D037 | 100 | 0.10 | 0.0080 | mg/l | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | D041 | 400 | 0.050 | 0.013 | mg/l | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | D042 | 2.0 | 0.050 | 0.012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.020 | 0.0039 | mg/l | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | D030 | 0.13 | 0.020 | 0.0022 | mg/l | |
| 118-74-1 | Hexachlorobenzene | ND | D032 | 0.13 | 0.020 | 0.0037 | mg/l | |
| 87-68-3 | Hexachlorobutadiene | ND | D033 | 0.50 | 0.010 | 0.0037 | mg/l | |
| 67-72-1 | Hexachloroethane | ND | D034 | 3.0 | 0.050 | 0.0026 | mg/l | |
| 98-95-3 | Nitrobenzene | ND | D036 | 2.0 | 0.020 | 0.0025 | mg/l | |
| 110-86-1 | Pyridine | ND | D038 | 5.0 | 0.020 | 0.0027 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 34% | | 13-68% |
| 4165-62-2 | Phenol-d5 | 22% | | 10-49% |
| 118-79-6 | 2,4,6-Tribromophenol | 93% | | 37-130% |
| 4165-60-0 | Nitrobenzene-d5 | 64% | | 25-112% |
| 321-60-8 | 2-Fluorobiphenyl | 57% | | 31-106% |
| 1718-51-0 | Terphenyl-d14 | 77% | | 14-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-2 | | |
| **Lab Sample ID:** | JA42294-1 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | OQA-QAM-025 SW846 3545 | **Percent Solids:** | 63.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | ZZ58055.D | 20 | 03/26/10 | DNM | 03/22/10 | OP42729 | GZZ1918 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.0 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | Total PHC | 22400 | 130 | 81 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 61% | | 50-120% |
| 84-15-1 | o-Terphenyl | 756% [a] | | 50-120% |
| 16416-32-3 | Tetracosane-d50 | 484% [a] | | 50-120% |

(a) Outside control limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-2 | | |
| **Lab Sample ID:** | JA42294-1 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8151 SW846 3510C | **Percent Solids:** | 63.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | WW88941.D | 1 | 03/25/10 | TDR | 03/24/10 | OP42784 | GWW3107 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Herbicide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | ND | D016 | 10 | 0.0050 | 0.0013 | mg/l | |
| 93-72-1 | 2,4,5-TP (Silvex) | ND | D017 | 1.0 | 0.0015 | 0.00018 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 19719-28-9 | 2,4-DCAA | 100% | | 50-142% |
| 19719-28-9 | 2,4-DCAA | 94% | | 50-142% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-2 | | |
| **Lab Sample ID:** | JA42294-1 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8081A SW846 3510C | **Percent Solids:** | 63.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2G45001.D | 1 | 03/24/10 | VDT | 03/24/10 | OP42779 | G2G1717 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Pesticide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 58-89-9 | gamma-BHC (Lindane) | ND | D013 | 0.40 | 0.00020 | 0.000011 | mg/l | |
| 12789-03-6 | Chlordane | ND | D020 | 0.030 | 0.0050 | 0.00079 | mg/l | |
| 72-20-8 | Endrin | ND | D012 | 0.020 | 0.00020 | 0.000031 | mg/l | |
| 76-44-8 | Heptachlor | ND | D031 | 0.0080 | 0.00020 | 0.000020 | mg/l | |
| 1024-57-3 | Heptachlor epoxide | ND | D031 | 0.0080 | 0.00020 | 0.000016 | mg/l | |
| 72-43-5 | Methoxychlor | ND | D014 | 10 | 0.00020 | 0.000068 | mg/l | |
| 8001-35-2 | Toxaphene | ND | D015 | 0.50 | 0.0025 | 0.0021 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 61% | | 30-137% |
| 877-09-8 | Tetrachloro-m-xylene | 51% | | 30-137% |
| 2051-24-3 | Decachlorobiphenyl | 67% | | 10-137% |
| 2051-24-3 | Decachlorobiphenyl | 71% | | 10-137% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-2 | | |
| **Lab Sample ID:** | JA42294-1 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8082 SW846 3545 | **Percent Solids:** | 63.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | AB87351.D | 1 | 03/22/10 | VDT | 03/22/10 | OP42728 | GAB5484 |
| Run #2 | AB87419.D | 25 | 03/24/10 | VDT | 03/22/10 | OP42728 | GAB5486 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 2.0 g | 10.0 ml |
| Run #2 | 2.0 g | 10.0 ml |

**PCB List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor 1016 | ND | 0.39 | 0.14 | mg/kg | |
| 11104-28-2 | Aroclor 1221 | ND | 0.39 | 0.26 | mg/kg | |
| 11141-16-5 | Aroclor 1232 | ND | 0.39 | 0.13 | mg/kg | |
| 53469-21-9 | Aroclor 1242 | ND | 0.39 | 0.14 | mg/kg | |
| 12672-29-6 | Aroclor 1248 | ND | 0.39 | 0.078 | mg/kg | |
| 11097-69-1 | Aroclor 1254 | 398 [a] | 9.8 | 2.5 | mg/kg | |
| 11096-82-5 | Aroclor 1260 | ND | 0.39 | 0.15 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 95% | 80% | 33-141% |
| 877-09-8 | Tetrachloro-m-xylene | 86% | 122% | 33-141% |
| 2051-24-3 | Decachlorobiphenyl | 92% | 81% | 32-154% |
| 2051-24-3 | Decachlorobiphenyl | 80% | 101% | 32-154% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** OC-DR-2
**Lab Sample ID:** JA42294-1
**Matrix:** SO - Solid
**Project:** Ringwood, NJ

**Date Sampled:** 03/18/10
**Date Received:** 03/19/10
**Percent Solids:** 63.9

**Metals Analysis, TCLP Leachate SW846 1311**

| Analyte | Result | HW# | MCL | RL | MDL | Units | DF | Prep | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0060 B | D004 | 5.0 | 0.50 | 0.0026 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Barium | 0.032 B | D005 | 100 | 1.0 | 0.00025 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Cadmium | 0.0013 B | D006 | 1.0 | 0.0050 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Chromium | 0.0013 B | D007 | 5.0 | 0.010 | 0.00056 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Lead | 0.060 B | D008 | 5.0 | 0.50 | 0.0013 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Mercury | 0.000082 U | D009 | 0.20 | 0.00020 | 0.000082 | mg/l | 1 | 03/24/10 | 03/24/10 | JW | SW846 7470A [1] |
| Selenium | 0.0067 B | D010 | 1.0 | 0.50 | 0.0023 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Silver | 0.00052 U | D011 | 5.0 | 0.010 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |

(1) Instrument QC Batch: MA24017
(2) Instrument QC Batch: MA24022
(3) Prep QC Batch: MP51927
(4) Prep QC Batch: MP51945

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates a result > = MDL but < RL

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-2 | | |
| **Lab Sample ID:** | JA42294-1 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| | | **Percent Solids:** | 63.9 |
| **Project:** | Ringwood, NJ | | |

**General Chemistry**

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|
| Corrosivity as pH | 4.36 NC | | su | 1 | 03/23/10 | LMM | SW846 CHAP7 |
| Cyanide Reactivity | < 7.8 | 7.8 | mg/kg | 1 | 03/23/10 10:29 | MG | SW846 CHAP7/9012 B |
| Ignitability (Flashpoint) [a] | 129 | | Deg. F | 1 | 03/23/10 | LMM | SW846 CHAP7/ASTM D93 |
| Solids, Percent | 63.9 | | % | 1 | 03/23/10 | KD | SM18 2540G |
| Sulfide Reactivity | < 160 | 160 | mg/kg | 1 | 10/23/10 | JA | SW846 CHAP7/9034 |

(a) Flashpoint testing started at 68 deg. F.

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-3 | | |
| **Lab Sample ID:** | JA42294-2 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8260B SW846 1311 | **Percent Solids:** | 88.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | L235920.D | 5 | 03/24/10 | MAH | 03/22/10 | GP52915 | VL5742 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**VOA TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | D018 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | D035 | 200 | 0.10 | 0.0081 | mg/l | |
| 56-23-5 | Carbon tetrachloride | ND | D019 | 0.50 | 0.0050 | 0.0013 | mg/l | |
| 108-90-7 | Chlorobenzene | ND | D021 | 100 | 0.0050 | 0.0019 | mg/l | |
| 67-66-3 | Chloroform | ND | D022 | 6.0 | 0.0050 | 0.0012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.0050 | 0.0014 | mg/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | D028 | 0.50 | 0.0050 | 0.0017 | mg/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | D029 | 0.70 | 0.0050 | 0.0020 | mg/l | |
| 127-18-4 | Tetrachloroethene | ND | D039 | 0.70 | 0.0050 | 0.0013 | mg/l | |
| 79-01-6 | Trichloroethene | ND | D040 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 75-01-4 | Vinyl chloride | ND | D043 | 0.20 | 0.025 | 0.0022 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 114% | | 76-120% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 120% | | 64-135% |
| 2037-26-5 | Toluene-D8 | 107% | | 76-117% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | | 72-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-3 | | |
| **Lab Sample ID:** | JA42294-2 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8270C SW846 3510C | **Percent Solids:** | 88.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M72163.D | 1 | 03/25/10 | KLS | 03/24/10 | OP42776 | EM2742 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 1.0 ml |
| Run #2 | | |

**ABN TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 95-48-7 | 2-Methylphenol | ND | D023 | 200 | 0.020 | 0.011 | mg/l | |
| | 3&4-Methylphenol | ND | D024 | 200 | 0.020 | 0.010 | mg/l | |
| 87-86-5 | Pentachlorophenol | ND | D037 | 100 | 0.10 | 0.0080 | mg/l | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | D041 | 400 | 0.050 | 0.013 | mg/l | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | D042 | 2.0 | 0.050 | 0.012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.020 | 0.0039 | mg/l | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | D030 | 0.13 | 0.020 | 0.0022 | mg/l | |
| 118-74-1 | Hexachlorobenzene | ND | D032 | 0.13 | 0.020 | 0.0037 | mg/l | |
| 87-68-3 | Hexachlorobutadiene | ND | D033 | 0.50 | 0.010 | 0.0037 | mg/l | |
| 67-72-1 | Hexachloroethane | ND | D034 | 3.0 | 0.050 | 0.0026 | mg/l | |
| 98-95-3 | Nitrobenzene | ND | D036 | 2.0 | 0.020 | 0.0025 | mg/l | |
| 110-86-1 | Pyridine | ND | D038 | 5.0 | 0.020 | 0.0027 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 37% | | 13-68% |
| 4165-62-2 | Phenol-d5 | 25% | | 10-49% |
| 118-79-6 | 2,4,6-Tribromophenol | 96% | | 37-130% |
| 4165-60-0 | Nitrobenzene-d5 | 70% | | 25-112% |
| 321-60-8 | 2-Fluorobiphenyl | 68% | | 31-106% |
| 1718-51-0 | Terphenyl-d14 | 83% | | 14-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-3 | | |
| **Lab Sample ID:** | JA42294-2 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | OQA-QAM-025 SW846 3545 | **Percent Solids:** | 88.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | ZZ58056.D | 10 | 03/26/10 | DNM | 03/22/10 | OP42729 | GZZ1918 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | Total PHC | 1710 | 13 | 8.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 66% | | 50-120% |
| 84-15-1 | o-Terphenyl | 99% | | 50-120% |
| 16416-32-3 | Tetracosane-d50 | 110% | | 50-120% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-3 | | |
| **Lab Sample ID:** | JA42294-2 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8151 SW846 3510C | **Percent Solids:** | 88.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | WW88942.D | 1 | 03/25/10 | TDR | 03/24/10 | OP42784 | GWW3107 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Herbicide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | ND | D016 | 10 | 0.0050 | 0.0013 | mg/l | |
| 93-72-1 | 2,4,5-TP (Silvex) | ND | D017 | 1.0 | 0.0015 | 0.00018 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 19719-28-9 | 2,4-DCAA | 104% | | 50-142% |
| 19719-28-9 | 2,4-DCAA | 104% | | 50-142% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-3 | | |
| **Lab Sample ID:** | JA42294-2 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8081A SW846 3510C | **Percent Solids:** | 88.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2G45002.D | 1 | 03/24/10 | VDT | 03/24/10 | OP42779 | G2G1717 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Pesticide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 58-89-9 | gamma-BHC (Lindane) | ND | D013 | 0.40 | 0.00020 | 0.000011 | mg/l | |
| 12789-03-6 | Chlordane | ND | D020 | 0.030 | 0.0050 | 0.00079 | mg/l | |
| 72-20-8 | Endrin | ND | D012 | 0.020 | 0.00020 | 0.000031 | mg/l | |
| 76-44-8 | Heptachlor | ND | D031 | 0.0080 | 0.00020 | 0.000020 | mg/l | |
| 1024-57-3 | Heptachlor epoxide | ND | D031 | 0.0080 | 0.00020 | 0.000016 | mg/l | |
| 72-43-5 | Methoxychlor | ND | D014 | 10 | 0.00020 | 0.000068 | mg/l | |
| 8001-35-2 | Toxaphene | ND | D015 | 0.50 | 0.0025 | 0.0021 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 75% | | 30-137% |
| 877-09-8 | Tetrachloro-m-xylene | 67% | | 30-137% |
| 2051-24-3 | Decachlorobiphenyl | 74% | | 10-137% |
| 2051-24-3 | Decachlorobiphenyl | 76% | | 10-137% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-3 | | |
| **Lab Sample ID:** | JA42294-2 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8082 SW846 3545 | **Percent Solids:** | 88.9 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | AB87352.D | 1 | 03/22/10 | VDT | 03/22/10 | OP42728 | GAB5484 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.1 g | 10.0 ml |
| Run #2 | | |

**PCB List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor 1016 | ND | 0.033 | 0.012 | mg/kg | |
| 11104-28-2 | Aroclor 1221 | ND | 0.033 | 0.022 | mg/kg | |
| 11141-16-5 | Aroclor 1232 | ND | 0.033 | 0.011 | mg/kg | |
| 53469-21-9 | Aroclor 1242 | ND | 0.033 | 0.012 | mg/kg | |
| 12672-29-6 | Aroclor 1248 | ND | 0.033 | 0.0065 | mg/kg | |
| 11097-69-1 | Aroclor 1254 | 0.616 | 0.033 | 0.0083 | mg/kg | |
| 11096-82-5 | Aroclor 1260 | ND | 0.033 | 0.013 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 91% | | 33-141% |
| 877-09-8 | Tetrachloro-m-xylene | 92% | | 33-141% |
| 2051-24-3 | Decachlorobiphenyl | 87% | | 32-154% |
| 2051-24-3 | Decachlorobiphenyl | 83% | | 32-154% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** OC-DR-3
**Lab Sample ID:** JA42294-2
**Matrix:** SO - Solid
**Project:** Ringwood, NJ

**Date Sampled:** 03/18/10
**Date Received:** 03/19/10
**Percent Solids:** 88.9

**Metals Analysis, TCLP Leachate SW846 1311**

| Analyte | Result | HW# | MCL | RL | MDL | Units | DF | Prep | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.014 B | D004 | 5.0 | 0.50 | 0.0026 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Barium | 0.032 B | D005 | 100 | 1.0 | 0.00025 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Cadmium | 0.00052 U | D006 | 1.0 | 0.0050 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Chromium | 0.0055 B | D007 | 5.0 | 0.010 | 0.00056 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Lead | 0.050 B | D008 | 5.0 | 0.50 | 0.0013 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Mercury | 0.000082 U | D009 | 0.20 | 0.00020 | 0.000082 | mg/l | 1 | 03/24/10 | 03/24/10 | JW | SW846 7470A [1] |
| Selenium | 0.028 B | D010 | 1.0 | 0.50 | 0.0023 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Silver | 0.00052 U | D011 | 5.0 | 0.010 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |

(1) Instrument QC Batch: MA24017
(2) Instrument QC Batch: MA24022
(3) Prep QC Batch: MP51927
(4) Prep QC Batch: MP51945

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates a result > = MDL but < RL

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-3 | | |
| **Lab Sample ID:** | JA42294-2 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| | | **Percent Solids:** | 88.9 |
| **Project:** | Ringwood, NJ | | |

**General Chemistry**

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|
| Corrosivity as pH | 7.45 NC | | su | 1 | 03/23/10 | LMM | SW846 CHAP7 |
| Cyanide Reactivity | < 5.6 | 5.6 | mg/kg | 1 | 03/23/10 10:30 | MG | SW846 CHAP7/9012 B |
| Ignitability (Flashpoint) | > 200 | | Deg. F | 1 | 03/23/10 | LMM | SW846 CHAP7/ASTM D93 |
| Solids, Percent | 88.9 | | % | 1 | 03/23/10 | KD | SM18 2540G |
| Sulfide Reactivity | < 110 | 110 | mg/kg | 1 | 10/23/10 | JA | SW846 CHAP7/9034 |

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-4 | | |
| **Lab Sample ID:** | JA42294-3 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8260B SW846 1311 | **Percent Solids:** | 72.8 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | L235907.D | 5 | 03/23/10 | MAH | 03/22/10 | GP52915 | VL5741 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**VOA TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | D018 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | D035 | 200 | 0.10 | 0.0081 | mg/l | |
| 56-23-5 | Carbon tetrachloride | ND | D019 | 0.50 | 0.0050 | 0.0013 | mg/l | |
| 108-90-7 | Chlorobenzene | ND | D021 | 100 | 0.0050 | 0.0019 | mg/l | |
| 67-66-3 | Chloroform | ND | D022 | 6.0 | 0.0050 | 0.0012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.0050 | 0.0014 | mg/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | D028 | 0.50 | 0.0050 | 0.0017 | mg/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | D029 | 0.70 | 0.0050 | 0.0020 | mg/l | |
| 127-18-4 | Tetrachloroethene | ND | D039 | 0.70 | 0.0050 | 0.0013 | mg/l | |
| 79-01-6 | Trichloroethene | ND | D040 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 75-01-4 | Vinyl chloride | ND | D043 | 0.20 | 0.025 | 0.0022 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 114% | | 76-120% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 125% | | 64-135% |
| 2037-26-5 | Toluene-D8 | 106% | | 76-117% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | | 72-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-4 | | |
| **Lab Sample ID:** | JA42294-3 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8270C SW846 3510C | **Percent Solids:** | 72.8 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M72164.D | 1 | 03/25/10 | KLS | 03/24/10 | OP42777 | EM2742 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 1.0 ml |
| Run #2 | | |

**ABN TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 95-48-7 | 2-Methylphenol | ND | D023 | 200 | 0.020 | 0.011 | mg/l | |
| | 3&4-Methylphenol | ND | D024 | 200 | 0.020 | 0.010 | mg/l | |
| 87-86-5 | Pentachlorophenol | ND | D037 | 100 | 0.10 | 0.0080 | mg/l | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | D041 | 400 | 0.050 | 0.013 | mg/l | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | D042 | 2.0 | 0.050 | 0.012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.020 | 0.0039 | mg/l | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | D030 | 0.13 | 0.020 | 0.0022 | mg/l | |
| 118-74-1 | Hexachlorobenzene | ND | D032 | 0.13 | 0.020 | 0.0037 | mg/l | |
| 87-68-3 | Hexachlorobutadiene | ND | D033 | 0.50 | 0.010 | 0.0037 | mg/l | |
| 67-72-1 | Hexachloroethane | ND | D034 | 3.0 | 0.050 | 0.0026 | mg/l | |
| 98-95-3 | Nitrobenzene | ND | D036 | 2.0 | 0.020 | 0.0025 | mg/l | |
| 110-86-1 | Pyridine | ND | D038 | 5.0 | 0.020 | 0.0027 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 39% | | 13-68% |
| 4165-62-2 | Phenol-d5 | 26% | | 10-49% |
| 118-79-6 | 2,4,6-Tribromophenol | 93% | | 37-130% |
| 4165-60-0 | Nitrobenzene-d5 | 69% | | 25-112% |
| 321-60-8 | 2-Fluorobiphenyl | 68% | | 31-106% |
| 1718-51-0 | Terphenyl-d14 | 83% | | 14-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-4 | | |
| **Lab Sample ID:** | JA42294-3 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | OQA-QAM-025 SW846 3545 | **Percent Solids:** | 72.8 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | ZZ58057.D | 20 | 03/26/10 | DNM | 03/22/10 | OP42729 | GZZ1918 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.0 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | Total PHC | 5240 | 32 | 21 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 71% | | 50-120% |
| 84-15-1 | o-Terphenyl | 263% [a] | | 50-120% |
| 16416-32-3 | Tetracosane-d50 | 95% | | 50-120% |

(a) Outside control limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-4 | | |
| **Lab Sample ID:** | JA42294-3 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8151 SW846 3510C | **Percent Solids:** | 72.8 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | WW88944.D | 1 | 03/25/10 | TDR | 03/24/10 | OP42785 | GWW3107 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Herbicide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | ND | D016 | 10 | 0.0050 | 0.0013 | mg/l | |
| 93-72-1 | 2,4,5-TP (Silvex) | ND | D017 | 1.0 | 0.0015 | 0.00018 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 19719-28-9 | 2,4-DCAA | 105% | | 50-142% |
| 19719-28-9 | 2,4-DCAA | 102% | | 50-142% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-4 | | |
| **Lab Sample ID:** | JA42294-3 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8081A SW846 3510C | **Percent Solids:** | 72.8 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2G45003.D | 1 | 03/24/10 | VDT | 03/24/10 | OP42780 | G2G1717 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Pesticide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 58-89-9 | gamma-BHC (Lindane) | ND | D013 | 0.40 | 0.00020 | 0.000011 | mg/l | |
| 12789-03-6 | Chlordane | ND | D020 | 0.030 | 0.0050 | 0.00079 | mg/l | |
| 72-20-8 | Endrin | ND | D012 | 0.020 | 0.00020 | 0.000031 | mg/l | |
| 76-44-8 | Heptachlor | ND | D031 | 0.0080 | 0.00020 | 0.000020 | mg/l | |
| 1024-57-3 | Heptachlor epoxide | ND | D031 | 0.0080 | 0.00020 | 0.000016 | mg/l | |
| 72-43-5 | Methoxychlor | ND | D014 | 10 | 0.00020 | 0.000068 | mg/l | |
| 8001-35-2 | Toxaphene | ND | D015 | 0.50 | 0.0025 | 0.0021 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 76% | | 30-137% |
| 877-09-8 | Tetrachloro-m-xylene | 70% | | 30-137% |
| 2051-24-3 | Decachlorobiphenyl | 82% | | 10-137% |
| 2051-24-3 | Decachlorobiphenyl | 86% | | 10-137% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-4 | | |
| **Lab Sample ID:** | JA42294-3 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8082 SW846 3545 | **Percent Solids:** | 72.8 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | XX93517.D | 1 | 03/26/10 | OPM | 03/26/10 | OP42813 | GXX3733 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.0 g | 10.0 ml |
| Run #2 | | |

**PCB List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor 1016 | ND | 0.040 | 0.014 | mg/kg | |
| 11104-28-2 | Aroclor 1221 | ND | 0.040 | 0.027 | mg/kg | |
| 11141-16-5 | Aroclor 1232 | ND | 0.040 | 0.013 | mg/kg | |
| 53469-21-9 | Aroclor 1242 | ND | 0.040 | 0.014 | mg/kg | |
| 12672-29-6 | Aroclor 1248 | ND | 0.040 | 0.0080 | mg/kg | |
| 11097-69-1 | Aroclor 1254 | ND | 0.040 | 0.010 | mg/kg | |
| 11096-82-5 | Aroclor 1260 | ND | 0.040 | 0.016 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 77% | | 33-141% |
| 877-09-8 | Tetrachloro-m-xylene | 80% | | 33-141% |
| 2051-24-3 | Decachlorobiphenyl | 113% | | 32-154% |
| 2051-24-3 | Decachlorobiphenyl | 81% | | 32-154% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** OC-DR-4
**Lab Sample ID:** JA42294-3
**Matrix:** SO - Solid
**Project:** Ringwood, NJ

**Date Sampled:** 03/18/10
**Date Received:** 03/19/10
**Percent Solids:** 72.8

**Metals Analysis, TCLP Leachate SW846 1311**

| Analyte | Result | HW# | MCL | RL | MDL | Units | DF | Prep | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.029 B | D004 | 5.0 | 0.50 | 0.0026 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Barium | 0.39 B | D005 | 100 | 1.0 | 0.00025 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Cadmium [a] | 0.0026 U | D006 | 1.0 | 0.025 | 0.0026 | mg/l | 5 | 03/24/10 | 03/26/10 | ND | SW846 6010B [3] |
| Chromium | 0.0037 B | D007 | 5.0 | 0.010 | 0.00056 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Lead | 0.0097 B | D008 | 5.0 | 0.50 | 0.0013 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Mercury | 0.000082 U | D009 | 0.20 | 0.00020 | 0.000082 | mg/l | 1 | 03/24/10 | 03/24/10 | JW | SW846 7470A [1] |
| Selenium | 0.019 B | D010 | 1.0 | 0.50 | 0.0023 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Silver | 0.0029 B | D011 | 5.0 | 0.010 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |

(1) Instrument QC Batch: MA24017
(2) Instrument QC Batch: MA24022
(3) Instrument QC Batch: MA24029
(4) Prep QC Batch: MP51929
(5) Prep QC Batch: MP51946

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates a result > = MDL but < RL

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-4 | | |
| **Lab Sample ID:** | JA42294-3 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| | | **Percent Solids:** | 72.8 |
| **Project:** | Ringwood, NJ | | |

**General Chemistry**

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|
| Corrosivity as pH | 8.35 NC | | su | 1 | 03/23/10 | LMM | SW846 CHAP7 |
| Cyanide Reactivity | < 6.9 | 6.9 | mg/kg | 1 | 03/23/10 10:31 | MG | SW846 CHAP7/9012 B |
| Ignitability (Flashpoint) | > 200 | | Deg. F | 1 | 03/23/10 | LMM | SW846 CHAP7/ASTM D93 |
| Solids, Percent | 72.8 | | % | 1 | 03/23/10 | KD | SM18 2540G |
| Sulfide Reactivity | < 140 | 140 | mg/kg | 1 | 10/23/10 | JA | SW846 CHAP7/9034 |

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-5 | | |
| **Lab Sample ID:** | JA42294-4 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8260B SW846 1311 | **Percent Solids:** | 60.3 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | L235908.D | 5 | 03/23/10 | MAH | 03/22/10 | GP52915 | VL5741 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**VOA TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | D018 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | D035 | 200 | 0.10 | 0.0081 | mg/l | |
| 56-23-5 | Carbon tetrachloride | ND | D019 | 0.50 | 0.0050 | 0.0013 | mg/l | |
| 108-90-7 | Chlorobenzene | ND | D021 | 100 | 0.0050 | 0.0019 | mg/l | |
| 67-66-3 | Chloroform | ND | D022 | 6.0 | 0.0050 | 0.0012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.0050 | 0.0014 | mg/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | D028 | 0.50 | 0.0050 | 0.0017 | mg/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | D029 | 0.70 | 0.0050 | 0.0020 | mg/l | |
| 127-18-4 | Tetrachloroethene | ND | D039 | 0.70 | 0.0050 | 0.0013 | mg/l | |
| 79-01-6 | Trichloroethene | ND | D040 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 75-01-4 | Vinyl chloride | ND | D043 | 0.20 | 0.025 | 0.0022 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 118% | | 76-120% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 130% | | 64-135% |
| 2037-26-5 | Toluene-D8 | 110% | | 76-117% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | | 72-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-5 | | |
| **Lab Sample ID:** | JA42294-4 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8270C SW846 3510C | **Percent Solids:** | 60.3 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M72165.D | 1 | 03/25/10 | KLS | 03/24/10 | OP42777 | EM2742 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 1.0 ml |
| Run #2 | | |

**ABN TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 95-48-7 | 2-Methylphenol | ND | D023 | 200 | 0.020 | 0.011 | mg/l | |
| | 3&4-Methylphenol | ND | D024 | 200 | 0.020 | 0.010 | mg/l | |
| 87-86-5 | Pentachlorophenol | ND | D037 | 100 | 0.10 | 0.0080 | mg/l | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | D041 | 400 | 0.050 | 0.013 | mg/l | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | D042 | 2.0 | 0.050 | 0.012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.020 | 0.0039 | mg/l | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | D030 | 0.13 | 0.020 | 0.0022 | mg/l | |
| 118-74-1 | Hexachlorobenzene | ND | D032 | 0.13 | 0.020 | 0.0037 | mg/l | |
| 87-68-3 | Hexachlorobutadiene | ND | D033 | 0.50 | 0.010 | 0.0037 | mg/l | |
| 67-72-1 | Hexachloroethane | ND | D034 | 3.0 | 0.050 | 0.0026 | mg/l | |
| 98-95-3 | Nitrobenzene | ND | D036 | 2.0 | 0.020 | 0.0025 | mg/l | |
| 110-86-1 | Pyridine | ND | D038 | 5.0 | 0.020 | 0.0027 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 38% | | 13-68% |
| 4165-62-2 | Phenol-d5 | 26% | | 10-49% |
| 118-79-6 | 2,4,6-Tribromophenol | 104% | | 37-130% |
| 4165-60-0 | Nitrobenzene-d5 | 79% | | 25-112% |
| 321-60-8 | 2-Fluorobiphenyl | 76% | | 31-106% |
| 1718-51-0 | Terphenyl-d14 | 89% | | 14-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-5 | | |
| **Lab Sample ID:** | JA42294-4 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | OQA-QAM-025 SW846 3545 | **Percent Solids:** | 60.3 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | ZZ58058.D | 10 | 03/26/10 | DNM | 03/22/10 | OP42729 | GZZ1918 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | Total PHC | 1280 | 19 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 54% | | 50-120% |
| 84-15-1 | o-Terphenyl | 282% [a] | | 50-120% |
| 16416-32-3 | Tetracosane-d50 | 243% [a] | | 50-120% |

(a) Outside control limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-5 | | |
| **Lab Sample ID:** | JA42294-4 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8151 SW846 3510C | **Percent Solids:** | 60.3 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | WW88945.D | 1 | 03/25/10 | TDR | 03/24/10 | OP42785 | GWW3107 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Herbicide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | ND | D016 | 10 | 0.0050 | 0.0013 | mg/l | |
| 93-72-1 | 2,4,5-TP (Silvex) | ND | D017 | 1.0 | 0.0015 | 0.00018 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 19719-28-9 | 2,4-DCAA | 55% | | 50-142% |
| 19719-28-9 | 2,4-DCAA | 51% | | 50-142% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-5 | | |
| **Lab Sample ID:** | JA42294-4 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8081A SW846 3510C | **Percent Solids:** | 60.3 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2G45004.D | 1 | 03/24/10 | VDT | 03/24/10 | OP42780 | G2G1717 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Pesticide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 58-89-9 | gamma-BHC (Lindane) | ND | D013 | 0.40 | 0.00020 | 0.000011 | mg/l | |
| 12789-03-6 | Chlordane | ND | D020 | 0.030 | 0.0050 | 0.00079 | mg/l | |
| 72-20-8 | Endrin | ND | D012 | 0.020 | 0.00020 | 0.000031 | mg/l | |
| 76-44-8 | Heptachlor | ND | D031 | 0.0080 | 0.00020 | 0.000020 | mg/l | |
| 1024-57-3 | Heptachlor epoxide | ND | D031 | 0.0080 | 0.00020 | 0.000016 | mg/l | |
| 72-43-5 | Methoxychlor | ND | D014 | 10 | 0.00020 | 0.000068 | mg/l | |
| 8001-35-2 | Toxaphene | ND | D015 | 0.50 | 0.0025 | 0.0021 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 79% | | 30-137% |
| 877-09-8 | Tetrachloro-m-xylene | 69% | | 30-137% |
| 2051-24-3 | Decachlorobiphenyl | 81% | | 10-137% |
| 2051-24-3 | Decachlorobiphenyl | 85% | | 10-137% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-5 | | |
| **Lab Sample ID:** | JA42294-4 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8082 SW846 3545 | **Percent Solids:** | 60.3 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | AB87354.D | 1 | 03/22/10 | VDT | 03/22/10 | OP42728 | GAB5484 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.1 g | 10.0 ml |
| Run #2 | | |

**PCB List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor 1016 | ND | 0.048 | 0.017 | mg/kg | |
| 11104-28-2 | Aroclor 1221 | ND | 0.048 | 0.032 | mg/kg | |
| 11141-16-5 | Aroclor 1232 | ND | 0.048 | 0.016 | mg/kg | |
| 53469-21-9 | Aroclor 1242 | ND | 0.048 | 0.017 | mg/kg | |
| 12672-29-6 | Aroclor 1248 | 0.501 | 0.048 | 0.0096 | mg/kg | |
| 11097-69-1 | Aroclor 1254 | 0.797 | 0.048 | 0.012 | mg/kg | |
| 11096-82-5 | Aroclor 1260 | 0.258 | 0.048 | 0.019 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 103% | | 33-141% |
| 877-09-8 | Tetrachloro-m-xylene | 125% | | 33-141% |
| 2051-24-3 | Decachlorobiphenyl | 155% [a] | | 32-154% |
| 2051-24-3 | Decachlorobiphenyl | 149% | | 32-154% |

(a) Outside control limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** OC-DR-5
**Lab Sample ID:** JA42294-4
**Matrix:** SO - Solid
**Project:** Ringwood, NJ

**Date Sampled:** 03/18/10
**Date Received:** 03/19/10
**Percent Solids:** 60.3

**Metals Analysis, TCLP Leachate SW846 1311**

| Analyte | Result | HW# | MCL | RL | MDL | Units | DF | Prep | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.035 B | D004 | 5.0 | 0.50 | 0.0026 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Barium | 9.2 | D005 | 100 | 1.0 | 0.00025 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Cadmium | 0.00057 B | D006 | 1.0 | 0.0050 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Chromium | 0.12 | D007 | 5.0 | 0.010 | 0.00056 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Lead | 0.034 B | D008 | 5.0 | 0.50 | 0.0013 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Mercury [a] | 0.00016 U | D009 | 0.20 | 0.00040 | 0.00016 | mg/l | 1 | 03/24/10 | 03/24/10 | JW | SW846 7470A [1] |
| Selenium | 0.016 B | D010 | 1.0 | 0.50 | 0.0023 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Silver | 0.00052 U | D011 | 5.0 | 0.010 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |

(1) Instrument QC Batch: MA24017
(2) Instrument QC Batch: MA24022
(3) Prep QC Batch: MP51929
(4) Prep QC Batch: MP51946

(a) Elevated sample detection limit due to difficult sample matrix.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates a result > = MDL but < RL

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-5 | | |
| **Lab Sample ID:** | JA42294-4 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| | | **Percent Solids:** | 60.3 |
| **Project:** | Ringwood, NJ | | |

**General Chemistry**

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|
| Corrosivity as pH | 8.64 NC | | su | 1 | 03/23/10 | LMM | SW846 CHAP7 |
| Cyanide Reactivity | < 8.3 | 8.3 | mg/kg | 1 | 03/23/10 10:35 | MG | SW846 CHAP7/9012 B |
| Ignitability (Flashpoint) | > 200 | | Deg. F | 1 | 03/23/10 | LMM | SW846 CHAP7/ASTM D93 |
| Solids, Percent | 60.3 | | % | 1 | 03/23/10 | KD | SM18 2540G |
| Sulfide Reactivity | < 170 | 170 | mg/kg | 1 | 10/23/10 | JA | SW846 CHAP7/9034 |

RL = Reporting Limit

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-6 | | |
| **Lab Sample ID:** | JA42294-5 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8260B SW846 1311 | **Percent Solids:** | 84.2 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | L235921.D | 5 | 03/24/10 | MAH | 03/22/10 | GP52915 | VL5742 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**VOA TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | D018 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | D035 | 200 | 0.10 | 0.0081 | mg/l | |
| 56-23-5 | Carbon tetrachloride | ND | D019 | 0.50 | 0.0050 | 0.0013 | mg/l | |
| 108-90-7 | Chlorobenzene | ND | D021 | 100 | 0.0050 | 0.0019 | mg/l | |
| 67-66-3 | Chloroform | ND | D022 | 6.0 | 0.0050 | 0.0012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.0050 | 0.0014 | mg/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | D028 | 0.50 | 0.0050 | 0.0017 | mg/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | D029 | 0.70 | 0.0050 | 0.0020 | mg/l | |
| 127-18-4 | Tetrachloroethene | ND | D039 | 0.70 | 0.0050 | 0.0013 | mg/l | |
| 79-01-6 | Trichloroethene | ND | D040 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 75-01-4 | Vinyl chloride | ND | D043 | 0.20 | 0.025 | 0.0022 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 113% | | 76-120% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 121% | | 64-135% |
| 2037-26-5 | Toluene-D8 | 110% | | 76-117% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | | 72-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-6 | | |
| **Lab Sample ID:** | JA42294-5 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8270C SW846 3510C | **Percent Solids:** | 84.2 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M72166.D | 1 | 03/25/10 | KLS | 03/24/10 | OP42776 | EM2742 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 1.0 ml |
| Run #2 | | |

**ABN TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 95-48-7 | 2-Methylphenol | ND | D023 | 200 | 0.020 | 0.011 | mg/l | |
| | 3&4-Methylphenol | ND | D024 | 200 | 0.020 | 0.010 | mg/l | |
| 87-86-5 | Pentachlorophenol | ND | D037 | 100 | 0.10 | 0.0080 | mg/l | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | D041 | 400 | 0.050 | 0.013 | mg/l | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | D042 | 2.0 | 0.050 | 0.012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.020 | 0.0039 | mg/l | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | D030 | 0.13 | 0.020 | 0.0022 | mg/l | |
| 118-74-1 | Hexachlorobenzene | ND | D032 | 0.13 | 0.020 | 0.0037 | mg/l | |
| 87-68-3 | Hexachlorobutadiene | ND | D033 | 0.50 | 0.010 | 0.0037 | mg/l | |
| 67-72-1 | Hexachloroethane | ND | D034 | 3.0 | 0.050 | 0.0026 | mg/l | |
| 98-95-3 | Nitrobenzene | ND | D036 | 2.0 | 0.020 | 0.0025 | mg/l | |
| 110-86-1 | Pyridine | ND | D038 | 5.0 | 0.020 | 0.0027 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 37% | | 13-68% |
| 4165-62-2 | Phenol-d5 | 26% | | 10-49% |
| 118-79-6 | 2,4,6-Tribromophenol | 105% | | 37-130% |
| 4165-60-0 | Nitrobenzene-d5 | 69% | | 25-112% |
| 321-60-8 | 2-Fluorobiphenyl | 70% | | 31-106% |
| 1718-51-0 | Terphenyl-d14 | 87% | | 14-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-6 | | |
| **Lab Sample ID:** | JA42294-5 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | OQA-QAM-025 SW846 3545 | **Percent Solids:** | 84.2 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | ZZ58059.D | 20 | 03/26/10 | DNM | 03/22/10 | OP42729 | GZZ1918 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | Total PHC | 12200 | 28 | 18 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 120% | | 50-120% |
| 84-15-1 | o-Terphenyl | 242% [a] | | 50-120% |
| 16416-32-3 | Tetracosane-d50 | 266% [a] | | 50-120% |

(a) Outside control limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-6 | | |
| **Lab Sample ID:** | JA42294-5 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8151 SW846 3510C | **Percent Solids:** | 84.2 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | WW88943.D | 1 | 03/25/10 | TDR | 03/24/10 | OP42784 | GWW3107 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Herbicide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | ND | D016 | 10 | 0.0050 | 0.0013 | mg/l | |
| 93-72-1 | 2,4,5-TP (Silvex) | ND | D017 | 1.0 | 0.0015 | 0.00018 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 19719-28-9 | 2,4-DCAA | 102% | | 50-142% |
| 19719-28-9 | 2,4-DCAA | 102% | | 50-142% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-6 | | |
| **Lab Sample ID:** | JA42294-5 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8081A SW846 3510C | **Percent Solids:** | 84.2 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2G45005.D | 1 | 03/24/10 | VDT | 03/24/10 | OP42779 | G2G1717 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Pesticide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 58-89-9 | gamma-BHC (Lindane) | ND | D013 | 0.40 | 0.00020 | 0.000011 | mg/l | |
| 12789-03-6 | Chlordane | ND | D020 | 0.030 | 0.0050 | 0.00079 | mg/l | |
| 72-20-8 | Endrin | ND | D012 | 0.020 | 0.00020 | 0.000031 | mg/l | |
| 76-44-8 | Heptachlor | ND | D031 | 0.0080 | 0.00020 | 0.000020 | mg/l | |
| 1024-57-3 | Heptachlor epoxide | ND | D031 | 0.0080 | 0.00020 | 0.000016 | mg/l | |
| 72-43-5 | Methoxychlor | ND | D014 | 10 | 0.00020 | 0.000068 | mg/l | |
| 8001-35-2 | Toxaphene | ND | D015 | 0.50 | 0.0025 | 0.0021 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 74% | | 30-137% |
| 877-09-8 | Tetrachloro-m-xylene | 64% | | 30-137% |
| 2051-24-3 | Decachlorobiphenyl | 78% | | 10-137% |
| 2051-24-3 | Decachlorobiphenyl | 81% | | 10-137% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-6 | | |
| **Lab Sample ID:** | JA42294-5 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| **Method:** | SW846 8082 SW846 3545 | **Percent Solids:** | 84.2 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | AB87441.D | 1 | 03/25/10 | VDT | 03/22/10 | OP42728 | GAB5486 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.0 g | 10.0 ml |
| Run #2 | | |

**PCB List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor 1016 | ND | 0.035 | 0.012 | mg/kg | |
| 11104-28-2 | Aroclor 1221 | ND | 0.035 | 0.023 | mg/kg | |
| 11141-16-5 | Aroclor 1232 | ND | 0.035 | 0.011 | mg/kg | |
| 53469-21-9 | Aroclor 1242 | 0.0929 | 0.035 | 0.013 | mg/kg | |
| 12672-29-6 | Aroclor 1248 | ND | 0.035 | 0.0069 | mg/kg | |
| 11097-69-1 | Aroclor 1254 [a] | 0.123 | 0.035 | 0.0088 | mg/kg | |
| 11096-82-5 | Aroclor 1260 | ND | 0.035 | 0.014 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 111% | | 33-141% |
| 877-09-8 | Tetrachloro-m-xylene | 80% | | 33-141% |
| 2051-24-3 | Decachlorobiphenyl | 102% | | 32-154% |
| 2051-24-3 | Decachlorobiphenyl | 91% | | 32-154% |

(a) Reported from 2nd signal due to interference on 1st signal.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** OC-DR-6
**Lab Sample ID:** JA42294-5
**Matrix:** SO - Solid
**Project:** Ringwood, NJ

**Date Sampled:** 03/18/10
**Date Received:** 03/19/10
**Percent Solids:** 84.2

**Metals Analysis, TCLP Leachate SW846 1311**

| Analyte | Result | HW# | MCL | RL | MDL | Units | DF | Prep | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.0062 B | D004 | 5.0 | 0.50 | 0.0026 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Barium | 0.44 B | D005 | 100 | 1.0 | 0.00025 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Cadmium | 0.040 | D006 | 1.0 | 0.0050 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Chromium | 0.0014 B | D007 | 5.0 | 0.010 | 0.00056 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Lead | 0.16 B | D008 | 5.0 | 0.50 | 0.0013 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Mercury | 0.000082 U | D009 | 0.20 | 0.00020 | 0.000082 | mg/l | 1 | 03/24/10 | 03/24/10 | JW | SW846 7470A [1] |
| Selenium | 0.010 B | D010 | 1.0 | 0.50 | 0.0023 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |
| Silver | 0.00062 B | D011 | 5.0 | 0.010 | 0.00052 | mg/l | 1 | 03/24/10 | 03/25/10 | ND | SW846 6010B [2] |

(1) Instrument QC Batch: MA24017
(2) Instrument QC Batch: MA24022
(3) Prep QC Batch: MP51927
(4) Prep QC Batch: MP51945

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates a result > = MDL but < RL

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | OC-DR-6 | | |
| **Lab Sample ID:** | JA42294-5 | **Date Sampled:** | 03/18/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/19/10 |
| | | **Percent Solids:** | 84.2 |
| **Project:** | Ringwood, NJ | | |

**General Chemistry**

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|
| Corrosivity as pH | 7.97 NC | | su | 1 | 03/23/10 | LMM | SW846 CHAP7 |
| Cyanide Reactivity | < 5.9 | 5.9 | mg/kg | 1 | 03/23/10 10:36 | MG | SW846 CHAP7/9012 B |
| Ignitability (Flashpoint) | > 200 | | Deg. F | 1 | 03/23/10 | LMM | SW846 CHAP7/ASTM D93 |
| Solids, Percent | 84.2 | | % | 1 | 03/23/10 | KD | SM18 2540G |
| Sulfide Reactivity | < 120 | 120 | mg/kg | 1 | 10/23/10 | JA | SW846 CHAP7/9034 |

RL = Reporting Limit

## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

SOL

# CHAIN OF CUSTODY

PAGE 1 OF 1

ACCUTEST Laboratories

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

| FED-EX Tracking # | Bottle Order Control # |
|---|---|
| Accutest Quote # | Accutest Job # JA42294 |

**Client / Reporting Information**

Company Name: ARCADIS-U.S., Inc.
Street Address: 1 INTERNATIONAL BLVD.
City / State / Zip: MAHWAH, NJ 07495
Project Contact / E-mail: E. Zimmerman
Phone #: 201.684.1410 / Fax #: 201.684.1420
Sampler(s) Name(s) / Phone #: V. Myers, D. Kirschner

**Project Information**

Project Name: FORD RINGWOOD
Street: Peters Mine Rd
City / State: RINGWOOD, NJ
Project #: NJ000604.0036.00004
Client Purchase Order #:
Project Manager: E. Zimmerman

**Billing Information (If different from Report to)**

Company Name:
Street Address:
City / State / Zip:
Attention:

**Requested Analysis (see TEST CODE sheet)**

TCLPIDJJ25

**Matrix Codes**

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB-Equipment Blank
RB-Rinse Blank
TB-Trip Blank

| Accutest Sample # | Field ID / Point of Collection | MEOH/DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | TCLPIDJJ25 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DC-DR-2 -1 | | 3/18/10 | 1523 | VM | SOL | 3 | | | | | 3 | | | | 3 | EX37, |
| | OC-DR-3 -2 | | 3/18/10 | 1538 | DK | SOL | 3 | | | | | 3 | | | | 3 | 19K1 |
| | OC-DR-4 -3 | | 3/18/10 | 1507 | VM | SOL | 3 | | | | | 3 | | | | 3 | |
| | OC-DR-5 -4 | | 3/18/10 | 1503 | DC | SOL | 3 | | | | | 3 | | | | 3 | |
| | OC-DR-6 -5 | | 3/18/10 | 1530 | VM | SOL | 3 | | | | | 3 | | | | 3 | |

**Turnaround Time (Business days)**

- [ ] Std. 15 Business Days
- [ ] Std. 10 Business Days (by Contract only)
- [ ] 10 Day RUSH
- [x] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date: EZ 3/18/10

**Data Deliverable Information**

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

**Comments / Special Instructions**

Sample Custody must be documented below each time samples change possession, including courier delivery.

| Relinquished by Sampler: | Date Time: | Received By: | Relinquished By: | Date Time: | Received By: |
|---|---|---|---|---|---|
| [signature] | 3/14/10 9:45 | 1 [signature] | 2 [signature] | 3/19/10 1420 | 2 [signature] |
| Relinquished by Sampler: 3 | Date Time: | Received By: 3 | Relinquished By: 4 | Date Time: | Received By: 4 |
| Relinquished by: 5 | Date Time: | Received By: 5 | Custody Seal # 252 | Preserved where applicable: ICE | On Ice: X |

Cooler Temp. 3.8°C

1A

TAS 3/19/10

4.1

4

JA42294: Chain of Custody
Page 1 of 2

# Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** JA42294 **Client:** **Immediate Client Services Action Required:** No

**Date / Time Received:** 3/19/2010 **Delivery Method:** **Client Service Action Required at Login:** No

**Project:** **No. Coolers:** 1 **Airbill #'s:**

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☑ | | ☐ | ☑ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☐ | | ☐ | ☑ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com



## JA42294: Chain of Custody
## Page 2 of 2

Technical Report for

Arcadis

Ringwood, NJ

NJ000604.0035.00035

Accutest Job Number: JA42555

Sampling Date: 03/23/10

Report to:

Arcadis Geraghty & Miller

VMyers@arcadis-us.com

ATTN: Veronica Myers

Total number of pages in report: **20**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

David N. Speis
VP Ops, Laboratory Director

Client Service contact: Marie Meidhof 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, PA, RI, SC, TN, VA, WV

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Test results relate only to samples analyzed.

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# Sample Summary

Arcadis

**Job No:** JA42555

Ringwood, NJ
Project No: NJ000604.0035.00035

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| JA42555-1 | 03/23/10 | 09:47 | VM | 03/23/10 | SO | Soil | SR-4-PE-06(4.5-5.0) |
| JA42555-2 | 03/23/10 | 09:00 | VM | 03/23/10 | AQ | Field Blank Soil | FB(032310) |
| JA42555-3 | 03/23/10 | 14:20 | VM | 03/23/10 | SO | Solid | DR-1 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# CASE NARRATIVE / CONFORMANCE SUMMARY

| | | | |
|---|---|---|---|
| **Client:** | Arcadis | **Job No** | JA42555 |
| **Site:** | Ringwood, NJ | **Report Date** | 4/6/2010 11:13:35 AM |

On 03/23/2010, 2 Sample(s), 0 Trip Blank(s) and 1 Field Blank(s) were received at Accutest Laboratories at a temperature of 3.8 C. Samples were intact and properly preserved, unless noted below. An Accutest Job Number of JA42555 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix:** LEACHATE **Batch ID:** GP52915

- Sample(s) JA42294-1LS were used as the QC samples indicated.

**Matrix:** LEACHATE **Batch ID:** VL5747

- JA42838-1MSD for 1,2-Dichloroethane: Outside control limits due to matrix interference.
- JA42838-1MSD for 2-Butanone (MEK): Outside control limits due to matrix interference.

## Extractables by GCMS By Method SW846 8270C

**Matrix:** AQ **Batch ID:** OP42797

- All samples were extracted within the recommended method holding time.
- Sample(s) JA42402-12MS, JA42402-12MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

**Matrix:** LEACHATE **Batch ID:** OP42776

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-1LS were used as the QC samples indicated.

**Matrix:** SO **Batch ID:** OP42789

- All samples were extracted within the recommended method holding time.
- Sample(s) JA42495-1MS, JA42495-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Extractables by GC By Method OQA-QAM-025

**Matrix:** SO **Batch ID:** OP42790

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42525-9MS, JA42525-9MSD were used as the QC samples indicated.
- Matrix Spike / Matrix Spike Duplicate Recovery(s) for Total PHC are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- JA42555-3 for Tetracosane-d50: Outside control limits due to matrix interference.

## Extractables by GC By Method SW846 8081A

**Matrix:** LEACHATE **Batch ID:** OP42779

- All samples were extracted within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-1LS were used as the QC samples indicated.

## Extractables by GC By Method SW846 8082

**Matrix:** SO **Batch ID:** OP42792

- All samples were extracted within the recommended method holding time.
- Sample(s) JA42539-1MS, JA42539-1MSD, OP42792-MSMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JA42555-3 for Aroclor 1254: Reported from 1st signal. %D of end check (ECC) on 2nd signal excess method criteria (15 %) so using for confirmation only.
- OP42792-MS for Tetrachloro-m-xylene: Outside control limits due to matrix interference.
- OP42792-MSD for Tetrachloro-m-xylene: Outside control limits due to matrix interference.

## Extractables by GC By Method SW846 8151

**Matrix:** LEACHATE **Batch ID:** OP42784

- All samples were extracted within the recommended method holding time.
- Sample(s) JA42294-1LS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Metals By Method SW846 6010B

**Matrix:** LEACHATE **Batch ID:** MP51927

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-1MS, JA42294-1MSD, JA42294-1SDL were used as the QC samples for metals.
- RPD(s) for Serial Dilution for Arsenic, Cadmium, Chromium, Selenium are outside control limits for sample MP51927-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- RPD(s) for Serial Dilution for Barium are outside control limits for sample MP51927-SD1. Serial dilution indicates possible matrix interference.
- JA42555-3 for Cadmium: Elevated detection limit due to dilution required for high interfering element.
- JA42555-3 for Chromium: Elevated detection limit due to dilution required for high interfering element.
- JA42555-3 for Silver: Elevated detection limit due to dilution required for high interfering element.

## Metals By Method SW846 7470A

**Matrix:** LEACHATE **Batch ID:** MP51945

- All samples were digested within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42294-1MS, JA42294-1MSD were used as the QC samples for metals.

## Wet Chemistry By Method SM18 2540G

| Matrix: SO | Batch ID: GN35848 |
|---|---|

- The data for SM18 2540G meets quality control requirements.

| Matrix: SO | Batch ID: GN35855 |
|---|---|

- The data for SM18 2540G meets quality control requirements.

## Wet Chemistry By Method SW846 CHAP7

| Matrix: SO | Batch ID: GN35836 |
|---|---|

- Sample(s) JA42432-1DUP were used as the QC samples for Corrosivity as pH.

## Wet Chemistry By Method SW846 CHAP7/9012 B

| Matrix: SO | Batch ID: GP52982 |
|---|---|

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42432-1DUP were used as the QC samples for Cyanide Reactivity.

## Wet Chemistry By Method SW846 CHAP7/9034

| Matrix: SO | Batch ID: GP52983 |
|---|---|

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JA42432-1DUP, JA42432-1MS were used as the QC samples for Sulfide Reactivity.

## Wet Chemistry By Method SW846 CHAP7/ASTM D93

| Matrix: SO | Batch ID: GN35851 |
|---|---|

- Sample(s) JA42432-1DUP were used as the QC samples for Ignitability (Flashpoint).

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SR-4-PE-06(4.5-5.0) | | |
| **Lab Sample ID:** | JA42555-1 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | SO - Soil | **Date Received:** | 03/23/10 |
| **Method:** | SW846 8270C SW846 3550B | **Percent Solids:** | 76.6 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M72189.D | 1 | 03/26/10 | LP | 03/25/10 | OP42789 | EM2743 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.7 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 56-55-3 | Benzo(a)anthracene | 0.0434 | 0.043 | 0.014 | mg/kg | |
| 50-32-8 | Benzo(a)pyrene | 0.0350 | 0.043 | 0.013 | mg/kg | J |
| 205-99-2 | Benzo(b)fluoranthene | 0.0468 | 0.043 | 0.014 | mg/kg | |
| 207-08-9 | Benzo(k)fluoranthene | 0.0252 | 0.043 | 0.016 | mg/kg | J |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 0.0234 | 0.043 | 0.015 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 81% | | 28-113% |
| 321-60-8 | 2-Fluorobiphenyl | 83% | | 38-107% |
| 1718-51-0 | Terphenyl-d14 | 87% | | 31-116% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | FB(032310) | | |
| **Lab Sample ID:** | JA42555-2 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | AQ - Field Blank Soil | **Date Received:** | 03/23/10 |
| **Method:** | SW846 8270C SW846 3510C | **Percent Solids:** | n/a |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 2M28007.D | 1 | 03/25/10 | OYA | 03/25/10 | OP42797 | E2M1183 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 56-55-3 | Benzo(a)anthracene | ND | 1.0 | 0.12 | ug/l | |
| 50-32-8 | Benzo(a)pyrene | ND | 1.0 | 0.095 | ug/l | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 1.0 | 0.25 | ug/l | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 1.0 | 0.38 | ug/l | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 1.0 | 0.13 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 85% | | 25-112% |
| 321-60-8 | 2-Fluorobiphenyl | 81% | | 31-106% |
| 1718-51-0 | Terphenyl-d14 | 88% | | 14-122% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | DR-1 | | |
| **Lab Sample ID:** | JA42555-3 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/23/10 |
| **Method:** | SW846 8260B SW846 1311 | **Percent Solids:** | 93.0 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | L235995.D | 5 | 03/30/10 | MAH | 03/25/10 | GP52915 | VL5747 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**VOA TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 71-43-2 | Benzene | ND | D018 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | D035 | 200 | 0.10 | 0.0081 | mg/l | |
| 56-23-5 | Carbon tetrachloride | ND | D019 | 0.50 | 0.0050 | 0.0013 | mg/l | |
| 108-90-7 | Chlorobenzene | ND | D021 | 100 | 0.0050 | 0.0019 | mg/l | |
| 67-66-3 | Chloroform | ND | D022 | 6.0 | 0.0050 | 0.0012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.0050 | 0.0014 | mg/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | D028 | 0.50 | 0.0050 | 0.0017 | mg/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | D029 | 0.70 | 0.0050 | 0.0020 | mg/l | |
| 127-18-4 | Tetrachloroethene | ND | D039 | 0.70 | 0.0050 | 0.0013 | mg/l | |
| 79-01-6 | Trichloroethene | ND | D040 | 0.50 | 0.0050 | 0.0012 | mg/l | |
| 75-01-4 | Vinyl chloride | ND | D043 | 0.20 | 0.025 | 0.0022 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | | 76-120% |
| 17060-07-0 | 1,2-Dichloroethane-D4 | 85% | | 64-135% |
| 2037-26-5 | Toluene-D8 | 94% | | 76-117% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 72-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | DR-1 | | |
| **Lab Sample ID:** | JA42555-3 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/23/10 |
| **Method:** | SW846 8270C SW846 3510C | **Percent Solids:** | 93.0 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 3M18263.D | 1 | 03/29/10 | KLS | 03/26/10 | OP42776 | E3M784 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 1.0 ml |
| Run #2 | | |

**ABN TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 95-48-7 | 2-Methylphenol | ND | D023 | 200 | 0.020 | 0.011 | mg/l | |
| | 3&4-Methylphenol | ND | D024 | 200 | 0.020 | 0.010 | mg/l | |
| 87-86-5 | Pentachlorophenol | ND | D037 | 100 | 0.10 | 0.0080 | mg/l | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | D041 | 400 | 0.050 | 0.013 | mg/l | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | D042 | 2.0 | 0.050 | 0.012 | mg/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | D027 | 7.5 | 0.020 | 0.0039 | mg/l | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | D030 | 0.13 | 0.020 | 0.0022 | mg/l | |
| 118-74-1 | Hexachlorobenzene | ND | D032 | 0.13 | 0.020 | 0.0037 | mg/l | |
| 87-68-3 | Hexachlorobutadiene | ND | D033 | 0.50 | 0.010 | 0.0037 | mg/l | |
| 67-72-1 | Hexachloroethane | ND | D034 | 3.0 | 0.050 | 0.0026 | mg/l | |
| 98-95-3 | Nitrobenzene | ND | D036 | 2.0 | 0.020 | 0.0025 | mg/l | |
| 110-86-1 | Pyridine | ND | D038 | 5.0 | 0.020 | 0.0027 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 47% | | 13-68% |
| 4165-62-2 | Phenol-d5 | 31% | | 10-49% |
| 118-79-6 | 2,4,6-Tribromophenol | 88% | | 37-130% |
| 4165-60-0 | Nitrobenzene-d5 | 104% | | 25-112% |
| 321-60-8 | 2-Fluorobiphenyl | 81% | | 31-106% |
| 1718-51-0 | Terphenyl-d14 | 102% | | 14-122% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | DR-1 | | |
| **Lab Sample ID:** | JA42555-3 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/23/10 |
| **Method:** | OQA-QAM-025 SW846 3550B | **Percent Solids:** | 93.0 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | ZZ58082.D | 1 | 03/27/10 | DNM | 03/25/10 | OP42790 | GZZ1918 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.0 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | Total PHC | 1590 | 1.3 | 0.82 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 108-90-7 | Chlorobenzene | 107% | | 50-120% |
| 84-15-1 | o-Terphenyl | 119% | | 50-120% |
| 16416-32-3 | Tetracosane-d50 | 399% [a] | | 50-120% |

(a) Outside control limits due to matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | DR-1 | | |
| **Lab Sample ID:** | JA42555-3 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/23/10 |
| **Method:** | SW846 8151 SW846 3510C | **Percent Solids:** | 93.0 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | WW89044.D | 1 | 03/29/10 | TDR | 03/26/10 | OP42784 | GWW3110 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Herbicide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 94-75-7 | 2,4-D | ND | D016 | 10 | 0.0050 | 0.0013 | mg/l | |
| 93-72-1 | 2,4,5-TP (Silvex) | ND | D017 | 1.0 | 0.0015 | 0.00018 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 19719-28-9 | 2,4-DCAA | 93% | | 50-142% |
| 19719-28-9 | 2,4-DCAA | 97% | | 50-142% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | DR-1 | | |
| **Lab Sample ID:** | JA42555-3 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/23/10 |
| **Method:** | SW846 8081A SW846 3510C | **Percent Solids:** | 93.0 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 1G52185.D | 1 | 03/29/10 | OPM | 03/26/10 | OP42779 | G1G1927 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 100 ml | 10.0 ml |
| Run #2 | | |

**Pesticide TCLP Leachate** **TCLP Leachate method SW846 1311**

| CAS No. | Compound | Result | HW# | MCL | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|---|---|
| 58-89-9 | gamma-BHC (Lindane) | ND | D013 | 0.40 | 0.00020 | 0.000011 | mg/l | |
| 12789-03-6 | Chlordane | ND | D020 | 0.030 | 0.0050 | 0.00079 | mg/l | |
| 72-20-8 | Endrin | ND | D012 | 0.020 | 0.00020 | 0.000031 | mg/l | |
| 76-44-8 | Heptachlor | ND | D031 | 0.0080 | 0.00020 | 0.000020 | mg/l | |
| 1024-57-3 | Heptachlor epoxide | ND | D031 | 0.0080 | 0.00020 | 0.000016 | mg/l | |
| 72-43-5 | Methoxychlor | ND | D014 | 10 | 0.00020 | 0.000068 | mg/l | |
| 8001-35-2 | Toxaphene | ND | D015 | 0.50 | 0.0025 | 0.0021 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 68% | | 30-137% |
| 877-09-8 | Tetrachloro-m-xylene | 70% | | 30-137% |
| 2051-24-3 | Decachlorobiphenyl | 59% | | 10-137% |
| 2051-24-3 | Decachlorobiphenyl | 63% | | 10-137% |

ND = Not detected MDL - Method Detection Limit
MCL = Maximum Contamination Level (40 CFR 261 6/96)
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | DR-1 | | |
| **Lab Sample ID:** | JA42555-3 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/23/10 |
| **Method:** | SW846 8082 SW846 3545 | **Percent Solids:** | 93.0 |
| **Project:** | Ringwood, NJ | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | AB87512.D | 1 | 03/27/10 | VDT | 03/25/10 | OP42792 | GAB5488 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 17.0 g | 10.0 ml |
| Run #2 | | |

**PCB List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 12674-11-2 | Aroclor 1016 | ND | 0.032 | 0.011 | mg/kg | |
| 11104-28-2 | Aroclor 1221 | ND | 0.032 | 0.021 | mg/kg | |
| 11141-16-5 | Aroclor 1232 | ND | 0.032 | 0.010 | mg/kg | |
| 53469-21-9 | Aroclor 1242 | ND | 0.032 | 0.011 | mg/kg | |
| 12672-29-6 | Aroclor 1248 | ND | 0.032 | 0.0063 | mg/kg | |
| 11097-69-1 | Aroclor 1254 [a] | 0.154 | 0.032 | 0.0080 | mg/kg | |
| 11096-82-5 | Aroclor 1260 | ND | 0.032 | 0.012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 877-09-8 | Tetrachloro-m-xylene | 90% | | 33-141% |
| 877-09-8 | Tetrachloro-m-xylene | 83% | | 33-141% |
| 2051-24-3 | Decachlorobiphenyl | 88% | | 32-154% |
| 2051-24-3 | Decachlorobiphenyl | 85% | | 32-154% |

(a) Reported from 1st signal. %D of end check (ECC) on 2nd signal excess method criteria (15 %) so using for confirmation only.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





**Client Sample ID:** DR-1
**Lab Sample ID:** JA42555-3
**Matrix:** SO - Solid
**Project:** Ringwood, NJ

**Date Sampled:** 03/23/10
**Date Received:** 03/23/10
**Percent Solids:** 93.0

**Metals Analysis, TCLP Leachate SW846 1311**

| Analyte | Result | HW# | MCL | RL | MDL | Units | DF | Prep | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.060 B | D004 | 5.0 | 0.50 | 0.0026 | mg/l | 1 | 03/26/10 | 03/30/10 | ND | SW846 6010B [2] |
| Barium | 0.16 B | D005 | 100 | 1.0 | 0.00025 | mg/l | 1 | 03/26/10 | 03/30/10 | ND | SW846 6010B [2] |
| Cadmium [a] | 0.013 U | D006 | 1.0 | 0.13 | 0.013 | mg/l | 25 | 03/26/10 | 03/30/10 | ND | SW846 6010B [2] |
| Chromium [a] | 9.4 | D007 | 5.0 | 0.25 | 0.014 | mg/l | 25 | 03/26/10 | 03/30/10 | ND | SW846 6010B [2] |
| Lead | 0.073 B | D008 | 5.0 | 0.50 | 0.0013 | mg/l | 1 | 03/26/10 | 03/30/10 | ND | SW846 6010B [2] |
| Mercury | 0.000082 U | D009 | 0.20 | 0.00020 | 0.000082 | mg/l | 1 | 03/29/10 | 03/29/10 | JW | SW846 7470A [1] |
| Selenium | 0.43 B | D010 | 1.0 | 0.50 | 0.058 | mg/l | 25 | 03/26/10 | 03/30/10 | ND | SW846 6010B [2] |
| Silver [a] | 0.013 U | D011 | 5.0 | 0.25 | 0.013 | mg/l | 25 | 03/26/10 | 03/30/10 | ND | SW846 6010B [2] |

(1) Instrument QC Batch: MA24034
(2) Instrument QC Batch: MA24036
(3) Prep QC Batch: MP51927
(4) Prep QC Batch: MP51945

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit MDL = Method Detection Limit U = Indicates a result < MDL
MCL = Maximum Contamination Level (40 CFR 261 6/96) B = Indicates a result > = MDL but < RL

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | DR-1 | | |
| **Lab Sample ID:** | JA42555-3 | **Date Sampled:** | 03/23/10 |
| **Matrix:** | SO - Solid | **Date Received:** | 03/23/10 |
| | | **Percent Solids:** | 93.0 |
| **Project:** | Ringwood, NJ | | |

**General Chemistry**

| Analyte | Result | RL | Units | DF | Analyzed | By | Method |
|---|---|---|---|---|---|---|---|
| Corrosivity as pH | 9.01 NC | | su | 1 | 03/24/10 | LMM | SW846 CHAP7 |
| Cyanide Reactivity | < 5.4 | 5.4 | mg/kg | 1 | 03/27/10 11:39 | NR | SW846 CHAP7/9012 B |
| Ignitability (Flashpoint) | > 200 | | Deg. F | 1 | 03/24/10 | LMM | SW846 CHAP7/ASTM D93 |
| Solids, Percent | 93 | | % | 1 | 03/25/10 | KD | SM18 2540G |
| Sulfide Reactivity | < 110 | 110 | mg/kg | 1 | 03/27/10 | NS | SW846 CHAP7/9034 |

RL = Reporting Limit

## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

# CHAIN OF CUSTODY

PAGE 1 OF 1

ACCUTEST Laboratories

2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.accutest.com

SDG

EDD-GK Tracking #: AF143209.1 | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: JA42555

**Client / Reporting Information**

Company Name: ARCADIS - U.S. Inc.
Street Address: 1 International BLVD.
City State Zip: MAHWAH, NJ 07495
Project Contact: E. Zimmerman | E-mail:
Phone #: 201.684.1410/201.684.1420 | Fax #:
Sampler(s) Name(s): V. MYERS | Phone #:

**Project Information**

Project Name: FORD RINGWOOD
Street: Peters
City State: | Company Name:
Project #: | Street Address:
Client Purchase Order #: | City State Zip:
Project Manager: | Attention:

**Billing Information ( If different from Report to)**

**Requested Analysis ( see TEST CODE sheet)**

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

| Accutest Sample # | Field ID / Point of Collection | MEOH/DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | Preserved: HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Benzo(a)anthracene | Benzo(a)pyrene | Benzo(b)fluoranthene | Benzo(k)fluoranthene | Indeno(1,2,3-cd)pyrene | TCLP1DW025 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | SB-4-PE-06(4.5-5.0) | | 3/23/10 | 09:47 | VM | SO | 1 | | | | | 1 | | | | 1 | 1 | 1 | 1 | 1 | | EX7 |
| -2 | FB(032310) | | 3/23/10 | 09:00 | VM | FB | 2 | | | | | 2 | | | | 1 | 1 | 1 | 1 | 1 | | 48C |
| -3 | DR-1 (*NOTE) | | 3/23/10 | 14:20 | VM | SOL | 3 | | | | | 3 | | | | | | | | | 3 | 19G2 |

**Turnaround Time ( Business days)**

- [ ] Std. 15 Business Days
- [ ] Std. 10 Business Days ( by Contract only)
- [ ] 10 Day *RUSH*
- [ ] 5 Day *RUSH*
- [X] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Approved By (Accutest PM): / Date: EZ 3/23/10

Emergency & Rush T/A data available VIA Lablink

**Data Deliverable Information**

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" ( Level 2)
- [ ] FULLT1 ( Level 3+4 )
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [X] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

**Comments / Special Instructions**

(*NOTE) DR-1 Please do TAT OF 5 DAYS

**Sample Custody must be documented below each time samples change possession, including courier delivery.**

| | Relinquished by Sampler: | Date Time: | Received By: | Relinquished By: | Date Time: | Received By: |
|---|---|---|---|---|---|---|
| 1 | | 3/23/10 | 1 VINCENT CASSELLANO | 2 VINCENT CASSELLANO | 3/23 1830 | 2 |
| 3 | | | 3 | 4 | | 4 |
| 5 | | | 5 | Custody Seal # 962 | [X] Intact [ ] Not Intact | Preserved where applicable [X] | On Ice [X] | Cooler Temp. 3.8°C |

4.1
4

# Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** JA42555 **Client:** **Immediate Client Services Action Required:** No

**Date / Time Received:** 3/23/2010 **Delivery Method:** **Client Service Action Required at Login:** No

**Project:** **No. Coolers:** 1 **Airbill #'s:**

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☑ | | ☐ | ☑ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☐ | | ☐ | ☑ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V:732.329.0200

2235 US Highway 130
F: 732.329.3499

Dayton, New Jersey
www/accutest.com

4.1
4

## JA42555: Chain of Custody
## Page 2 of 2

Table 6. Summary of Drum Inventory, O'Connor Disposal Area

| Drum No. | Date Sampled | Time Sampled | Description of Contents | Anaylical Exceedances ** |
|---|---|---|---|---|
| DR-1 | 3/23/2010 | 14:20 | Drum carcus with blue and white band, traces of soil and hard tan material, strong odor. | Benzo(a)anthracene 0.0434/0.043, Benzo(b)fluoranthene 0.0468/0.043, Total PHC 1590/1.3,Aroclor 1254 0.154/0.032 |
| DR-2 | 3/18/2010 | 15:23 | Tan- white greasey material consistancy of butter, stong odor, breaks easy. | 3&4-Methylphenol 0.0226/0.020, Total PHC 22400/130,Aroclor 1254 398/ 9.8, Tetrachloro-m-xylene 95%/ 80% |
| DR-3 | 3/18/2010 | 15:38 | Silver beads, solid, looks like beads of solder. | Total PHC 1710/13, Aroclor 1254 0.616/ 0.033 |
| DR-4 | 3/18/2010 | 15:07 | White and light blue mottle soild, powder, crumbles. | Total PHC 5240/32 |
| DR-5 | 3/18/2010 | 15:03 | Paint sludge, solid, rust color material. | Total PHC 1280/19, Aroclor 1248 0.501/0.048, Aroclor 1254 0.797/0.048, Aroclor 1260 0.258/0.048, Barium 9.2/1.0, Chromium |
| DR-6 | 3/18/2010 | 15:30 | Silver powder mixed with soil. | Total PHC 12200/28 |

** All units in mg/l

ARCADIS

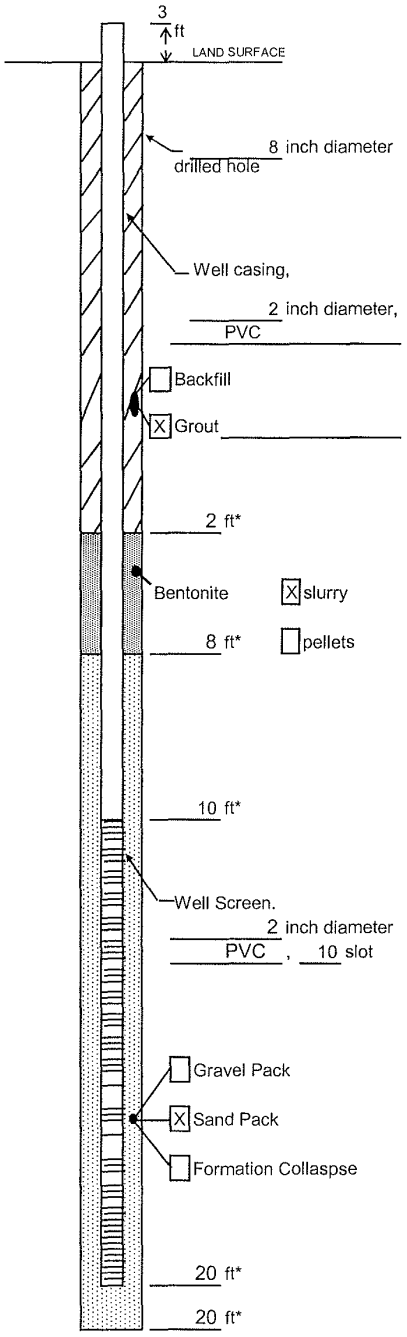
## Appendix H

Well Construction Logs

**ARCADIS** GERAGHTY & MILLER

# Well Construction Log

(Unconsolidated)




Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project Ringwood Well OB-22

Town/City Ringwood

County Passaic State NJ

Permit No.

Land-Surface Elevation and Datum:

515.5 feet [X] Surveyed [ ] Estimated

Installation Date(s) 10/10/2006

Drilling Method Hollow Stem Auger

Drilling Contractor Summit

Drilling Fluid None

Development Technique(s) and Date(s)

10/10/26

Pump and surge

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 0.5 hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Monitoring

Remarks

Prepared by B. Mason

R2-0005023

New Jersey Department of Environmental Protection
Bureau of Water Allocation

Well Permit Number
2300019635

# MONITORING WELL RECORD

Atlas Sheet Coordinates
2321569

**OWNER IDENTIFICATION** RINGWOOD BOROUGH / PASSAIC COUNTY OF NJ

Address 60 MARGARET KING AVENUE

City Ringwood State New Jersey Zip Code 07456

**WELL LOCATION - If not the same as owner please give address** Owner's Well No. OB-MW22 (50)

County Passaic Municipality Ringwood Boro Lot No. 14 Block No. 601

Address PETER MINE ROAD RINGWOOD MINES

**WELL USE** Monitoring

**DATE WELL STARTED** 10/09/06

**DATE WELL COMPLETED** 10/09/06

**WELL CONSTRUCTION**

Total Depth Drilled 20 ft.

Finished Well Depth 20 ft.

Borehole Diameter:

Top 6 in.

Bottom 6 in.

Well was finished: ☐ above grade ☒ flush mounted

If finished above grade, casing height (stick up) above land surface — ft.

Steel protective casing installed?

☐ Yes ☒ No

Static Water Level after drilling 11 ft.

Water Level was Measured Using M-scope

Well was developed for 1/2 hours

at 2 gpm

Method of development Pump

Pump Capacity — gpm

Pump Type —

Drilling Fluid — Type of Rig CME-75

Health and Safety Plan Submitted? ☒ Yes ☐ No

Level of Protection used on site (circle one) None (D) C B A

| Note: Measure all depths from land surface | Depth to Top (ft.) | Depth to Bottom (ft.) | Diameter (inches) | Material | Wgt./Rating (lbs/sch no.) |
|---|---|---|---|---|---|
| Single/Inner Casing | 0 | 10 | 2 | PVC | sch 40 |
| Middle Casing (for triple cased wells only) | | | | | |
| Outer Casing (largest diameter) | | | | | |
| Open Hole or Screen (No. Used .010 ) | 10 | 20 | 2 | PVC | sch 40 |
| Blank Casings (No. Used ) | | | | | |
| Tail Piece | | | | | |
| Gravel Pack | 8 | 20 | | morie | #1 |
| Grout | 0 | 8 | | Neat Cement | 185 lbs |
| | | | | Bentonite | 10 lbs |

Grouting Method Tremie

Drilling Method HSA

**GEOLOGIC LOG**

Note each depth where water was encountered in consolidated formations

0-10' Med brown sand with cobbles

10'-20' Med brown sand with silt

*I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.*

Drilling Company SUMMIT DRILLING CO INC

Well Driller (Print) John Murtha

Driller's Signature John Murtha

Registration No. 521245 Date 10/27/06

**AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)**

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____

OR

LATITUDE: __° __' __.__" LONGITUDE: __° __' __.__"

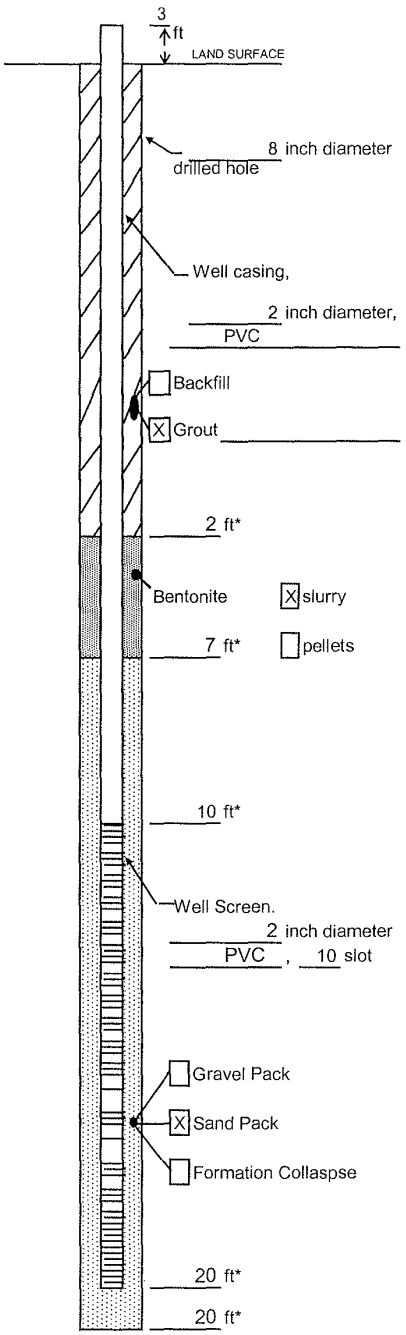
*ORIGINAL: DEP* *COPIES: DRILLER* *OWNER* *HEALTH DEPARTMENT*

R2-0005024

**ARCADIS** GERAGHTY & MILLER

# Well Construction Log

(Unconsolidated)




Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project Ringwood Well OB-23

Town/City Ringwood

County Passaic State NJ

Permit No.

Land-Surface Elevation and Datum:

512.8 feet [X] Surveyed [ ] Estimated

Installation Date(s) 10/10/2006

Drilling Method Hollow Stem Auger

Drilling Contractor Summit

Drilling Fluid None

Development Technique(s) and Date(s)

10/10/2006

Pump and surge

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water _____ feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration 0.5 hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Monitoring

Remarks

Prepared by B. Mason

New Jersey Department of Environmental Protection
Bureau of Water Allocation

Well Permit Number
2300019636

# MONITORING WELL RECORD

Atlas Sheet Coordinates
2321569

**OWNER IDENTIFICATION** RINGWOOD BOROUGH / PASSAIC COUNTY OF NJ

Address 60 MARGARET KING AVENUE

City Ringwood State New Jersey Zip Code 07456

**WELL LOCATION - If not the same as owner please give address** **Owner's Well No.** OB-2023 (JP)

County Passaic Municipality Ringwood Boro Lot No. 14 Block No. 601

Address PETER MINE ROAD RINGWOOD MINES

**WELL USE** Monitoring

**DATE WELL STARTED** 10/10/06

**DATE WELL COMPLETED** 10/10/06

**WELL CONSTRUCTION**

Total Depth Drilled 20 ft.

Finished Well Depth 20 ft.

Borehole Diameter:

Top 6 in.

Bottom 6 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface +2.5 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling 11 ft.

Water Level was Measured Using measure

Well was developed for ½ hours

at 2 gpm

Method of development pump

Pump Capacity — gpm

Pump Type —

Drilling Fluid — Type of Rig CME-75

Health and Safety Plan Submitted? ☒ Yes ☐ No

Level of Protection used on site (circle one) None (D) C B A

| Note: Measure all depths from land surface | Depth to Top (ft.) | Depth to Bottom (ft.) | Diameter (inches) | Material | Wgt./Rating (lbs/sch no.) |
|---|---|---|---|---|---|
| Single/Inner Casing | +2.5 | 10 | 2 | PVC | sch 40 |
| Middle Casing (for triple cased wells only) | | | | | |
| Outer Casing (largest diameter) | | | | | |
| Open Hole or Screen (No. Used .010 ) | 10 | 20 | 2 | PVC | sch 40 |
| Blank Casings (No. Used ) | | | | | |
| Tail Piece | | | | | |
| Gravel Pack | 8 | 20 | | morie | #1 |
| Grout | 0 | 8 | | Neat Cement<br>Bentonite | 168 lbs<br>10 lbs |

Grouting Method Tremie

Drilling Method HSA

**GEOLOGIC LOG**

Note each depth where water was encountered in consolidated formations

0-10' med brown sand with cobbles

10'-20' med brown sand

*I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.*

Drilling Company SUMMIT DRILLING CO INC

Well Driller (Print) John Murtha

Driller's Signature John Murtha

Registration No. 521245 Date 10/27/06

**AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)**

**NJ STATE PLANE COORDINATE IN US SURVEY FEET**

NORTHING:_____ EASTING:_____

OR

LATITUDE: __° __' __.__" LONGITUDE: __° __' __.__"

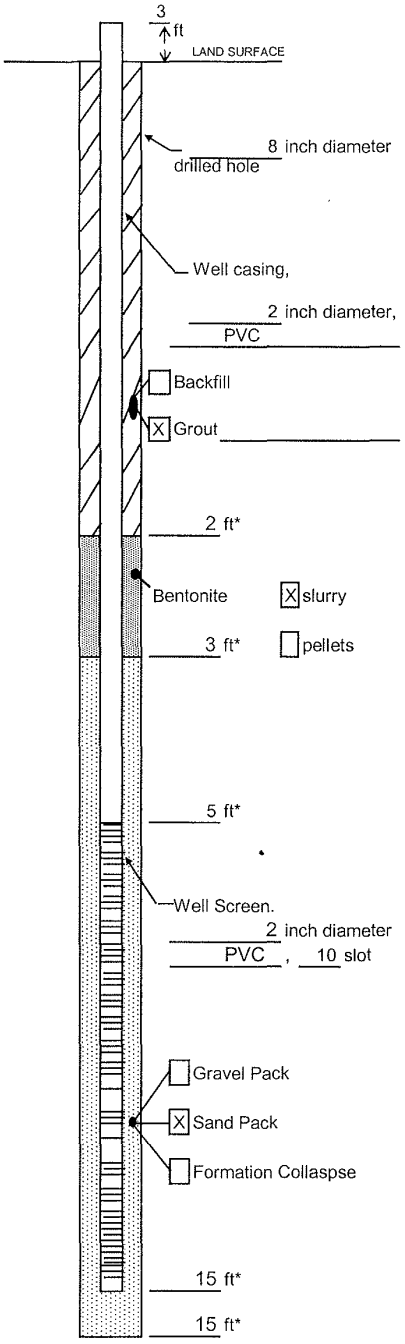
*ORIGINAL: DEP* *COPIES: DRILLER* *OWNER* *HEALTH DEPARTMENT*

R2-0005026

**ARCADIS** GERAGHTY & MILLER

# Well Construction Log

(Unconsolidated)




Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project Ringwood Well OB-24

Town/City Ringwood

County Passaic State NJ

Permit No.

Land-Surface Elevation and Datum:

498.0 feet [X] Surveyed [ ] Estimated

Installation Date(s) 10/9/2006

Drilling Method Hollow Stem Auger

Drilling Contractor Summit

Drilling Fluid None

Development Technique(s) and Date(s)

10/9/2006

Pump and surge

Fluid Loss During Drilling gallons

Water Removed During Development gallons

Static Depth to Water feet below M.P.

Pumping Depth to Water feet below M.P.

Pumping Duration 0.5 hours

Yield gpm Date

Specific Capacity gpm/ft

Well Purpose Monitoring

Remarks

Prepared by B. Mason

New Jersey Department of Environmental Protection
Bureau of Water Allocation

# MONITORING WELL RECORD

Well Permit Number
2300019637

Atlas Sheet Coordinates
2321569

**OWNER IDENTIFICATION** RINGWOOD BOROUGH / PASSAIC COUNTY OF NJ

Address 60 MARGARET KING AVENUE

City Ringwood State New Jersey Zip Code 07456

**WELL LOCATION - If not the same as owner please give address** **Owner's Well No.** OB-2T 24 (JB)

County Passaic Municipality Ringwood Boro Lot No. 14 Block No. 601

Address PETER MINE ROAD RINGWOOD MINES

**WELL USE** Monitoring

**DATE WELL STARTED** 10/09/06

**DATE WELL COMPLETED** 10/09/06

**WELL CONSTRUCTION**

Total Depth Drilled 15 ft.

Finished Well Depth 15 ft.

Borehole Diameter:

Top 6 in.

Bottom 6 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface +2.5 ft.

Steel protective casing installed?

☒ Yes ☐ No

Static Water Level after drilling 6 ft.

Water Level was Measured Using M-scope

Well was developed for 1/2 hours

at 2 gpm

Method of development pump

Pump Capacity — gpm

Pump Type —

Drilling Fluid — Type of Rig CME-75

Health and Safety Plan Submitted? ☒ Yes ☐ No

Level of Protection used on site (circle one) None (D) C B A

| Note: Measure all depths from land surface | Depth to Top (ft.) | Depth to Bottom (ft.) | Diameter (inches) | Material | Wgt./Rating (lbs/sch no.) |
|---|---|---|---|---|---|
| Single/Inner Casing | +2.5 | 5 | 2 | PVC | sch40 |
| Middle Casing (for triple cased wells only) | | | | | |
| Outer Casing (largest diameter) | | | | | |
| Open Hole or Screen (No. Used .010 ) | 5 | 15 | 2 | PVC | sch40 |
| Blank Casings (No. Used ) | | | | | |
| Tail Piece | | | | | |
| Gravel Pack | 3 | 15 | | morie | #1 |
| Grout | 0 | 3 | | Neat Cement | 94 lbs |
| | | | | Bentonite | 5 lbs |

Grouting Method Gravity

Drilling Method HSA

**GEOLOGIC LOG**

Note each depth where water was encountered in consolidated formations

0-10' med brown sand with cobbles

10'-15' med brown sand with silt.

**AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)**

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____

OR

LATITUDE: ___ ° ___ ' ___.__ " LONGITUDE: ___ ° ___ ' ___.__ "

*I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.*

Drilling Company SUMMIT DRILLING CO INC

Well Driller (Print) John Murtha

Driller's Signature John Murtha

Registration No. 321245 Date 10/27/06

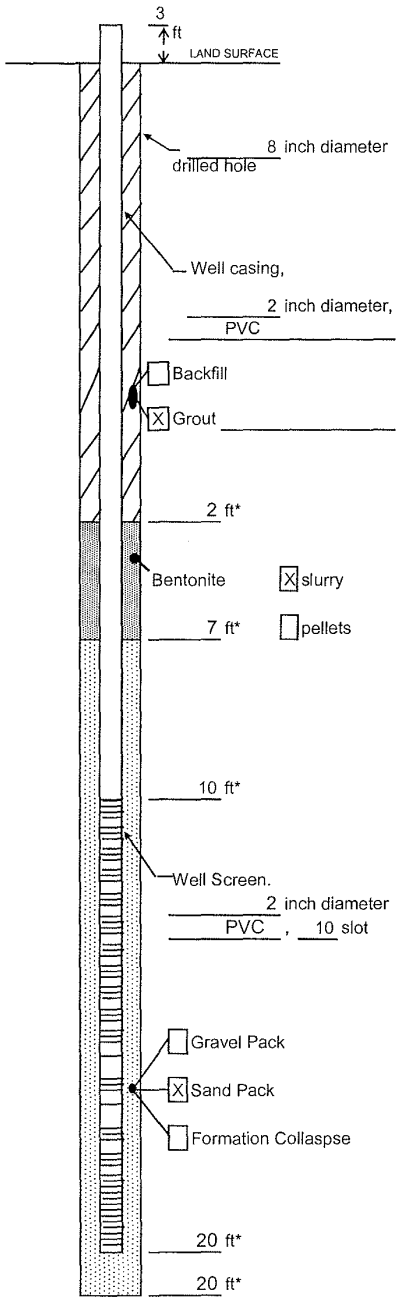
*ORIGINAL: DEP* *COPIES: DRILLER* *OWNER* *HEALTH DEPARTMENT*

R2-0005028

**ARCADIS** GERAGHTY & MILLER

# Well Construction Log

(Unconsolidated)




Measuring Point is
Top of Well Casing
Unless Otherwise Noted.

* Depth Below Land Surface

Project Ringwood Well OB-25

Town/City Ringwood

County Passaic State NJ

Permit No.

Land-Surface Elevation and Datum:

524.4 feet [X] Surveyed [ ] Estimated

Installation Date(s) 10/9/2006

Drilling Method Hollow Stem Auger

Drilling Contractor Summit

Drilling Fluid None

Development Technique(s) and Date(s)

10/10/2006

Pump and surge

DRY after 2 minutes of development

Fluid Loss During Drilling _____ gallons

Water Removed During Development _____ gallons

Static Depth to Water 11.5 feet below M.P.

Pumping Depth to Water 12.5 feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Monitoring

Remarks

Prepared by B. Mason

New Jersey Department of Environmental Protection
Bureau of Water Allocation

Well Permit Number
2300019638

# MONITORING WELL RECORD

Atlas Sheet Coordinates
2321569

**OWNER IDENTIFICATION** RINGWOOD BOROUGH / PASSAIC COUNTY OF NJ

Address 60 MARGARET KING AVENUE

City Ringwood State New Jersey Zip Code 07456

**WELL LOCATION - If not the same as owner please give address** **Owner's Well No.** OB-2225

County Passaic Municipality Ringwood Boro Lot No. 14 Block No. 601

Address PETER MINE ROAD RINGWOOD MINES

**WELL USE** Monitoring

**DATE WELL STARTED** 10/10/06

**DATE WELL COMPLETED** 10/10/06

**WELL CONSTRUCTION**

Total Depth Drilled 20 ft.

Finished Well Depth 20 ft.

Borehole Diameter:

Top 6 in.

Bottom 6 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface +2.5 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling 11 ft.

Water Level was Measured Using Measure

Well was developed for 1/2 hours

at 2 gpm

Method of development Pump

Pump Capacity — gpm

Pump Type —

Drilling Fluid — Type of Rig CME-75

Health and Safety Plan Submitted? ☒ Yes ☐ No

Level of Protection used on site (circle one) None (D) C B A

| Note: Measure all depths from land surface | Depth to Top (ft.) | Depth to Bottom (ft.) | Diameter (inches) | Material | Wgt./Rating (lbs/sch no.) |
|---|---|---|---|---|---|
| Single/Inner Casing | +2.5 | 10 | 2 | PVC | sch 40 |
| Middle Casing (for triple cased wells only) | | | | | |
| Outer Casing (largest diameter) | | | | | |
| Open Hole or Screen (No. Used .010 ) | 10 | 20 | 2 | PVC | sch 40 |
| Blank Casings (No. Used ) | | | | | |
| Tail Piece | | | | | |
| Gravel Pack | 8 | 20 | | Morie | #1 |
| Grout | 0 | 8 | | Neat Cement<br>Bentonite | 188 lbs<br>10 lbs |

Grouting Method Tremie

Drilling Method HSA

**GEOLOGIC LOG**

Note each depth where water was encountered in consolidated formations

0-10' Med brown sand with cobbles

10'-20' Med brown sand

*I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.*

Drilling Company SUMMIT DRILLING CO INC

Well Driller (Print) John Murtha

Driller's Signature John Murtha

Registration No. 52125 Date 10/27/06

**AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)**

**NJ STATE PLANE COORDINATE IN US SURVEY FEET**

NORTHING:_____ EASTING:_____

OR

LATITUDE:__° __' __.__" LONGITUDE:__° __' __.__"

*ORIGINAL: DEP* *COPIES: DRILLER* *OWNER* *HEALTH DEPARTMENT*

R2-0005030

DWR-133M
6/04

**STATE OF NEW JERSEY**
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

**MONITORING WELL PERMIT**

**Mail To:**
NJDEP
BUREAU OF WATER ALLOCATION
PO BOX 426
TRENTON, NJ 08625-0426

**Permit No.** _____

***VALID ONLY AFTER APPROVAL BY THE D.E.P.***

COORD #: . .

Owner [illegible]
Address [illegible] King Avenue
Ringwood N.J. 07456

Driller SUMMIT DRILLING CO., INC.
Address 9W Chimney Rock Road
Bound Brook, NJ 08805

Name of Facility Ringwood Mines
Address Peter Mine Road
Ringwood N.J. 07456

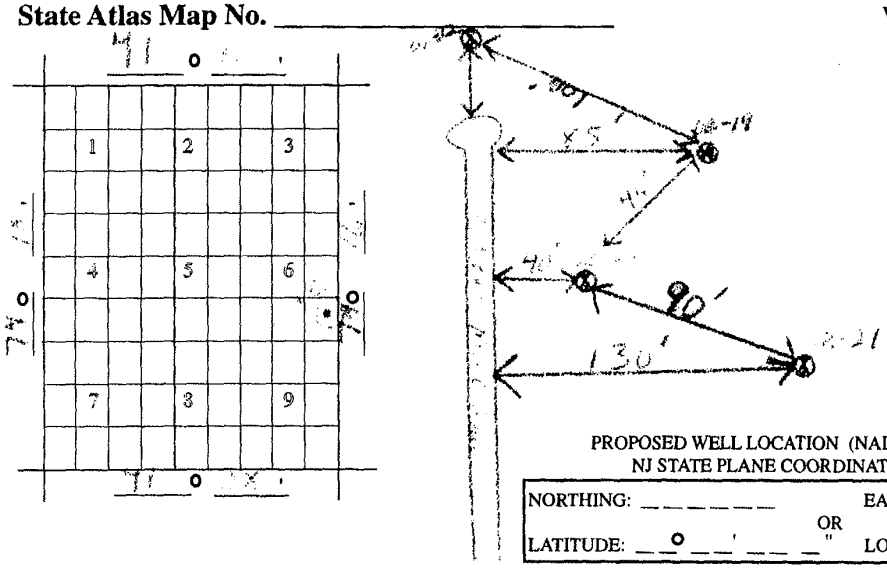
| | | | |
|---|---|---|---|
| Diameter of Well(s) | 2 Inches | Proposed Depth of Well(s) | 25 Feet |
| # of Wells Applied for (max. 10) | 4 | Will pumping equipment be utilized? | YES ☐ NO ☒ |
| Type of Well (see reverse) | Monitor | If Yes, give pump capacity | — cumulative GPM |

LOCATION OF WELL(S)

| Lot # | Block # | Municipality | County |
|---|---|---|---|
| 14 | 601 | Ringwood | Passaic |

**Draw sketch of well(s) nearest roads,buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.**

**State Atlas Map No.** _____

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PROPOSED WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____
OR
LATITUDE: __ ° __ ' __ " LONGITUDE: __ ° __ ' __ "

FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- ☐ RCRA Site
- ☐ Underground Storage Tank Site
- ☐ Operational Ground Water Permit Site
- ☐ Pretreatment and Residuals Site
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☐ Other (explain) _____
- ☐ Spill Site
- ☒ ISRA Site
- ☐ CERCLA (Superfund) Site

CASE I.D. Number _____

This Space for Approval Stamp
WELL PERMIT APPROVED
N.J. D.E.P.
SEP 19 2006
BUREAU OF WATER SYSTEM & WELL PERMITTING

**FOR D.E.P. USE**
☐ Issuance of this permit is subject to the conditions attached. (see next page)
☒ For monitoring purposes only
☐ _____

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS PERTAINING TO THIS PERMIT.
**In compliance with N.J.S.A.58:4A-14, application is made for a permit to drill a well as described above.**

Date 09-13-06 Signature of Driller Matt Raab Registration No. _____

Signature of Property Owner Jonathan Zocklin [illegible]

Arnold [illegible]

*COPIES: Water Allocation - White - Health Dept. - [illegible]*

R2-0005031

ARCADIS

## Appendix I

Groundwater Sampling Logs

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | SC-1 |
| Date: | 4/27/12 | Sampled By: | C. Goldsmith | | |
| Sampling Time: | 9:45 | Recorded By: | C. Goldsmith | | |
| Weather: | Mostly sunny, windy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 99' to 109' (angled) |
| Total Depth: | 69.77 | Pump intake depth: | 103' |
| Depth to Water: | 14.35 | | |
| Water Column: | 55.42 | Total Volume Purged: | 11.5 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 8:55 Off: 11:15 |
| Gallons in Well: | 9.03 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:00 | 5 | 250 | 0.325 | 9.50 | -27.0 | 6.48 | 0.231 | 10.32 | 14.39 | 2.88 | |
| 9:05 | 10 | 250 | 0.65 | 6.50 | -21.0 | 6.35 | 0.330 | 10.16 | 14.37 | 2.25 | |
| 9:10 | 15 | 250 | 0.98 | 0.00 | -22.0 | 6.30 | 0.403 | 10.17 | 14.37 | 1.95 | |
| 9:15 | 20 | 250 | 1.30 | 0.00 | -23.0 | 6.28 | 0.429 | 10.16 | 14.37 | 1.89 | |
| 9:20 | 25 | 250 | 1.63 | 0.00 | -25.0 | 6.28 | 0.438 | 10.15 | 14.37 | 1.64 | |
| 9:25 | 30 | 250 | 1.95 | 0.00 | -26.0 | 6.28 | 0.438 | 10.18 | 14.37 | 1.54 | |
| 9:30 | 35 | 250 | 2.28 | 0.00 | -27.0 | 6.39 | 0.439 | 10.23 | 14.37 | 1.56 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | SC-2 |
| Date: | 4/19/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 10:10 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 60s | Replicate/**Split:** | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 47' to 67' |
| Total Depth: | 69.77' | Pump intake depth: | 65' |
| Depth to Water: | 58.41' | | |
| Water Column: | 11.36' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 9:38 Off: 10:39 |
| Gallons in Well: | 1.85 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:38 | 0 | 200 | 0.27 | 0.00 | 155.0 | 6.92 | 0.482 | 15.42 | 58.56 | 3.77 | |
| 9:43 | 5 | 200 | 0.53 | 0.00 | 150.0 | 6.73 | 0.464 | 14.39 | 59.08 | 2.35 | |
| 9:48 | 10 | 200 | 0.80 | 0.00 | 152.0 | 6.70 | 0.459 | 13.95 | 59.61 | 1.71 | |
| 9:53 | 15 | 200 | 1.06 | 0.00 | 155.0 | 6.69 | 0.461 | 13.88 | 60.01 | 1.51 | |
| 9:58 | 20 | 200 | 1.33 | 0.00 | 155.0 | 6.68 | 0.463 | 13.94 | 60.35 | 1.39 | |
| 10:03 | 25 | 200 | 1.59 | 0.00 | 155.0 | 6.68 | 0.464 | 13.92 | 60.79 | 1.26 | |
| 10:08 | 30 | 200 | 1.86 | 0.00 | 155.0 | 6.69 | 0.465 | 13.92 | 61.12 | 1.14 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | SC-2 |
| Date: | 6/19/12 | Sampled By: | C. Goldsmith | | |
| Sampling Time: | 14:30 | Recorded By: | C. Goldsmith | | |
| Weather: | Cloudy, 80s | Replicate/**Split:** | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 47' to 67' |
| Total Depth: | 69.77' | Pump intake depth: | 65' |
| Depth to Water: | 56.42' | | |
| Water Column: | 13.35' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 13:45 Off: 17:10 |
| Gallons in Well: | 2.17 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:50 | 5 | 150 | 0.13 | 26.00 | 233.0 | 6.52 | 0.439 | 17.78 | 57.03 | 2.34 | |
| 13:55 | 10 | 150 | 0.78 | 0.60 | 223.0 | 6.60 | 0.430 | 16.55 | 57.27 | 1.80 | |
| 14:00 | 15 | 150 | 0.52 | 2.50 | 224.0 | 6.54 | 0.431 | 15.89 | 57.61 | 1.46 | |
| 14:05 | 20 | 150 | 0.72 | 2.10 | 224.0 | 6.50 | 0.436 | 15.52 | 57.84 | 1.32 | |
| 14:10 | 25 | 150 | 0.91 | 0.30 | 223.0 | 6.52 | 0.439 | 15.33 | 58.41 | 1.18 | |
| 14:15 | 30 | 150 | 1.11 | 0.00 | 221.0 | 6.53 | 0.440 | 15.46 | 58.66 | 1.14 | |
| 14:20 | 35 | 150 | 1.30 | 0.00 | 219.0 | 6.56 | 0.440 | 15.47 | 58.90 | 1.17 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-1 |
| Date: | 4/26/2012 | Sampled By: | K.Lepkowski/ G. Giannuario | | |
| Sampling Time: | 9:30 | Recorded By: | K.Lepkowski/ G. Giannuario | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** | | |
| Casing Diameter: | 6" | Screen Interval: | From 5' | to | 31' |
| Total Depth: | 33.04' | Pump intake depth: | 20' | | |
| Depth to Water: | 5.29' | | | | |
| Water Column: | 27.75 | Total Volume Purged: | 2 gallons | | |
| Gallons/Foot: | 1.47 | Pump on: | 8:51 | Off: | 10:00 |
| Gallons in Well: | 41.00 | | | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8:51 | 0 | 200 | 0.05 | 33.90 | 140.0 | 6.20 | 0.079 | 10.04 | 5.29 | 7.75 | |
| 8:56 | 5 | 200 | 0.27 | 1.40 | 169.0 | 5.96 | 0.061 | 9.57 | 5.38 | 6.05 | |
| 9:01 | 10 | 200 | 0.53 | 1.30 | 191.0 | 5.83 | 0.053 | 9.50 | 5.41 | 6.11 | |
| 9:06 | 15 | 200 | 0.80 | 2.20 | 211.0 | 5.77 | 0.050 | 9.43 | 5.41 | 6.05 | |
| 9:11 | 20 | 200 | 1.06 | 2.70 | 220.0 | 5.75 | 0.049 | 9.43 | 5.41 | 6.01 | |
| 9:16 | 25 | 200 | 1.33 | 3.70 | 232.0 | 5.73 | 0.048 | 9.39 | 5.41 | 6.03 | |
| 9:21 | 30 | 200 | 1.60 | 3.10 | 238.0 | 5.73 | 0.048 | 9.38 | 5.41 | 5.72 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-2 |
| Date: | 4/19/12 | Sampled By: | G.Giannuario | | |
| Sampling Time: | 10:20 | Recorded By: | G.Giannuario | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 6" | Screen Interval: | From 8' to 42' |
| Total Depth: | 42.4' | Pump intake depth: | 40 |
| Depth to Water: | 19.73' | | |
| Water Column: | 22.67' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 9:45 Off: 10:40 |
| Gallons in Well: | 33.00 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:50 | 5 | 200 | 0.27 | 2.00 | 279.0 | 6.50 | 0.163 | 15.69 | 19.75 | 9.23 | |
| 9:55 | 10 | 200 | 0.53 | 0.00 | 274.0 | 5.68 | 0.161 | 13.05 | 19.78 | 7.42 | |
| 10:00 | 15 | 200 | 0.80 | 0.00 | 275.0 | 5.64 | 0.159 | 13.03 | 19.78 | 6.63 | |
| 10:05 | 20 | 200 | 1.06 | 0.00 | 273.0 | 5.64 | 0.157 | 13.08 | 19.77 | 7.43 | |
| 10:10 | 25 | 200 | 1.33 | 0.00 | 277.0 | 5.65 | 0.157 | 13.05 | 19.77 | 7.40 | |
| 10:15 | 30 | 200 | 1.60 | 0.00 | 276.0 | 5.65 | 0.157 | 13.07 | 19.78 | 7.42 | |
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**OBSERVATIONS DURING SAMPLING**

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|---|---|---|---|
| Well Condition: | Lock Missing | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-2 |
| Date: | 6/19/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 14:05 | Recorded By: | K.Lepkowski | | |
| Weather: | Cloudy, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 6" | Screen Interval: | From 8' to 42' |
| Total Depth: | 42.4' | Pump intake depth: | 40 |
| Depth to Water: | 19.10' | | |
| Water Column: | 23.30' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 13:25 Off: 15:06 |
| Gallons in Well: | 34.25 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:30 | 5 | 200 | 0.27 | 0.00 | 216.0 | 6.27 | 0.174 | 14.28 | 19.12 | 11.53 | |
| 13:35 | 10 | 200 | 0.53 | 0.00 | 231.0 | 6.02 | 0.163 | 13.50 | 19.14 | 10.33 | |
| 13:40 | 15 | 200 | 0.80 | 0.00 | 246.0 | 5.87 | 0.159 | 13.05 | 19.15 | 9.58 | |
| 13:45 | 20 | 200 | 1.06 | 0.00 | 255.0 | 5.79 | 0.159 | 12.94 | 19.15 | 9.25 | |
| 13:50 | 25 | 200 | 1.33 | 0.00 | 260.0 | 5.74 | 0.158 | 12.90 | 19.16 | 9.14 | |
| 13:55 | 30 | 200 | 1.60 | 0.00 | 262.0 | 5.71 | 0.158 | 12.90 | 19.16 | 8.94 | |
| 14:00 | 35 | 200 | 1.87 | 0.00 | 262.0 | 5.71 | 0.157 | 12.97 | 19.16 | 8.89 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Lock Missing | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-3 |
| Date: | 4/23/12 | Sampled By: | K.Lepkowski/G.Giannuario | | |
| Sampling Time: | 10:10 | Recorded By: | K.Lepkowski/G.Giannuario | | |
| Weather: | Rainy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4' | Screen Interval: | From 9' to 24' |
| Total Depth: | 23.77' | Pump intake depth: | 22' |
| Depth to Water: | 3.98 | | |
| Water Column: | 19.79 | Total Volume Purged: | 3 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 9:30 Off: 10:30 |
| Gallons in Well: | 29.00 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:35 | 5 | 300 | 0.40 | 2.6 | 238.0 | 6.93 | 0.165 | 10.52 | 3.19 | 11.56 | |
| 9:40 | 10 | 300 | 0.79 | 2.3 | 225.0 | 6.69 | 0.146 | 9.87 | 3.19 | 9.91 | |
| 9:45 | 15 | 300 | 1.19 | 2.8 | 213.0 | 6.56 | 0.145 | 9.73 | 3.19 | 9.29 | |
| 9:50 | 20 | 300 | 1.58 | 2.7 | 207.0 | 6.56 | 0.145 | 9.73 | 3.19 | 8.91 | |
| 9:55 | 25 | 300 | 1.98 | 2.5 | 204.0 | 6.65 | 0.144 | 9.68 | 3.19 | 8.62 | |
| 10:00 | 30 | 300 | 2.37 | 2.7 | 203.0 | 6.65 | 0.145 | 9.65 | 3.19 | 8.65 | |
| 10:05 | 35 | 300 | 2.77 | 2.6 | 202.0 | 6.65 | 0.145 | 9.65 | 3.19 | 8.64 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-4 |
| Date: | 4/27/12 | Sampled By: | P.Krupin | | |
| Sampling Time: | 9:30 | Recorded By: | P.Krupin | | |
| Weather: | Partly cloudy, 40s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 6" | Screen Interval: | From 28' to 61' |
| Total Depth: | 60.50' | Pump intake depth: | 40' |
| Depth to Water: | 17.75' | | |
| Water Column: | 42.75' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 8:50 Off: 11:30 |
| Gallons in Well: | 62.84' | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8:55 | 5 | 200 | 0.27 | 16.60 | -68.0 | 6.72 | 0.793 | 12.00 | 17.81 | 6.75 | |
| 9:00 | 10 | 200 | 0.53 | 16.70 | -63.0 | 6.72 | 0.855 | 11.80 | 17.87 | 2.58 | |
| 9:05 | 15 | 200 | 0.80 | 17.50 | -60.0 | 6.70 | 0.875 | 11.90 | 17.90 | 1.89 | |
| 9:10 | 20 | 200 | 1.06 | 18.10 | -60.0 | 6.67 | 0.889 | 11.90 | 17.96 | 1.49 | |
| 9:15 | 25 | 200 | 1.33 | 16.70 | -59.0 | 6.66 | 0.893 | 11.80 | 17.98 | 1.43 | |
| 9:20 | 30 | 200 | 1.59 | 16.30 | -59.0 | 6.66 | 0.899 | 11.80 | 18.00 | 1.33 | |
| 9:25 | 35 | 200 | 1.86 | 16.20 | -59.0 | 6.65 | 0.902 | 11.80 | 18.02 | 1.24 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-5 |
| Date: | 4/19/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 13:53 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 60s | Replicate/Split: | DUP(041912) | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 6" | Screen Interval: | From 18' to 63' |
| Total Depth: | 64.04' | Pump intake depth: | 40' |
| Depth to Water: | 3.65' | | |
| Water Column: | 60.39' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 13:11 Off: 14:57 |
| Gallons in Well: | 88.77 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:11 | 0 | 200 | 0.05 | 1.0 | -156.0 | 7.40 | 0.709 | 27.82 | 3.69 | 2.15 | |
| 13:16 | 5 | 200 | 0.27 | 7.8 | -167.0 | 7.41 | 0.694 | 26.16 | 3.80 | 1.59 | |
| 13:21 | 10 | 200 | 0.53 | 17.9 | -171.0 | 7.41 | 0.692 | 25.10 | 3.91 | 1.51 | |
| 13:26 | 15 | 200 | 0.80 | 23.1 | -173.0 | 7.41 | 0.699 | 24.27 | 3.96 | 1.49 | |
| 13:31 | 20 | 200 | 1.06 | 25.7 | -174.0 | 7.40 | 0.707 | 23.69 | 4.04 | 1.44 | |
| 13:36 | 25 | 200 | 1.33 | 22.2 | -175.0 | 7.41 | 0.716 | 23.14 | 4.11 | 1.40 | |
| 13:41 | 30 | 200 | 1.59 | 0.0 | -176.0 | 7.41 | 0.843 | 16.63 | 4.15 | 2.13 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-5 |
| Date: | 6/19/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 14:35 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 90s | Replicate/Split: | | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 6" | Screen Interval: | From 18' to 63' |
| Total Depth: | 64.04' | Pump intake depth: | 40' |
| Depth to Water: | 3.25' | | |
| Water Column: | 60.79' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 14:00 Off: 15:23 |
| Gallons in Well: | 89.36 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14:05 | 5 | 200 | 0.27 | 1.0 | -157.0 | 6.85 | 0.944 | 14.71 | 3.50 | 2.72 | |
| 14:10 | 10 | 200 | 0.53 | 0.3 | -173.0 | 6.98 | 0.947 | 14.17 | 3.65 | 0.94 | |
| 14:15 | 15 | 200 | 0.80 | 0.0 | -178.0 | 7.02 | 0.945 | 13.98 | 3.75 | 0.85 | |
| 14:20 | 20 | 200 | 1.06 | 0.0 | -179.0 | 7.03 | 0.944 | 13.86 | 3.83 | 0.79 | |
| 14:25 | 25 | 200 | 1.33 | 0.0 | -180.0 | 7.04 | 0.944 | 13.92 | 3.86 | 0.80 | |
| 14:30 | 30 | 200 | 1.59 | 0.0 | -180.0 | 7.05 | 0.944 | 13.80 | 3.92 | 0.73 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Light Yellow | Turbidity(qualitative): | Clear |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

Project Number: NJ000604.0035 Task: 00034 Well ID: OB-6
Date: Sampled By:
Sampling Time: Recorded By:
Weather: Replicate/Split:

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

Casing Material: Steel Purge Method: **Low Flow Bladder Pump**
Casing Diameter: 6" Screen Interval: From 10' to 36'
Total Depth: 26.35' Pump intake depth:
Depth to Water:
Water Column: 13.70' Total Volume Purged: gallons
Gallons/Foot: Pump on: Off:
Gallons in Well:

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | Obstruction in well as per 5/2011 log | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

Well Condition: Purge Water Disposal:
Color: Turbidity(qualitative):
Odor: Other (OVA, HNU,etc.):

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-7 |
| Date: | 4/20/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 11:35 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4" | Screen Interval: | From 14' to 42' |
| Total Depth: | 43.10' | Pump intake depth: | 20' |
| Depth to Water: | 4.18' | | |
| Water Column: | 38.92' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.653 | Pump on: | 11:24 Off: 12:26 |
| Gallons in Well: | 25.40 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:24 | 0 | 200 | 0.05 | 140.0 | -8.0 | 13.42 | 0.638 | 13.42 | 4.28 | 2.66 | |
| 11:29 | 5 | 200 | 0.27 | 244.0 | -39.0 | 12.72 | 0.642 | 12.72 | 4.28 | 1.98 | |
| 11:34 | 10 | 200 | 0.53 | 41.6 | -45.0 | 11.98 | 0.644 | 11.98 | 4.31 | 1.78 | |
| 11:39 | 15 | 200 | 0.80 | 4.4 | -48.0 | 11.90 | 0.637 | 11.90 | 4.4 | 1.68 | |
| 11:44 | 20 | 200 | 1.06 | 0.7 | -49.0 | 11.88 | 0.638 | 11.88 | 4.42 | 1.59 | |
| 11:49 | 25 | 200 | 1.33 | 0.0 | -50.0 | 11.89 | 0.635 | 11.89 | 4.42 | 1.51 | |
| 11:54 | 30 | 200 | 1.59 | 0.0 | -50.0 | 11.90 | 0.625 | 11.90 | 4.44 | 1.50 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-10 |
| Date: | 4/20/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 11:35 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4" | Screen Interval: | From 10' to 20' |
| Total Depth: | 20.85' | Pump intake depth: | 15' |
| Depth to Water: | 6.68' | | |
| Water Column: | 14.17 | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.653 | Pump on: | 11:02 Off: 12:09 |
| Gallons in Well: | 12.00 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:02 | 0 | 200 | 0.10 | 0.00 | 102.0 | 6.70 | 0.141 | 14.97 | 6.69 | 5.30 | |
| 11:07 | 5 | 200 | 0.27 | 0.00 | 110.0 | 6.70 | 0.132 | 13.58 | 6.69 | 3.97 | |
| 11:12 | 10 | 200 | 0.53 | 0.00 | 111.0 | 6.70 | 0.131 | 13.31 | 6.69 | 3.53 | |
| 11:17 | 15 | 200 | 0.80 | 0.00 | 112.0 | 6.70 | 0.131 | 13.32 | 6.69 | 3.32 | |
| 11:22 | 20 | 200 | 1.06 | 0.00 | 112.0 | 6.70 | 0.131 | 13.37 | 6.69 | 3.18 | |
| 11:27 | 25 | 200 | 1.33 | 0.00 | 113.0 | 6.70 | 0.131 | 13.50 | 6.69 | 3.05 | |
| 11:32 | 30 | 200 | 1.59 | 0.00 | 114.0 | 6.68 | 0.131 | 13.66 | 6.69 | 3.02 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | None |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-11R |
| Date: | 4/26/12 | Sampled By: | P. Krupin | | |
| Sampling Time: | 9:45 | Recorded By: | P.Krupin | | |
| Weather: | Cloudy, 40s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 25' to 40' |
| Total Depth: | 38.45' | Pump intake depth: | 35' |
| Depth to Water: | 16.63' | | |
| Water Column: | 21.82' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 9:05 Off: 11:40 |
| Gallons in Well: | 3.56 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:10 | 5 | 200 | 0.27 | 5.60 | -94.0 | 6.44 | 0.489 | 10.00 | 16.67 | 4.01 | |
| 9:15 | 10 | 200 | 0.53 | 3.90 | -104.0 | 6.58 | 0.485 | 9.90 | 16.67 | 2.04 | |
| 9:20 | 15 | 200 | 0.80 | 2.40 | -107.0 | 6.61 | 0.487 | 9.90 | 16.67 | 1.53 | |
| 9:25 | 20 | 200 | 1.06 | 1.80 | -109.0 | 6.62 | 0.488 | 9.90 | 16.67 | 1.33 | |
| 9:30 | 25 | 200 | 1.33 | 1.60 | -109.0 | 6.63 | 0.488 | 10.00 | 16.67 | 1.21 | |
| 9:35 | 30 | 200 | 1.59 | 1.80 | -109.0 | 6.64 | 0.488 | 10.00 | 16.67 | 1.08 | |
| 9:40 | 35 | 200 | 1.86 | 2.00 | -109.0 | 6.64 | 0.489 | 10.10 | 16.67 | 1.21 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-12 |
| Date: | 4/19/12 | Sampled By: | G.Giannuario | | |
| Sampling Time: | 11:45 | Recorded By: | G.Giannuario | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 6" | Screen Interval: | From 9' to 40' |
| Total Depth: | 39.79' | Pump intake depth: | 38' |
| Depth to Water: | 11.80' | | |
| Water Column: | 27.99' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 11:10 Off: 12:05 |
| Gallons in Well: | 42.00 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:15 | 5 | 200 | 0.27 | 16.90 | 234.0 | 6.31 | 0.088 | 14.48 | 11.81 | 9.89 | |
| 11:20 | 10 | 200 | 0.53 | 0.00 | 271.0 | 5.89 | 0.089 | 11.64 | 11.81 | 6.62 | |
| 11:25 | 15 | 200 | 0.80 | 0.00 | 272.0 | 5.86 | 0.087 | 11.35 | 11.81 | 5.89 | |
| 11:30 | 20 | 200 | 1.06 | 0.00 | 275.0 | 5.85 | 0.087 | 11.33 | 11.81 | 5.40 | |
| 11:35 | 25 | 200 | 1.33 | 0.00 | 277.0 | 5.85 | 0.087 | 11.36 | 11.81 | 5.48 | |
| 11:40 | 30 | 200 | 1.59 | 0.00 | 278.0 | 5.85 | 0.087 | 11.36 | 11.81 | 5.45 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-13 |
| Date: | 4/20/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 10:06 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 6" | Screen Interval: | From 8' to 60' |
| Total Depth: | 62.71' | Pump intake depth: | 30' |
| Depth to Water: | 17.72' | | |
| Water Column: | 44.99' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 9:34 Off: 10:31 |
| Gallons in Well: | 66.14 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:34 | 0 | 200 | 0.05 | 0.00 | 77.0 | 6.79 | 0.126 | 12.89 | 17.72 | 10.92 | |
| 9:39 | 5 | 200 | 0.27 | 0.00 | 110.0 | 6.45 | 0.110 | 11.82 | 17.93 | 10.72 | |
| 9:44 | 10 | 200 | 0.53 | 0.00 | 123.0 | 6.36 | 0.197 | 11.51 | 18.04 | 10.46 | |
| 9:49 | 15 | 200 | 0.80 | 0.00 | 130.0 | 6.34 | 0.106 | 11.47 | 18.19 | 10.23 | |
| 9:54 | 20 | 200 | 1.06 | 0.00 | 135.0 | 6.31 | 0.105 | 11.49 | 18.32 | 10.09 | |
| 9:59 | 25 | 200 | 1.33 | 0.00 | 139.0 | 6.31 | 0.105 | 11.48 | 18.45 | 10.02 | |
| 10:04 | 30 | 200 | 1.59 | 0.00 | 142.0 | 6.30 | 0.104 | 11.49 | 18.59 | 10.01 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | OK. | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | None |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-14A |
| Date: | 4/18/12 | Sampled By: | G.Giannuario | | |
| Sampling Time: | 10:00 | Recorded By: | G.Giannuario | | |
| Weather: | Sunny, 60s | Replicate/Split: | MS/MSD (041812) | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4" | Screen Interval: | From 4' to 14' |
| Total Depth: | 16.03' | Pump intake depth: | 10' |
| Depth to Water: | 9.80' | | |
| Water Column: | 6.23' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.653 | Pump on: | 9:25 Off: 10:47 |
| Gallons in Well: | 4.10 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:25 | 0 | 200 | 0.00 | 7.00 | -28.0 | 7.27 | 0.701 | 14.90 | 10.00 | 5.07 | |
| 9:30 | 5 | 200 | 0.27 | 3.00 | -42.0 | 7.06 | 0.654 | 14.85 | 10.04 | 2.75 | |
| 9:35 | 10 | 200 | 0.53 | 1.00 | -52.0 | 7.03 | 0.638 | 14.65 | 10.26 | 2.49 | |
| 9:40 | 15 | 200 | 0.80 | 0.50 | -54.0 | 6.97 | 0.624 | 14.53 | 10.32 | 2.21 | |
| 9:45 | 20 | 200 | 1.06 | 0.20 | -56.0 | 6.89 | 0.613 | 14.37 | 10.52 | 2.04 | |
| 9:50 | 25 | 200 | 1.33 | 0.90 | -57.0 | 6.86 | 0.611 | 14.31 | 10.67 | 1.92 | |
| 9:55 | 30 | 200 | 1.59 | 0.50 | -55.0 | 6.86 | 0.610 | 14.30 | 10.74 | 1.98 | |
| | | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-14B |
| Date: | 4/18/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 10:05 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny,60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4" | Screen Interval: | From 25' to 35' |
| Total Depth: | 37.11' | Pump intake depth: | 30' |
| Depth to Water: | 12.54' | | |
| Water Column: | 25.57' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.653 | Pump on: | 9:30 Off: 10:34 |
| Gallons in Well: | 16.00 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:30 | 0 | 200 | 0.15 | 14.90 | 10.0 | 7.37 | 0.742 | 13.94 | 12.65 | 10.15 | |
| 9:35 | 5 | 200 | 0.42 | 14.50 | -24.0 | 7.10 | 0.891 | 13.68 | 12.80 | 5.74 | |
| 9:40 | 10 | 200 | 0.68 | 14.50 | -30.0 | 7.07 | 0.931 | 13.59 | 12.94 | 3.19 | |
| 9:45 | 15 | 200 | 0.95 | 14.90 | -31.0 | 7.07 | 0.941 | 13.52 | 13.03 | 2.28 | |
| 9:50 | 20 | 200 | 1.21 | 10.20 | -31.0 | 7.07 | 0.947 | 13.46 | 13.12 | 1.72 | |
| 9:55 | 25 | 200 | 1.48 | 9.90 | -30.0 | 7.06 | 0.950 | 13.43 | 13.18 | 1.42 | |
| 10:00 | 30 | 200 | 1.74 | 9.70 | -30.0 | 7.07 | 0.950 | 13.45 | 13.24 | 1.20 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-15B |
| Date: | 4/24/12 | Sampled By: | C.Goldsmith/P.Krupin | | |
| Sampling Time: | 14:30 | Recorded By: | C.Goldsmith/P.Krupin | | |
| Weather: | Partly cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4" | Screen Interval: | From 25' to 35' |
| Total Depth: | 35.96' | Pump intake depth: | 33' |
| Depth to Water: | 6.24' | | |
| Water Column: | 29.72' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.653 | Pump on: | 13:25 Off: 16:30 |
| Gallons in Well: | 19.41 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:40 | 5 | 150 | 0.13 | 2.3 | 165.0 | 7.74 | 0.188 | 14.92 | 6.43 | 8.36 | |
| 13:45 | 10 | 150 | 0.78 | 1.3 | 163.0 | 7.77 | 0.196 | 14.71 | 6.50 | 3.16 | |
| 13:50 | 15 | 150 | 0.52 | 1.1 | 158.0 | 7.74 | 0.192 | 14.60 | 6.52 | 2.38 | |
| 13:55 | 20 | 150 | 0.72 | 0.00 | 151.0 | 7.66 | 0.194 | 14.53 | 6.55 | 1.69 | |
| 14:00 | 25 | 150 | 0.91 | 0.00 | 148.0 | 7.58 | 0.195 | 14.67 | 6.60 | 1.46 | |
| 14:05 | 30 | 150 | 1.11 | 0.00 | 144.0 | 7.55 | 0.196 | 14.77 | 6.68 | 1.30 | |
| 14:10 | 35 | 150 | 1.30 | 0.00 | 135.0 | 7.49 | 0.195 | 14.71 | 6.74 | 1.17 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Needs to be cut down | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | No odor | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-16 |
| Date: | 4/17/12 | Sampled By: | P. Krupin | | |
| Sampling Time: | 13:20 | Recorded By: | P. Krupin | | |
| Weather: | Sunny, 70s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4" | Screen Interval: | From 5' to 15' |
| Total Depth: | 17.22' | Pump intake depth: | 10' |
| Depth to Water: | 5.79' | | |
| Water Column: | 11.43' | Total Volume Purged: | 3.50 gallons |
| Gallons/Foot: | 0.653 | Pump on: | 12:10 Off: 14:10 |
| Gallons in Well: | 7.46 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:25 | 15 | 200 | 0.80 | 259.00 | -70.0 | 6.90 | 0.920 | 23.10 | 5.95 | 2.31 | |
| 12:30 | 20 | 200 | 1.06 | 235.00 | -72.0 | 6.89 | 0.928 | 22.70 | 5.95 | 2.02 | |
| 12:35 | 25 | 200 | 1.33 | 182.00 | -67.0 | 6.88 | 1.000 | 16.5 | 5.97 | 2.31 | |
| 12:40 | 30 | 200 | 1.59 | 131.00 | -65.0 | 6.89 | 1.010 | 16.30 | 5.97 | 2.36 | |
| 12:45 | 35 | 200 | 1.86 | 107.60 | -62.0 | 6.91 | 1.000 | 16.10 | 5.98 | 2.47 | |
| 12:50 | 40 | 200 | 2.12 | 88.70 | -61.0 | 6.91 | 1.000 | 16.00 | 5.98 | 2.55 | |
| 12:55 | 45 | 200 | 2.38 | 54.30 | -63.0 | 6.88 | 1.000 | 15.30 | 5.97 | 2.36 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-17 |
| Date: | 4/17/12 | Sampled By: | G. Giannuario | | |
| Sampling Time: | 10:12 | Recorded By: | G.Giannuario | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4" | Screen Interval: | From 3' to 13' |
| Total Depth: | 16.75' | Pump intake depth: | 15' |
| Depth to Water: | 5.43' | | |
| Water Column: | 11.32' | Total Volume Purged: | |
| Gallons/Foot: | 0.653 | Pump on: | 9:30 Off: 10:47 |
| Gallons in Well: | 7.40 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:30 | 0 | 200 | | 218.0 | 52.0 | 6.60 | 0.773 | 12.28 | 5.79 | 7.50 | |
| 9:35 | 5 | 175 | | 85.5 | 1.0 | 6.73 | 0.806 | 11.10 | 5.86 | 3.94 | |
| 9:40 | 10 | 175 | | 44.2 | -10.0 | 6.76 | 0.811 | 10.62 | 5.97 | 2.79 | |
| 9:45 | 15 | 175 | | 36.8 | -14.0 | 6.76 | 0.806 | 10.49 | 6.06 | 2.30 | |
| 9:50 | 20 | 175 | | 29.9 | -14.0 | 6.76 | 0.804 | 10.32 | 6.11 | 1.94 | |
| 9:55 | 25 | 175 | | 23.5 | -13.0 | 6.78 | 0.801 | 10.21 | 6.16 | 1.78 | |
| 10:00 | 30 | 175 | | 22.0 | -13.0 | 6.76 | 0.797 | 10.24 | 6.20 | 1.55 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Lock rusty | Purge Water Disposal: | |
| Color: | | Turbidity(qualitative): | |
| Odor: | | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-18 |
| Date: | 4/17/12 | Sampled By: | G.Giannuario | | |
| Sampling Time: | 12:35 | Recorded By: | G. Giannuario | | |
| Weather: | Sunny, 70s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 4" | Screen Interval: | From 10' to 20' |
| Total Depth: | 21.78' | Pump intake depth: | 20' |
| Depth to Water: | 4.01' | | |
| Water Column: | 17.77' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.653 | Pump on: | 12:00 Off: 13:07 |
| Gallons in Well: | 12.00 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 | 0 | 200 | 0.00 | 5.6 | 88.0 | 7.71 | 0.386 | 15.61 | 4.17 | 10.05 | |
| 12:05 | 5 | 200 | 0.27 | 1.9 | 43.0 | 7.34 | 0.402 | 13.40 | 4.24 | 5.78 | |
| 12:10 | 10 | 200 | 0.53 | 2 | 56.0 | 7.24 | 0.374 | 12.52 | 4.38 | 3.72 | |
| 12:15 | 15 | 200 | 0.80 | 2.2 | 78.0 | 7.13 | 0.396 | 10.86 | 4.58 | 2.81 | |
| 12:20 | 20 | 200 | 1.06 | 0.6 | 90.0 | 7.10 | 0.362 | 10.83 | 4.67 | 2.29 | |
| 12:25 | 25 | 200 | 1.33 | 0.4 | 88.0 | 7.11 | 0.364 | 10.82 | 4.54 | 2.27 | |
| 12:30 | 30 | 200 | 1.59 | 0.2 | 87.0 | 7.13 | 0.365 | 10.84 | 4.53 | 2.21 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-19 |
| Date: | 4/25/12 | Sampled By: | C. Goldsmith | | |
| Sampling Time: | 14:00 | Recorded By: | C. Goldsmith | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | SOLINST | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 5' to 20' |
| Total Depth: | 21.70' | Pump intake depth: | 15' |
| Depth to Water: | 12.03' | | |
| Water Column: | 9.67' | Total Volume Purged: | 3 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 13:05 Off: 15:25 |
| Gallons in Well: | 1.60 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:10 | 5 | 200 | 0.26 | 43.10 | -21.0 | 6.15 | 0.160 | 10.95 | 12.21 | 1.80 | |
| 13:15 | 10 | 200 | 0.52 | 7.30 | -33.0 | 6.24 | 0.162 | 10.67 | 12.23 | 1.50 | |
| 13:20 | 15 | 200 | 0.78 | 0.00 | -41.0 | 6.23 | 0.161 | 10.67 | 12.23 | 1.22 | |
| 13:25 | 20 | 200 | 1.04 | 0.00 | -47.0 | 6.25 | 0.161 | 10.59 | 12.23 | 1.09 | |
| 13:30 | 25 | 200 | 1.30 | 0.00 | -46.0 | 6.22 | 0.161 | 10.53 | 12.23 | 0.98 | |
| 13:35 | 30 | 200 | 1.56 | 0.00 | -50.0 | 6.23 | 0.161 | 10.48 | 12.23 | 0.98 | |
| 13:40 | 35 | 200 | 1.82 | 0.00 | 48.0 | 6.21 | 0.161 | 10.44 | 12.23 | 0.98 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-20A |
| Date: | 4/27/12 | Sampled By: | G. Giannuario | | |
| Sampling Time: | 12:45 | Recorded By: | G. Giannuario | | |
| Weather: | Sunny, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 6' to 21' |
| Total Depth: | 19.73' | Pump intake depth: | 19' |
| Depth to Water: | 15.04 | | |
| Water Column: | 4.71 | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 12:10 Off: 13:40 |
| Gallons in Well: | 0.77 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:15 | 5 | 200 | 0.27 | 145 | -49.0 | 6.73 | 0.190 | 12.34 | 19.73 | 4.99 | |
| 12:20 | 10 | 200 | 0.53 | 100 | -2.0 | 6.19 | 0.196 | 10.71 | 15.71 | 1.92 | |
| 12:25 | 15 | 200 | 0.80 | 46.5 | -15.0 | 6.15 | 0.203 | 10.37 | 15.77 | 0.96 | |
| 12:30 | 20 | 200 | 1.06 | 34.8 | -20.0 | 6.14 | 0.206 | 10.31 | 15.77 | 0.82 | |
| 12:35 | 25 | 200 | 1.33 | 33.9 | -25.0 | 6.15 | 0.208 | 10.29 | 15.77 | 0.76 | |
| 12:40 | 30 | 200 | 1.59 | 32.7 | -26.0 | 6.15 | 0.208 | 10.22 | 15.77 | 0.78 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US** 1 of 1

Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB- 20 B |
| Date: | 4/27/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 12:50 | Recorded By: | K.Lepkowski | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 24' to 34' |
| Total Depth: | 35.91' | Pump intake depth: | 30' |
| Depth to Water: | 14.31' | | |
| Water Column: | 21.6' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 12:12 Off: 14:03 |
| Gallons in Well: | 3.50 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:12 | 0 | 200 | 0.00 | 49.5 | -28.0 | 6.50 | 0.375 | 16.68 | 14.61 | 2.84 | |
| 12:18 | 5 | 200 | 0.27 | 29.9 | -25.0 | 6.43 | 0.373 | 16.02 | 14.70 | 1.73 | |
| 12:22 | 10 | 200 | 0.53 | 26.4 | -28.0 | 6.39 | 0.376 | 15.22 | 14.74 | 1.32 | |
| 12:28 | 15 | 200 | 0.80 | 23.6 | -32.0 | 6.34 | 0.378 | 14.78 | 14.76 | 1.22 | |
| 12:32 | 20 | 200 | 1.06 | 23.6 | -34.0 | 6.37 | 0.380 | 14.49 | 14.76 | 1.13 | |
| 12:38 | 25 | 200 | 1.33 | 10.5 | -39.0 | 6.40 | 0.382 | 14.02 | 14.76 | 1.67 | |
| 12:42 | 30 | 200 | 1.59 | 8.9 | -40.0 | 6.39 | 0.384 | 13.73 | 14.76 | 1.05 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB- 21 |
| Date: | 4/24/12 | Sampled By: | G.Giannuario | | |
| Sampling Time: | 10:25 | Recorded By: | G.Giannuario | | |
| Weather: | Sunny, 40s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 6' to 21' |
| Total Depth: | 26.78' | Pump intake depth: | 19' |
| Depth to Water: | 6.53' | | |
| Water Column: | 20.20' | Total Volume Purged: | 2.5 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 9:40 Off: 10:50 |
| Gallons in Well: | 3.30 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:40 | 0 | 200 | 0.00 | 306.00 | 306.0 | 6.74 | 0.122 | 10.73 | 6.55 | 4.97 | |
| 9:45 | 5 | 200 | 0.27 | 426.00 | 426.0 | 6.43 | 0.120 | 9.73 | 6.59 | 3.61 | |
| 9:50 | 10 | 200 | 0.53 | 207.00 | 207.0 | 6.20 | 0.114 | 9.35 | 6.60 | 2.62 | |
| 9:55 | 15 | 200 | 0.80 | 126.00 | 126.0 | 5.99 | 0.113 | 9.20 | 6.61 | 2.26 | |
| 10:00 | 20 | 200 | 1.06 | 80.90 | 80.9 | 5.86 | 0.112 | 9.40 | 6.61 | 2.13 | |
| 10:05 | 25 | 200 | 1.33 | 70.30 | 70.3 | 5.79 | 0.112 | 9.46 | 6.61 | 2.05 | |
| 10:10 | 30 | 200 | 1.59 | 55.70 | 55.7 | 5.72 | 0.112 | 9.37 | 6.61 | 2.02 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear with sediment | Turbidity(qualitative): | Tan sediment |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-22 |
| Date: | 4/18/12 | Sampled By: | G. Giannuario | | |
| Sampling Time: | DRY | Recorded By: | G. Giannuario | | |
| Weather: | Cloudy, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | SOLINST | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 10' to 20' |
| Total Depth: | 21.82' | Pump intake depth: | 20' |
| Depth to Water: | 17.18' | | |
| Water Column: | 4.64' | Total Volume Purged: | none |
| Gallons/Foot: | 0.163 | Pump on: | 13:50 Off: 13:55 |
| Gallons in Well: | 0.76 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:50 | | | | 179.0 | 216.0 | 7.48 | 0.317 | 13.79 | 19.28 | | |
| | | | | | | | | | | | |
| | 13:54 Well Dry<br>4/19/12 : sampled at 13:45 for VOCs | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | -- |
| Color: | Light brown | Turbidity(qualitative): | Turbid |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-23 |
| Date: | 4/18/12 | Sampled By: | G. Giannuario | | |
| Sampling Time: | DRY | Recorded By: | G. Giannuario | | |
| Weather: | Cloudy, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 10' to 20' |
| Total Depth: | 21.22' | Pump intake depth: | 18' |
| Depth to Water: | 20.10' | | |
| Water Column: | 1.10' | Total Volume Purged: | none |
| Gallons/Foot: | 0.163 | Pump on: | 12:05 Off: 12:11 |
| Gallons in Well: | 0.18 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:10 | | Well dry | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 4/19/12 | | | | | | | | | | | |
| 12:20 | | Well dry, no samples collected | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Lock cut | Purge Water Disposal: | |
| Color: | | Turbidity(qualitative): | |
| Odor: | | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-24 |
| Date: | 4/18/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 12:40 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 5' to 15' |
| Total Depth: | 17.51' | Pump intake depth: | 12' |
| Depth to Water: | 5.39' | | |
| Water Column: | 12.12' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.16 | Pump on: | 12:03 Off: 13:05 |
| Gallons in Well: | 2.00 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:03 | 0 | 200 | 0.00 | 235 | 191.0 | 7.57 | 0.826 | 11.23 | 5.70 | 16.01 | |
| 12:08 | 5 | 200 | 0.27 | 227 | 194.0 | 7.48 | 0.820 | 10.16 | 6.64 | 4.09 | |
| 12:13 | 10 | 200 | 0.53 | 198 | 193.0 | 7.42 | 0.816 | 9.78 | 6.84 | 2.37 | |
| 12:18 | 15 | 200 | 0.80 | 92.5 | 192.0 | 7.41 | 0.813 | 9.66 | 6.90 | 1.81 | |
| 12:23 | 20 | 200 | 1.06 | 52.7 | 188.0 | 7.40 | 0.813 | 9.57 | 6.95 | 1.52 | |
| 12:28 | 25 | 200 | 1.33 | 36.8 | 183.0 | 7.40 | 0.813 | 9.57 | 6.95 | 1.31 | |
| 12:33 | 30 | 200 | 1.59 | 31.8 | 179.0 | 7.39 | 0.812 | 9.58 | 6.95 | 1.17 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-25 |
| Date: | 4/20/12 | Sampled By: | P. Krupin | | |
| Sampling Time: | 9:30 | Recorded By: | P. Krupin | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 10' to 20' |
| Total Depth: | 18.62' | Pump intake depth: | 15' |
| Depth to Water: | 11.25' | | |
| Water Column: | 7.37 | Total Volume Purged: | 1 gallon |
| Gallons/Foot: | 0.163 | Pump on: | 8:50 Off: 11:05 |
| Gallons in Well: | 1.20 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8:55 | 5 | 100 | 0.13 | 307.0 | 121.0 | 6.59 | 0.280 | 14.30 | 11.39 | 14.09 | |
| 9:00 | 10 | 100 | 0.26 | 194.0 | 138.0 | 6.65 | 0.297 | 14.00 | 11.49 | 13.88 | |
| 9:05 | 15 | 100 | 0.39 | 107.0 | 179.0 | 7.24 | 0.658 | 13.20 | 11.52 | 7.70 | |
| 9:10 | 20 | 100 | 0.52 | 40.2 | 150.0 | 7.36 | 0.660 | 12.40 | 11.59 | 7.16 | |
| 9:15 | 25 | 100 | 0.65 | 25.0 | 139.0 | 7.38 | 0.663 | 12.10 | 11.70 | 7.00 | |
| 9:20 | 30 | 100 | 0.78 | 24.6 | 136.0 | 7.38 | 0.658 | 12.00 | 11.76 | 6.91 | |
| 9:25 | 35 | 100 | 0.91 | 24.1 | 135.0 | 7.39 | 0.652 | 12.10 | 11.80 | 6.84 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Increasing during sampling |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-26 |
| Date: | 4/20/12 | Sampled By: | P. Krupin | | |
| Sampling Time: | 14:30 | Recorded By: | P. Krupin | | |
| Weather: | Sunny, 70s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 10' to 20' |
| Total Depth: | 28.87' | Pump intake depth: | 15' |
| Depth to Water: | 11.92' | | |
| Water Column: | 16.05' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 13:50 Off: 15:25 |
| Gallons in Well: | 2.76 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:55 | 5 | 200 | 0.27 | 207.0 | 184.0 | 7.61 | 0.042 | 21.20 | 11.60 | 11.61 | |
| 14:00 | 10 | 200 | 0.53 | 124.0 | 195.0 | 7.42 | 0.040 | 21.00 | 11.62 | 11.18 | |
| 14:05 | 15 | 200 | 0.80 | 123.0 | 235.0 | 6.46 | 0.109 | 18.60 | 11.63 | 10.37 | |
| 14:10 | 20 | 200 | 1.06 | 99.0 | 235.0 | 6.30 | 0.113 | 17.60 | 11.63 | 10.06 | |
| 14:15 | 25 | 200 | 1.33 | 50.6 | 232.0 | 6.21 | 0.113 | 17.40 | 11.65 | 9.60 | |
| 14:20 | 30 | 200 | 1.59 | 49.4 | 232.0 | 6.21 | 0.113 | 17.30 | 11.69 | 9.56 | |
| 14:25 | 35 | 200 | 1.86 | 49.2 | 231.0 | 6.20 | 0.109 | 17.30 | 11.69 | 9.47 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-27 |
| Date: | 4/25/12 | Sampled By: | E. Black | | |
| Sampling Time: | 11:50 | Recorded By: | E.Black | | |
| Weather: | Overcast, 50s | Replicate/Split: | MS/MSD(042512) | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 24.5' to 39.5' |
| Total Depth: | 40.36' | Pump intake depth: | 36' |
| Depth to Water: | 15.09' | | |
| Water Column: | 25.27' | Total Volume Purged: | 9 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 9:40 Off: 14:26 |
| Gallons in Well: | 4.20 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:50 | 10 | 250 | 0.66 | 996.0 | 24.0 | 5.58 | 0.396 | 10.14 | 15.20 | 1.69 | |
| 9:55 | 15 | 250 | 0.99 | 947.0 | 32.0 | 5.46 | 0.392 | 10.14 | 15.23 | 1.44 | |
| 10:00 | 20 | 250 | 1.32 | 686.0 | 40.0 | 5.39 | 0.388 | 10.16 | 15.24 | 1.15 | |
| 10:05 | 25 | 250 | 1.65 | 461.0 | 44.0 | 5.33 | 0.390 | 10.21 | 15.23 | 0.93 | |
| 10:10 | 30 | 250 | 1.98 | 317.0 | 44.0 | 5.35 | 0.386 | 10.13 | 15.23 | 0.84 | |
| 10:15 | 35 | 250 | 2.31 | 282.00 | 47.0 | 5.30 | 0.386 | 10.09 | 15.23 | 0.74 | |
| 10:20 | 40 | 250 | 2.64 | 225.00 | 47.0 | 5.29 | 0.385 | 10.14 | 15.23 | 0.65 | |
| 10:50 | 70 | 250 | 4.62 | 83.1 | 45.0 | 5.32 | 0.384 | 10.43 | 15.23 | 0.40 | |
| 10:55 | 75 | 250 | 4.95 | 98.9 | 45.0 | 5.32 | 0.386 | 10.44 | 15.23 | 0.38 | |
| 11:00 | 80 | 250 | 5.28 | 112.0 | 4.0 | 5.27 | 0.383 | 10.55 | 15.23 | 0.36 | |
| 11:05 | 85 | 250 | 5.61 | 96.9 | 45.0 | 5.27 | 0.384 | 10.39 | 15.23 | 0.35 | |
| 11:10 | 90 | 225 | 5.94 | 103.0 | 46.0 | 5.29 | 0.383 | 10.26 | 15.23 | 0.34 | |
| 11:15 | 95 | 225 | 6.27 | 97.3 | 43.0 | 5.29 | 0.382 | 10.29 | 15.23 | 0.33 | |
| 11:20 | 100 | 225 | 6.60 | 72.1 | 45.0 | 5.29 | 0.381 | 10.37 | 15.23 | 0.31 | |
| 11:25 | 105 | 225 | 6.93 | 60.2 | 43.0 | 5.29 | 0.380 | 10.4 | 15.23 | 0.30 | |
| 11:30 | 110 | 225 | 7.26 | 92.7 | 44.0 | 5.29 | 0.381 | 10.37 | 15.23 | 0.30 | |
| 11:35 | 115 | 225 | 7.59 | 52.3 | 41.0 | 5.32 | 0.380 | 10.35 | 15.23 | 0.29 | |
| 11:40 | 120 | 225 | 7.92 | 50.1 | 43.0 | 5.31 | 0.379 | 10.38 | 15.23 | 0.28 | |
| 11:45 | 125 | 225 | 8.25 | 48.9 | 41.0 | 5.32 | 0.379 | 10.33 | 15.23 | 0.28 | |

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-28 |
| Date: | 4/17/12 | Sampled By: | P. Krupin | | |
| Sampling Time: | 10:30 | Recorded By: | P. Krupin | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**:NT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**IG INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From to |
| Total Depth: | 18.61' | Pump intake depth: | 15' |
| Depth to Water: | 1.65' | | |
| Water Column: | 16.96' | Total Volume Purged: | 3 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 9:30 Off: 11:00 |
| Gallons in Well: | 2.76 | | |

FIELD PARAMETERS

| Time | Minutes apsed | Rate (ml/m) | Gallons Purged | Turbidity | REDOX (mV) | pH | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:40 | 10 | 200 | 0.53 | 649.0 | 7.0 | 7.11 | 0.970 | 16.10 | 1.67 | 3.22 | |
| 9:45 | 15 | 200 | 0.80 | 658.0 | 27.0 | 7.03 | 0.981 | 14.20 | 1.70 | 1.57 | |
| 9:50 | 20 | 200 | 1.06 | 214.0 | 58.0 | 7.00 | 0.997 | 13.60 | 1.73 | 1.52 | |
| 9:55 | 25 | 200 | 1.33 | 137.0 | 97.0 | 6.98 | 1.030 | 12.70 | 1.92 | 1.38 | |
| 10:00 | 30 | 200 | 1.59 | 96.0 | 95.0 | 7.00 | 1.030 | 12.20 | 1.72 | 1.29 | |
| 10:05 | 35 | 200 | 1.86 | 77.8 | 94.0 | 7.01 | 1.030 | 12.10 | 1.72 | 1.38 | |
| 10:10 | 40 | 200 | 2.12 | 59.7 | 93.0 | 7.01 | 1.010 | 12.10 | 1.72 | 1.20 | |
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**ATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-29 |
| Date: | 5/11/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 13:10 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**:NT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**IG INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From to |
| Total Depth: | 34.47' | Pump intake depth: | 32' |
| Depth to Water: | 5.51' | | |
| Water Column: | 28.96' | Total Volume Purged: | 5 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 11:45 Off: 13:47 |
| Gallons in Well: | 4.72 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity | REDOX (mV) | pH | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:45 | 0 | 150 | 0.53 | 0.0 | 110.0 | 5.72 | 0.131 | 19.26 | 5.50 | 5.72 | |
| 11:50 | 5 | 150 | 0.80 | 0.0 | 114.0 | 3.27 | 0.128 | 18.69 | 5.51 | 3.27 | |
| 11:55 | 10 | 150 | 1.06 | 222.0 | 118.0 | 7.10 | 0.131 | 18.35 | 5.51 | 2.58 | |
| 12:00 | 15 | 150 | 1.33 | 870.0 | 117.0 | 7.08 | 0.134 | 18.28 | 5.51 | 2.29 | |
| 12:05 | 20 | 150 | 1.59 | 540.0 | 116.0 | 7.08 | 0.136 | 18.30 | 5.51 | 2.08 | |
| 12:10 | 25 | 150 | 1.86 | 364.0 | 111.0 | 7.11 | 0.137 | 18.43 | 5.51 | 1.99 | |
| 12:15 | 30 | 150 | 2.12 | 242.0 | 110.0 | 7.09 | 0.136 | 18.62 | 5.51 | 1.90 | |
| 12:45 | 60 | 150 | 3.70 | 84.0 | 111.0 | 6.77 | 0.153 | 12.42 | 5.51 | 1.37 | |
| 12:50 | 65 | 150 | 3.96 | 70.3 | 116.0 | 6.77 | 0.151 | 12.62 | 5.51 | 1.38 | |
| 12:55 | 70 | 150 | 4.22 | 57.4 | 120.0 | 6.77 | 0.151 | 12.40 | 5.51 | 1.34 | |
| 13:00 | 75 | 150 | 4.49 | 50.0 | 122.0 | 6.77 | 0.151 | 12.61 | 5.51 | 1.31 | |
| 13:05 | 80 | 150 | 4.75 | 46.5 | 123.0 | 6.71 | 0.151 | 12.82 | 5.51 | 1.30 | |

**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-30A |
| Date: | 5/10/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 15:50 | Recorded By: | K.Lepkowski | | |
| Weather: | Overcast, 60s | Replicate/Split: | None | | |

**:NT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**IG INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** | | |
| Casing Diameter: | 2" | Screen Interval: | From 8' | to | 18' |
| Total Depth: | 20.70' | Pump intake depth: | 18' | | |
| Depth to Water: | 17.66' | | | | |
| Water Column: | 3.04 | Total Volume Purged: | 2.5 gallons | | |
| Gallons/Foot: | 0.163 | Pump on: | 15:14 | Off: | 16:35 |
| Gallons in Well: | 0.50 | | | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity | REDOX (mV) | pH | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15:14 | 0 | 200 | 0.00 | 46.1 | -64.0 | 7.88 | 0.395 | 14.50 | | 8.74 | |
| 15:19 | 5 | 200 | 0.27 | 18.2 | -42.0 | 7.07 | 0.387 | 12.47 | | 11.15 | |
| 15:24 | 10 | 200 | 0.53 | 9.2 | 17.0 | 6.89 | 0.374 | 12.00 | | 8.03 | |
| 15:29 | 15 | 200 | 0.80 | 11.1 | 32.0 | 6.76 | 0.375 | 11.99 | | 10.75 | Pump |
| 15:34 | 20 | 200 | 1.06 | 26.1 | 39.0 | 6.70 | 0.369 | 11.73 | | 9.53 | obstructing |
| 15:39 | 25 | 200 | 1.33 | 0.0 | 48.0 | 6.61 | 0.387 | 11.47 | | 8.24 | DTW @ |
| 15:44 | 30 | 200 | 1.59 | 0.0 | 48.0 | 6.63 | 0.383 | 11.27 | | 8.20 | 17.51' |
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**ATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | On-site poly tank |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-30B |
| Date: | 5/11/12 | Sampled By: | K.Lepkowski | | |
| Sampling Time: | 10:37 | Recorded By: | K.Lepkowski | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**:NT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**IG INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** | | |
| Casing Diameter: | 2" | Screen Interval: | From 21 | to | 36 |
| Total Depth: | 38.50' | Pump intake depth: | 30' | | |
| Depth to Water: | 17.79' | | | | |
| Water Column: | 20.71 | Total Volume Purged: | 2 gallons | | |
| Gallons/Foot: | 0.163 | Pump on: | 10:05 | Off: | 11:10 |
| Gallons in Well: | 3.38 | | | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity | REDOX (mV) | pH | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:05 | 0 | 200 | 0.05 | 108.0 | 125.0 | 7.50 | 0.379 | 13.24 | 18.00 | 3.68 | |
| 10:10 | 5 | 200 | 0.27 | 126.0 | 120.0 | 6.86 | 0.392 | 12.21 | 18.02 | 2.24 | |
| 10:15 | 10 | 200 | 0.53 | 41.3 | 110.0 | 6.69 | 0.388 | 11.88 | 18.06 | 1.61 | |
| 10:20 | 15 | 200 | 0.80 | 7.5 | 104.0 | 6.60 | 0.389 | 11.77 | 18.09 | 1.39 | |
| 10:25 | 20 | 200 | 1.06 | 0.0 | 95.0 | 6.61 | 0.387 | 11.76 | 18.11 | 1.22 | |
| 10:30 | 25 | 200 | 1.33 | 0.0 | 91.0 | 6.56 | 0.389 | 11.78 | 18.11 | 1.12 | |
| 10:35 | 30 | 200 | 1.59 | 0.0 | 86.0 | 6.57 | 0.390 | 11.72 | 18.11 | 1.03 | |
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**ATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | On-site Poly Tank |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | OB-30C |
| Date: | 5/9/12 | Sampled By: | H. Culton/ K.Lepkowski | | |
| Sampling Time: | 13:50 | Recorded By: | H. Culton/ K.Lepkowski | | |
| Weather: | Overcast, 60s | Replicate/Split: | None | | |

**:NT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**IG INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** | | |
| Casing Diameter: | 2" | Screen Interval: | From 40' | to | 50' |
| Total Depth: | 52.15' | Pump intake depth: | 45' | | |
| Depth to Water: | 17.30' | | | | |
| Water Column: | 34.85' | Total Volume Purged: | 3.5 gallons | | |
| Gallons/Foot: | 0.163 | Pump on: | 12:44 | Off: | 14:21 |
| Gallons in Well: | 5.68 | | | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity | REDOX (mV) | pH | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:44 | 0 | 200 | 0.00 | 107.0 | 136.0 | 9,41 | 0.413 | 16.60 | 17.80 | 3.45 | |
| 12:49 | 5 | 200 | 0.27 | 86.0 | 135.0 | 8.84 | 0.412 | 14.22 | 18.46 | 2.29 | |
| 12:54 | 10 | 200 | 0.53 | 109.0 | 136.0 | 8.55 | 0.418 | 13.70 | 19.52 | 1.74 | |
| 12:59 | 15 | 200 | 0.80 | 110.0 | 128.0 | 8.37 | 0.417 | 13.56 | 20.26 | 1.52 | |
| 13:04 | 20 | 200 | 1.10 | 124.0 | 116.0 | 8.27 | 0.418 | 13.50 | 21.12 | 1.35 | |
| 13:09 | 25 | 200 | 1.32 | 149.0 | 96.0 | 8.21 | 0.417 | 13.63 | 21.81 | 1.21 | |
| 13:14 | 30 | 200 | 1.58 | 121.0 | 83.0 | 8.18 | 0.417 | 13.61 | 22.36 | 1.15 | |
| 13:44 | 60 | 200 | 3.20 | 33.9 | -27.0 | 8.07 | 0.425 | 13.38 | 24.40 | 0.89 | |
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**ATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | On site poly tank |
| Color: | Clear | Turbidity(qualitative): | None |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-1(64-74) |
| Date: | 4/17/12 | Sampled By: | C.Cifelli/ D. Kirschner | | |
| Sampling Time: | 12:40 | Recorded By: | C.Cifelli/ D. Kirschner | | |
| Weather: | Sunny, 70s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 64' to 74' |
| Total Depth: | 149' | Pump intake depth: | 64' |
| Depth to Water: | 10.83' | | |
| Water Column: | 138.17 | Total Volume Purged: | 1550 ml + sample |
| Gallons/Foot: | 0.041 | Pump on: | 11:00 Off: 16:05 |
| Gallons in Well: | 0.41 | Gas Pressure: | 30psi Discharge/Recharge Ra 10 sec/ 1 min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:40 | 100 | 25 | NA | 0 | -91 | 8.7 | 0.226 | 21.64 | - | 13.74 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | None | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-1(131-141) |
| Date: | 4/17/12 | Sampled By: | C.Cifelli/ D. Kirschner | | |
| Sampling Time: | 10:55 | Recorded By: | C.Cifelli/ D. Kirschner | | |
| Weather: | Sunny, 70s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 131' to 141' |
| Total Depth: | 149' | Pump intake depth: | 131' |
| Depth to Water: | 10.41' | | |
| Water Column: | 138.59 | Total Volume Purged: | 1750 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: 10:19 | Off: 13:20 |
| Gallons in Well: | 0.41 | Gas Pressure: 60psi | Discharge/Recharge Ra 10s/ 1 min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:51 | 32 | 125 | NA | 0 | -22.0 | 6.75 | 0.613 | 15.84 | NM | 18.03 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | None | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-2(279-289) |
| Date: | 5/8/12 | Sampled By: | K.Lepkowski/H. Culton | | |
| Sampling Time: | 11:10 | Recorded By: | K.Lepkowski/H. Culton | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** | | |
| Casing Diameter: | 1" | Screen Interval: | From 279' | to | 289' |
| Total Depth: | 473' | Pump intake depth: | 279' | | |
| Depth to Water: | 12.18' | | | | |
| Water Column: | 460.82' | Total Volume Purged: | 1600 milliliters + sample | | |
| Gallons/Foot: | 0.041 | Pump on: | 10:53 | Off: | 14:40 |
| Gallons in Well: | 0.41 | Gas Pressure: | 120ps | Discharge/Recharge Ra | 5 sec/1 min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:10 | 17 | 150 | NA | 0 | -89.0 | 11.45 | 2.230 | 14.69 | NM | 15.32 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Air fitting rusted- threading bad | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-2(452-462) |
| Date: | 5/9/12 | Sampled By: | K.Lepkowski/ H.Culton | | |
| Sampling Time: | DRY | Recorded By: | K.Lepkowski/ H.Culton | | |
| Weather: | Overcast, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 452' to 462' |
| Total Depth: | 473' | Pump intake depth: | 452' |
| Depth to Water: | 12.35' | | |
| Water Column: | 460.65' | Total Volume Purged: | 1000 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 9:40 Off: 11:30 |
| Gallons in Well: | 0.41 | Gas Pressure: | Discharge/Recharge Rate: |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| 5/10/12 | 220 psi ; 45 sec/ 30 secs collected all samples except Nitrogen gas ran out, will need at least 4 tanks | | | | | | | | | | |
| | | | | | | | | | | | |
| 5/16/12 | Collected remaining samples | | | | | | | | | | |
| 11:38 | 128 | | | 0 | -23 | 11.37 | 2.05 | 23.21 | | 13.71 | |
| 5/16/12 | Collected remaining samples | | | | | | | | | | |
| NOTE: | To avoid air line from blowing off line, tape air line to fitting with electrical tape then put on small band clamp to seal leaks. | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Changed air fitting | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-3(77-87) |
| Date: | 4/27/12 | Sampled By: | C. Cifelli | | |
| Sampling Time: | 10:00 | Recorded By: | C. Cifelli | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 77' to 87' |
| Total Depth: | 100' | Pump intake depth: | 77' |
| Depth to Water: | 14.56' | | |
| Water Column: | 85.44' | Total Volume Purged: | 1600 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 9:21 Off: 12:00 |
| Gallons in Well: | 0.41 | Gas Pressure: | 30psi Discharge/Recharge Ra 12 secs/1 min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:54 | 33 | 100 | NA | 0 | -64.0 | 7.18 | 0.346 | 12.31 | NM | 1.51 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Onsite Poly Tank |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-3DD(175-180) |
| Date: | 4/30/12 | Sampled By: | K.Lepkowski/G. Giannuario | | |
| Sampling Time: | 11:45 | Recorded By: | K.Lepkowski/G. Giannuario | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 155' to 160' |
| Total Depth: | 180' | Pump intake depth: | 155' |
| Depth to Water: | 15.91' | | |
| Water Column: | 139.09' | Total Volume Purged: | 1600 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 9:28 Off: 17:00 |
| Gallons in Well: | 0.41 | Gas Pressure: | 75psi Discharge/Recharge Ra 10 s / 1 min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:45 | 137 | 75 | NA | 0 | -84.0 | 12.01 | 2.340 | 16.89 | NM | 13.21 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | None |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-3DD(175-180) |
| Date: | 4/30/12 | Sampled By: | K.Lepkowski/ G. Giannuario | | |
| Sampling Time: | 10:00 | Recorded By: | K.Lepkowski/ G. Giannuario | | |
| Weather: | Sunny, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 175' to 180' |
| Total Depth: | 155' | Pump intake depth: | 175' |
| Depth to Water: | 16.15' | | |
| Water Column: | 163.85' | Total Volume Purged: | 1600 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 9:34 Off: 13:20 |
| Gallons in Well: | 0.41 | Gas Pressure: | 85psi Discharge/Recharge Ra 10 s/ 1 min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:58 | 24 | 150 | NA | 0 | -297.0 | 12.02 | 1.450 | 13.16 | NM | 0.75 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Yellow | Turbidity(qualitative): | |
| Odor: | None | Other (OVA, HNU,etc.): | None |



R2-0005076

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-4(333-343) |
| Date: | 4/25/12 | Sampled By: | C. Cifelli/ D. Kirschner | | |
| Sampling Time: | 10:45 | Recorded By: | C. Cifelli/ D. Kirschner | | |
| Weather: | Sunny, 50s | Replicate/Split: | N/A | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 333' to 343' |
| Total Depth: | 403' | Pump intake depth: | 333' |
| Depth to Water: | 30.06' | | |
| Water Column: | 372.94' | Total Volume Purged: | 1600 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 10:30 Off: 12:29 |
| Gallons in Well: | 0.41 | Gas Pressure: | 110psi Discharge/Recharge Ra 10s/ 50 s |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:40 | 10 | 150 | NA | 0 | -32 | 12.22 | 1.20 | 12.89 | NM | 15.19 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Onsite Poly Tank |
| Color: | Clear | Turbidity(qualitative): | Good |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-4(393-403) |
| Date: | 4/16/12 | Sampled By: | C. Cifelli | | |
| Sampling Time: | 9:50 | Recorded By: | C.Cifelli | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 393' to 403' |
| Total Depth: | 403' | Pump intake depth: | 393' |
| Depth to Water: | 29.90' | | |
| Water Column: | 373.10' | Total Volume Purged: | 1600 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 9:25 Off: 13:30 |
| Gallons in Well: | 0.41 | Gas Pressure: | 170ps Discharge/Recharge Ra 15s/45s |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:48 | 23 | 100 | NA | 0 | 207.0 | 6.89 | 0.244 | 10.64 | NM | 4.96 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | good | Purge Water Disposal: | Onsite Poly Tank |
| Color: | clear | Turbidity(qualitative): | Good |
| Odor: | none | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-4A(62-72) |
| Date: | 4/25/12 | Sampled By: | C. Cifelli/ G.Giannuario | | |
| Sampling Time: | 12:40 | Recorded By: | C. Cifelli/ G.Giannuario | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 62' to 72' |
| Total Depth: | 72' | Pump intake depth: | 62' |
| Depth to Water: | 14.40' | | |
| Water Column: | 57.60' | Total Volume Purged: | 1675 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 12:05 Off: 14:52 |
| Gallons in Well: | 0.41 | Gas Pressure: | 25psi Discharge/Recharge Ra 10 s/ 1 min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:34 | 30 | 125 | | 0 | 20.0 | 9.69 | 0.157 | 13.69 | NM | 15.05 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Poly Tank Onsit |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-4A(113-123) |
| Date: | 4/25/12 | Sampled By: | GG/CC | | |
| Sampling Time: | 14:15 | Recorded By: | GG/CC | | |
| Weather: | Cloudy, 50's | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 113' to 123' |
| Total Depth: | 123' | Pump intake depth: | 113 |
| Depth to Water: | 31.39' | | |
| Water Column: | 91.61' | Total Volume Purged: | 1600 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 13:30 Off: 15:58 |
| Gallons in Well: | 0.41 | Gas Pressure: | 55psi Discharge/Recharge Ra 10s/1min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 14:10 | 40 | 125 | NA | 0 | 68.0 | 8.07 | 0.160 | 12.20 | | 14.82 | |
| | | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

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|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | on site tank |
| Color: | Clear | Turbidity(qualitative): | |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-5 |
| Date: | 4/26/12 | Sampled By: | C. Goldsmith | | |
| Sampling Time: | 10:00 | Recorded By: | C. Goldsmith | | |
| Weather: | Cloudy, ~55F | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 99' to 119' |
| Total Depth: | 121.82' | Pump intake depth: | 110 |
| Depth to Water: | 12.21 | | |
| Water Column: | 109.61 | Total Volume Purged: | 10 Liters |
| Gallons/Foot: | 0.163 | Pump on: 9:05 | Off: 12:40 |
| Gallons in Well: | 17.54 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | L Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:15 | 10 | 200 | 2 | 15.3 | 159.0 | 7.63 | 0.502 | 10.31 | 12.58 | 4.34 | |
| 9:20 | 15 | 200 | 3 | 11.3 | -119.0 | 7.77 | 0.522 | 9.37 | 12.61 | 3.74 | |
| 9:25 | 20 | 200 | 4 | 7.8 | -143.0 | 7.75 | 0.510 | 9.30 | 12.64 | 3.45 | |
| 9:30 | 25 | 200 | 5 | 7.2 | -148.0 | 7.77 | 0.499 | 9.30 | 12.67 | 3.30 | |
| 9:35 | 30 | 200 | 6 | 6.6 | -155.0 | 7.83 | 0.478 | 9.27 | 12.67 | 3.12 | |
| 9:40 | 35 | 200 | 7 | 0.0 | -161.0 | 7.87 | 0.465 | 9.31 | 12.67 | 2.99 | |
| 9:45 | 40 | 200 | 8 | 0.0 | -165.0 | 7.99 | 0.457 | 9.33 | 12.67 | 2.89 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | No odor | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-5A |
| Date: | 4/25/12 | Sampled By: | C. Goldsmith | | |
| Sampling Time: | 10:45 | Recorded By: | C. Goldsmith | | |
| Weather: | Sunny, ~60F | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 54' to 74' |
| Total Depth: | 75.60' | Pump intake depth: | 65 |
| Depth to Water: | 12.04' | | |
| Water Column: | 63.56' | Total Volume Purged: | 13.5 liters |
| Gallons/Foot: | 0.163 | Pump on: | 9:40 Off: 12:45 |
| Gallons in Well: | 10.40 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | L Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:50 | 10 | 250 | 1.00 | 1.28 | 93.0 | 5.26 | 0.666 | 9.83 | 13.35 | 0.98 | |
| 9:55 | 15 | 250 | 2.25 | 87.70 | 94.0 | 5.25 | 0.661 | 9.73 | 13.71 | 0.87 | |
| 10:00 | 20 | 250 | 3.50 | 67.60 | 98.0 | 5.19 | 0.637 | 9.82 | 14.31 | 0.70 | |
| 10:05 | 25 | 250 | 4.75 | 56.50 | 99.0 | 5.15 | 0.618 | 10.20 | 14.82 | 0.68 | |
| 10:10 | 30 | 250 | 6.00 | 51.50 | 101.0 | 5.12 | 0.609 | 10.11 | 14.85 | 0.76 | |
| 10:15 | 35 | 250 | 7.25 | 49.70 | 103.0 | 5.08 | 0.595 | 10.16 | 14.98 | 0.74 | |
| 10:20 | 40 | 250 | 8.50 | 41.60 | 100.0 | 5.13 | 0.574 | 10.41 | 15.09 | 0.70 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |



R2-0005082

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-6 |
| Date: | 4/27/12 | Sampled By: | GG | | |
| Sampling Time: | 9:45 | Recorded By: | GG | | |
| Weather: | Sunny, 50'sF | Replicate/Split: | | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | Screen Interval: | From 99' to 119' |
| Total Depth: | 120' | Pump intake depth: | |
| Depth to Water: | 13.15' | | |
| Water Column: | 106.85' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 9:05 Off: 11:15 |
| Gallons in Well: | 17.42 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:10 | 5 | 200 | 0.27 | 162.0 | 705.0 | 6.68 | 0.447 | 11.18 | 13.15 | 3.21 | |
| 9:15 | 10 | 200 | 0.53 | 65.8 | 121.0 | 6.95 | 0.438 | 10.74 | 13.23 | 1.36 | |
| 9:20 | 15 | 200 | 0.80 | 46.2 | 95.0 | 6.96 | 0.438 | 10.68 | 13.23 | 1.10 | |
| 9:25 | 20 | 200 | 1.06 | 33.2 | 47.0 | 6.96 | 0.438 | 10.65 | 13.23 | 0.96 | |
| 9:30 | 25 | 200 | 1.33 | 23.4 | -4.0 | 6.97 | 0.439 | 10.80 | 13.23 | 0.87 | |
| 9:35 | 30 | 200 | 1.59 | 20.1 | -6.0 | 6.98 | 0.438 | 10.75 | 13.24 | 0.81 | |
| 9:40 | 35 | 200 | 1.86 | 20.7 | -10.0 | 6.98 | 0.438 | 10.70 | 13.24 | 0.80 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Poly tank on-site |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-6A |
| Date: | 4/27/12 | Sampled By: | K. Lepkowski | | |
| Sampling Time: | 9:38 | Recorded By: | K. Lepkowski | | |
| Weather: | Sunny, 50's | Replicate/Split: | | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 6" | Screen Interval: | From 58' to 78' |
| Total Depth: | 80.81' | Pump intake depth: | 60' |
| Depth to Water: | 13.70' | | |
| Water Column: | 67.11' | Total Volume Purged: | 2 gallons |
| Gallons/Foot: | 1.47 | Pump on: | 9:06 Off: 10:51 |
| Gallons in Well: | 94.24 | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:06 | | 200 | 0.05 | 0.0 | -48.0 | 6.89 | 0.499 | 12.80 | 14.03 | 3.84 | |
| 9:11 | 5 | 200 | 0.31 | 0.00 | -44.0 | 6.38 | 0.502 | 11.70 | 14.30 | 2.42 | |
| 9:16 | 10 | 200 | 0.58 | 0.00 | -51.0 | 6.48 | 0.502 | 11.43 | 14.37 | 2.22 | |
| 9:21 | 15 | 200 | 0.84 | 0.00 | -56.0 | 6.46 | 0.503 | 11.23 | 14.41 | 2.08 | |
| 9:26 | 20 | 200 | 1.11 | 0.00 | -60.0 | 6.57 | 0.504 | 11.16 | 14.41 | 1.99 | |
| 9:31 | 25 | 200 | 1.37 | 0.00 | -60.0 | 6.56 | 0.512 | 11.11 | 14.41 | 1.88 | |
| 9:36 | 30 | 200 | 1.64 | 0.00 | -51.0 | 6.56 | 0.517 | 11.05 | 14.41 | 1.87 | |

**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Good | | Purge Water Disposal: | To Ground |
| Clear | | Turbidity(qualitative): | Clear |
| No Odor | | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-7 |
| Date: | 4/24/12 | Sampled By: | GG | | |
| Sampling Time: | 12:30 | Recorded By: | GG | | |
| Weather: | Sunny,40's | Replicate/Split: | | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** | | |
| Casing Diameter: | 2" | Screen Interval: | From 99' | to | 119' |
| Total Depth: | 121.51' | Pump intake depth: | 110' | | |
| Depth to Water: | 2.66' | | | | |
| Water Column: | 118.85' | Total Volume Purged: | 2 gallons | | |
| Gallons/Foot: | 0.163 | Pump on: | 11:55 | Off: | 13:50 |
| Gallons in Well: | 19.37 | | | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:00 | 5 | 200 | 0.26 | 7.0 | 199.0 | 6.52 | 0.107 | 15.20 | 2.65 | 4.55 | |
| 12:05 | 10 | 200 | 0.53 | 0.0 | 189.0 | 6.56 | 0.107 | 14.46 | 2.65 | 3.59 | |
| 12:10 | 15 | 200 | 0.79 | 0.0 | 181.0 | 6.54 | 0.109 | 13.84 | 2.67 | 3.35 | |
| 12:15 | 20 | 200 | 1.10 | 0.0 | 182.0 | 6.53 | 0.108 | 13.47 | 2.68 | 3.24 | |
| 12:20 | 25 | 200 | 1.32 | 0.0 | 183.0 | 6.54 | 0.106 | 13.35 | 2.68 | 3.22 | |
| 12:25 | 30 | 200 | 1.60 | 0.0 | 182.0 | 6.54 | 0.107 | 13.39 | 2.69 | 3.26 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-8(163-173) |
| Date: | 5/2/12 | Sampled By: | KL/GG | | |
| Sampling Time: | 12:35 | Recorded By: | KL/GG | | |
| Weather: | Cloudy, rain, 50's | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 163' to 173' |
| Total Depth: | 220' | Pump intake depth: | |
| Depth to Water: | 173' | | |
| Water Column: | 112.87 | Total Volume Purged: | 1600 milliliters + sample |
| Gallons/Foot: | 0.041 | Pump on: | 11:25 Off: 12:53 |
| Gallons in Well: | 0.41 | Gas Pressure: | 75psi Discharge/Recharge Ra: 10s/1min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:33 | 68 | 30 | | 0 | 4.0 | 9.93 | 0.621 | 13.22 | | 15.98 | |
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* Note samples were collected from 6/23/2010 to 6/28/2010.

**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Poly tank on-site |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |

Collected (1) 40mL VOC vial

12:40 - well dry. Gave it 10+ mins to recharge
12:53 - well dry. Pump off.

5/3/2012
-pump on @ 9:18
-sample time 9:20
-increased discharge to 12 sec @ 14:20
-increased pressure to 100psi @ 15:40
-pump off @ 16:48

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-8(204-214) |
| Date: | 5/2/12 | Sampled By: | KL/GG | | |
| Sampling Time: | | Recorded By: | KL/GG | | |
| Weather: | Rainy, 50's | Replicate/Split: | | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 204' to 214' |
| Total Depth: | 220' | Pump intake depth: | |
| Depth to Water: | Dry | | |
| Water Column: | | Total Volume Purged: | 0 milliliters |
| Gallons/Foot: | 0.041 | Pump on: | 11:00 Off: 11:19 |
| Gallons in Well: | 0.41 | Gas Pressure: | 95psi Discharge/Recharge Ra: 10s/1min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
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| | | | | | | | | | | | |
| | | | | | None - well dry | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | | Turbidity(qualitative): | |
| Odor: | | Other (OVA, HNU,etc.): | |

No water produced

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-8A(47-57) |
| Date: | 5/2/12 | Sampled By: | KL/GG | | |
| Sampling Time: | No Samply Dry | Recorded By: | KL/GG | | |
| Weather: | Rainy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** | | |
| Casing Diameter: | 1" | Screen Interval: | From 47' | to | 57' |
| Total Depth: | 65' | Pump intake depth: | 47' | | |
| Depth to Water: | Dry | | | | |
| Water Column: | | Total Volume Purged: | 0 | | |
| Gallons/Foot: | 0.041 | Pump on: | 13:00 | Off: | 13:15 |
| Gallons in Well: | 0.41 | Gas Pressure: | 35psi | Discharge/Recharge Ra: | Dry |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
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Well dry - no water purged at all.

**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | | Turbidity(qualitative): | |
| Odor: | | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-9(139-149) |
| Date: | 4/19/12 - 4/20/12 | Sampled By: | | | |
| Sampling Time: | Dry | Recorded By: | CC | | |
| Weather: | Sunny, 70s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 139' to 149' |
| Total Depth: | 220' | Pump intake depth: | 139' |
| Depth to Water: | 58.71' | | |
| Water Column: | 161.29' | Total Volume Purged: | ~700 milliters |
| Gallons/Foot: | 0.041 | Pump on: | 10:22 Off: 11:06 |
| Gallons in Well: | 0.41 | Gas Pressure: | ~70 Discharge/Recharge Ra: 10s/1min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| 11:06 | Well dried out after initial purge of ~700mL - No Sample | | | | | | | | | | |
| | | | | | | | | | | | |
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| | | | | | | | | | | | |
| 4/20/12 | No Sample - No overnight recharge to sample - No Sample | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | |

####### 10:32 - Pause pump charge line for gas - possible hole in tubing
10:40 - Pump back on increase discharge 20s
10:52 - Switch lines maybe central
10:57 - Back on 20s/1min up to 90psi line 2
11:06 - Dried out

####### 9:50 - Pump on @ 139-149 Line 2
9:53 - Pump off - DRY- Nitrogen gas with minimal water dropouts - NO SAMPLE

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-9(206-216) |
| Date: | 4/19/12, 4/20/12 | Sampled By: | | | |
| Sampling Time: | 10:20 ( 4/20/12) | Recorded By: | CC | | |
| Weather: | Sunny, 70 | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 206' to 216' |
| Total Depth: | 220' | Pump intake depth: | 206' |
| Depth to Water: | 53.62' | | |
| Water Column: | 166.38' | Total Volume Purged: | 2050.00 milliters |
| Gallons/Foot: | 0.041 | Pump on: | 4/19/12-10:00, 4/20/12 - 10:03 Off: 4/19/12 - 11:22, 4/20/12 - 10:43 |
| Gallons in Well: | 0.41 | Gas Pressure: | 100ps Discharge/Recharge Ra 10s/1min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25ml | | | | | | | | | |
| | | | | | | | | | | | |
| 4/19/2012 | | | | | | | | | | | |
| 11:22 | Well dried out after 2050mL - No readings due to N2/ drying out | | | | | | | | | | |
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* Note samples were collected from 6/23/2010 to 6/28/2010.

**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | No | Turbidity(qualitative): | Clear |
| Odor: | No | Other (OVA, HNU,etc.): | None |

####### 10:44 increase to 15s discharge
11:00 20s 18psi
11:20 ? Turn up pressure to 110psi

####### 10:07 pump on
10:20 sample 3 VOCs
metals- total little for sulfide
metals- dissolved
10:43 Pump off - DRY

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-9A(25-35) |
| Date: | | Sampled By: | | | |
| Sampling Time: | | Recorded By: | | | |
| Weather: | | Replicate/Split: | | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 25' to 35' |
| Total Depth: | 37.85' | Pump intake depth: | |
| Depth to Water: | DRY | | |
| Water Column: | | Total Volume Purged: | None |
| Gallons/Foot: | 0.041 | Pump on: | Off: |
| Gallons in Well: | 0.41 | Gas Pressure: | Discharge/Recharge Rate: |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | DRY | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | NA |
| Color: | NA | Turbidity(qualitative): | NA |
| Odor: | NA | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-9A(85-95) |
| Date: | 4/19/12, 4/20/12 | Sampled By: | | | |
| Sampling Time: | 4/20/2012 10:40 | Recorded By: | CC | | |
| Weather: | Sunny | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 85' to 95' |
| Total Depth: | 100' | Pump intake depth: | 85' |
| Depth to Water: | 54.14' | | |
| Water Column: | 45.86' | Total Volume Purged: | 275.00 milliters |
| Gallons/Foot: | 0.041 | Pump on: | 9:57/10:33 Off: 10:00/14:68 |
| Gallons in Well: | 0.41 | Gas Pressure: | 50psi Discharge/Recharge Ra: 10s/1min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| 4/19/12 | | | | | | | | | | | |
| 10:00 | | | | | | | | | | | |
| | Well dry after 275mL purged- No Sample taken on 4/19/12 | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 4/20/12 | Sample | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

4/20/12 10:33 Pump on — 50psi/ 10s/1min
10:40 Sample 3 VOCs — Line 2
Total metals
Dissolved metals
PCBs
SVOCs
14:08 Dried out as last chamber filled

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-10(120-130) |
| Date: | 4/18/12, 4/19/12 | Sampled By: | | | |
| Sampling Time: | 4/19/12, 12:15 | Recorded By: | CC | | |
| Weather: | Cloudy, 60's | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 120' to 130' |
| Total Depth: | 195' | Pump intake depth: | 120' |
| Depth to Water: | 40.21' | | |
| Water Column: | 154.79' | Total Volume Purged: | 1000.00 milliters |
| Gallons/Foot: | 0.041 | Pump on: | 10:08 Off: 10:39 |
| Gallons in Well: | 0.41 Zist | Gas Pressure: | 70psi Discharge/Recharge Ra: 10s/1min |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 10:39 | | | | | | | | | | | |
| | | | | | | | | | | | |
| | Well dried out - no sample collected at this time - will wait for recharge and come back to try to sample | | | | | | | | | | |
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* Note samples were collected from 6/23/2010 to 6/28/2010.

**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

4/18/12 13:50 Attempt to sample - well did not recharge - dry - no sample
13:51

4/19/12 Was able to sample at 70psi 10s/1min all but 1 PCB bottle (10 bottles)

5/4/12 Geochemical + isotope samples taken to replace 8s/9s
70psi
10sec/1min
Pump on: 9:44
Pump off: 15:00
Purge Volume: 1600ml
Sample time: 10:10

turned up pressure to 100psi

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-10(185-195) |
| Date: | 4/17/12 | Sampled By: | CC/DK | | |
| Sampling Time: | 11:00 | Recorded By: | CC/DK | | |
| Weather: | Cloudy, 60's | Replicate/Split: | MS/MSD (041712) | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 185' to 195' |
| Total Depth: | 195' | Pump intake depth: | 185' |
| Depth to Water: | 39.79' | | |
| Water Column: | 155.21' | Total Volume Purged: | 1600 Milliters + Sample |
| Gallons/Foot: | 0.041 | Pump on: | 10:44 Off: 13:52 |
| Gallons in Well: | 0.41 | Gas Pressure: | 90 Discharge/Recharge Ra 10/45 |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:00 | 16 | 125 | | 0 | -184.0 | 10.88 | 0.913 | 13.00 | | 8.20 | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 5/4/12 | | | | | | | | | | | |
| 12:00 | 10 | 125 | | 0 | -66.0 | 11.03 | 0.552 | 15.19 | | 15.45 | |
| | | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

5/4/2012 Geochemical + isotope samples taken to replace 8s/9s

90psi
10secs/1min

Pump on: 11:50
Pump off:13:20
Purge Volume: 1600ml
Sample time: 12:00

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-10A(51-61) |
| Date: | 4/18/12 | Sampled By: | CC/DK | | |
| Sampling Time: | 11:20 | Recorded By: | CC/DK | | |
| Weather: | Cloudy, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 51' to 61' |
| Total Depth: | 85' | Pump intake depth: | 51' |
| Depth to Water: | 36.50' | | |
| Water Column: | 48.50' | Total Volume Purged: | 1600 Milliliters |
| Gallons/Foot: | 0.041 | Pump on: | 11:07 Off: 13:20 |
| Gallons in Well: | 0.41 | Gas Pressure: | 30 Discharge/Recharge Ra 7/30s |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:40 | 33 | 25 | | 0 | -38.0 | 8.00 | 385.000 | -14.60 | | 7.76 | |
| | | | | | | | | | | | |
| 5/7/2012 | 86 | | | 0 | 107 | 8.02 | 0.517 | 14.31 | | 15.69 | |
| | Geochemical and Isotope Sample Grab | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

5/7/2012 RW-10A (51-61)
Sample info
Geochemical + isotope samples taken to replace E57/9s
Pump on: 9:53
Pump off: 14:44
Sample time:11:20
Discharge/Recharge: 10s/1min
Vol. purged: 1600ml

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-10A(75-85) |
| Date: | 4/18/12 | Sampled By: | CC/DK | | |
| Sampling Time: | 10:20 | Recorded By: | CC/DK | | |
| Weather: | Cloudy, 60s | Replicate/Split: | DUP (041812) | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 75' to 85' |
| Total Depth: | 85' | Pump intake depth: | 75' |
| Depth to Water: | 37.15' | | |
| Water Column: | 47.85' | Total Volume Purged: | 1550.00 milliers #NAME? |
| Gallons/Foot: | 0.041 | Pump on: | 9:58 Off: 12:35 |
| Gallons in Well: | 0.41 Zist | Gas Pressure: | 50 Discharge/Recharge Ra 12/30s |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:16 | 18 | 35 | | 0 | 195.0 | 6.16 | 0.440 | 12.71 | | 8.90 | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 5/7/12 | | | | | | | | | | | |
| 10:20 | 27 | | | 0.0 | 19.0 | 9.54 | 0.419 | 14.05 | | 16.07 | |
| | | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

5/7/12 Line 2 Geochemical & isotope sampling/to replace 8/9s (JC)

RW-10A (75-85)
Pump on 9:53
Pump off: 13:30
Sample time: 10:20
Discharge/recharge: 10sec/1min
Vol. purged: 1600ml


R2-0005096

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-11S(236-241) |
| Date: | 5/1/12 | Sampled By: | KL/GG | | |
| Sampling Time: | 9:10 | Recorded By: | KL/GG | | |
| Weather: | Rainy, 40s | Replicate/Split: | None DUP (050112) on Geochem lt and O tritium & Carbon 14 SF, CFCs, Radon | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 236' to 241' |
| Total Depth: | 241' | Pump intake depth: | 236' |
| Depth to Water: | 8.60' | | |
| Water Column: | 232.40' | Total Volume Purged: | 1600.00 milliers +sample |
| Gallons/Foot: | 0.041 | Pump on: | 9:00 Off: 11:30 |
| Gallons in Well: | 0.41 | Gas Pressure: | 118ps Discharge/Recharge Ra 10s/1min set at 100psi |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:06 | 6 | 125 | | 0.0 | -4.0 | 10.45 | 0.187 | 11.96 | NA | 5.70 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-11D(262-267) |
| Date: | 5/1/12 | Sampled By: | KL/GG | | |
| Sampling Time: | 11:50 | Recorded By: | KL/GG | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **ZIST System** |
| Casing Diameter: | 1" | Screen Interval: | From 262' to 267' |
| Total Depth: | 267' | Pump intake depth: | 262' |
| Depth to Water: | 9.33' | | |
| Water Column: | 257.67' | Total Volume Purged: | 1600.00 milliers + sample |
| Gallons/Foot: | 0.041 | Pump on: | 11:35 Off: 12:30 |
| Gallons in Well: | 0.41 | Gas Pressure: | 131ps Discharge/Recharge Rate: set at 110 |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:50 | 15 | 75 | | 0.0 | 9.0 | 11.11 | 0.911 | 12.00 | | 5.59 | water clear |
| | | | | | | | | | | | |
| 12:15 | 40 | 75 | | 0 | -91.0 | 12.51 | 4.860 | 11.63 | | 6.23 | Milky |
| | | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | To Ground |
| Color: | White | Turbidity(qualitative): | Clear |
| Odor: | | Other (OVA, HNU,etc.): | None |

Stopped sampling at 11:57 to change tank
Began purging at 12:10
*only sampled 2 sets of VOAs*
After re-purging, water was milky white - so took another reading
Well dry at 12:30

5/2/2012
Began sampling at 9:10
Set pressure at 100psi
Discharge/recharge= 10sec/1min
Trickling water

9:50
increased pressure to 120psi
discharge/recharge=12 secs/1min

10:30
Pump off

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-12(50-70) |
| Date: | 5/10/12 | Sampled By: | R. Kelly | | |
| Sampling Time: | 12:27 | Recorded By: | R. Kelly | | |
| Weather: | Overcast, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump with Packers** |
| Casing Diameter: | 2"/6" | Screen Interval: | From 50' to 70' |
| Total Depth: | 70' | Pump intake depth: | 68' |
| Depth to Water: | 3.93' | | |
| Water Column: | 66.07 | Total Volume Purged: | 3 gallons |
| Gallons/Foot: | 0.163/1.469 | Pump on: | 11:30 Off: 12:48 |
| Gallons in Well: | 37.50 | Gas Pressure: | Discharge/Recharge Rate: |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:40 | 10 | 200 | 0.53 | 39.1 | 6.0 | 6.45 | 0.599 | 13.42 | 7.80 | 4.54 | |
| 11:45 | 15 | 200 | 0.79 | 42.1 | -33.0 | 6.48 | 0.602 | 12.47 | 9.10 | 2.54 | |
| 11:50 | 20 | 250 | 1.10 | 49.8 | -80.0 | 6.66 | 0.598 | 12.31 | 9.43 | 1.69 | |
| 11:55 | 25 | 250 | 1.32 | 41.7 | -137.0 | 6.93 | 0.595 | 12.63 | 9.94 | 1.18 | |
| 12:00 | 30 | 250 | 1.58 | 42.2 | -146.0 | 6.95 | 0.595 | 12.04 | 10.20 | 1.12 | |
| 12:05 | 35 | 300 | 1.85 | 43.7 | -157.0 | 6.96 | 0.595 | 12.09 | 10.30 | 1.03 | |
| 12:10 | 40 | 300 | 2.11 | 42.6 | -2.0 | 7.00 | 0.592 | 11.88 | 10.74 | 0.97 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Frac Tank On |
| Color: | No | Turbidity(qualitative): | Clear |
| Odor: | No | Other (OVA, HNU,etc.): | None |

Inflate Packer: 10:46
Deflate Packer: 12:53
13.10:DTW post sample

| Static DTW | Inner Casing | Outer Casing | Time |
|---|---|---|---|
| | 2.4 | 1.52 | 10:48 |
| | 2.9 | 1.51 | 10:54 |
| | 3.4 | 1.51 | 10:57 |
| | 3.92 | 1.51 | 11:00 |
| | 4.52 | 1.51 | 11:03 |
| | 5.12 | 1.51 | 11:08 |
| | 5.43 | 1.51 | 11:10 |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-12(96-116) |
| Date: | 5/10/12 | Sampled By: | R. Kelly | | |
| Sampling Time: | 14:28 | Recorded By: | R. Kelly | | |
| Weather: | Overcast, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pu with packers** |
| Casing Diameter: | 2"/6" | Screen Interval: | From 96' to 116' |
| Total Depth: | 116' | Pump intake depth: | 114' |
| Depth to Water: | +2' | | |
| Water Column: | 116' | Total Volume Purged: | 2.5 gallons |
| Gallons/Foot: | 0.163/1.469 | Pump on: | 13:30 Off: 15:00 |
| Gallons in Well: | 46.00 | Gas Pressure: | Discharge/Recharge Rate: |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13:35 | 5 | 150 | 0.20 | 37.7 | -26.0 | 5.94 | 0.542 | 15.23 | | 8.14 | |
| 13:40 | 10 | 200 | 0.46 | 44.9 | -29.0 | 6.41 | 0.586 | 13.52 | 5.75 | 3.58 | |
| 13:45 | 15 | 200 | 0.51 | 53.6 | -59.0 | 6.89 | 0.599 | 12.97 | NA | 2.46 | |
| 13:50 | 20 | 200 | 0.78 | 57.3 | -122.0 | 7.48 | 0.603 | 12.67 | NA | 1.64 | |
| 13:55 | 25 | 200 | 1.04 | 56.0 | -166.0 | 7.97 | 0.604 | 12.44 | 9.10 | 1.18 | |
| 14:00 | 30 | 200 | 1.31 | 53.7 | -173.0 | 8.15 | 0.605 | 12.25 | 10.30 | 0.99 | |
| 14:05 | 35 | 200 | 1.60 | 49.6 | -175.0 | 8.21 | 0.602 | 12.22 | 11.30 | 0.80 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Frac Tank On Site |
| Color: | No | Turbidity(qualitative): | Clear |
| Odor: | No | Other (OVA, HNU,etc.): | None |

stick up 3' ags

Inflate Packer: 13:14
Deflate Packer: 12:04
20.41 : DTW post sample

| Static DTW | ner Casir | Outer Casing | Time |
|---|---|---|---|
| | 1.6 | 2.24 | 13:20 |
| | 1.79 | 2.25 | 13:23 |
| | 1.86 | 2.25 | 13:25 |
| | 1.99 | 2.25 | 13:28 |
| | 2.02 | 2.27 | 13:30 |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | RW-12(125-148) |
| Date: | 5/11/12 | Sampled By: | CC | | |
| Sampling Time: | 11:10 | Recorded By: | CC | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | Horbia U-52 |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pu with packers** |
| Casing Diameter: | 2"/6" | Screen Interval: | From 125' to 148' |
| Total Depth: | 148' | Pump intake depth: | 148' |
| Depth to Water: | ~5.41' | | |
| Water Column: | 142.59' | Total Volume Purged: | 5 gallons |
| Gallons/Foot: | .163/1.469 | Pump on: | 10:02 Off: 11:27 |
| Gallons in Well: | 56.25 | Gas Pressure: | Discharge/Recharge Rate: |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:18 | 16 | 300 | 1.26 | 48.2 | -96.0 | 7.36 | 0.569 | 12.89 | 11.89/3.98 | 3.27 | |
| 10:23 | 21 | 300 | 1.65 | 40.8 | 59.0 | 5.71 | 5.690 | 11.95 | 13.2/4.02 | 2.78 | |
| 10:28 | 26 | 300 | 2.10 | 43.1 | 46.0 | 5.76 | 0.612 | 11.56 | 14.6/4.05 | 3.00 | |
| 10:33 | 31 | 300 | 2.40 | 40.6 | 34.0 | 5.85 | 0.609 | 11.56 | 14.6/4.10 | 2.44 | |
| 10:38 | 36 | 300 | 2.84 | 37.3 | 34.0 | 5.84 | 0.597 | 12.45 | 14.6/4.12 | 1.87 | |
| 10:43 | 41 | 300 | 3.24 | 35.5 | 35.0 | 5.85 | 0.596 | 12.57 | 14.6/4.15 | 1.81 | Charge gas |
| 10:48 | 46 | 300 | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Frac Tank On Site |
| Color: | No | Turbidity(qualitative): | Clear |
| Odor: | No | Other (OVA, HNU,etc.): | None |

Inflate Packer: 09:41
Deflate Packer: 11:30

| Static DTW | ner Casir | Outer Casing | Time |
|---|---|---|---|
| | 8.02' | | |
| | 8.42' | 3.70bgs | 9:45 |
| | 8.87' | 3.75 | 9:47 |
| | 9.41' | 3.8 | 9:52 |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | PMAirShaft-50 |
| Date: | 4/23/12 | Sampled By: | Paul Krupin | | |
| Sampling Time: | 12:05 | Recorded By: | Paul Krupin | | |
| Weather: | Cloudy, 50s | Replicate/Split: | | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | N/A | Purge Method: | **2" Bladder Pump** |
| Casing Diameter: | N/A | | |
| Total Depth: | N/A | Pump intake depth: | 50' |
| Depth to Water: | 6.87' | | |
| Water Column: | NA | Total Volume Purged: | 10 gallons |
| Gallons/Foot: | N/A | Pump on: | 11:02 Off: 13:00 |
| Gallons in Well: | N/A | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11:17 | 15 | 600 | 2.37 | 1 | 110.00 | 7.05 | 0.061 | 11.20 | 6.87 | 7.51 | |
| 11:32 | 30 | 600 | 4.74 | 0.9 | 175.00 | 6.74 | 0.059 | 11.10 | 6.87 | 6.37 | |
| 11:47 | 45 | 600 | 7.11 | 1.3 | 193.00 | 6.58 | 0.061 | 11.10 | 6.87 | 6.19 | |
| 12:02 | 60 | 600 | 9.48 | 1.5 | 197.00 | 6.53 | 0.061 | 11.10 | 6.87 | 6.03 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Ok | Purge Water Disposal: | Frac tank on site |
| Color | Clear | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | PMAirShaft-180 (042312) |
| Date: | 4/23/12 | Sampled By: | C. Cifelli | | |
| Sampling Time: | 13:10 | Recorded By: | C. Cifelli | | |
| Weather: | Cloudy, 50s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | N/A | Purge Method: | **3 volume purge** |
| Casing Diameter: | N/A | | |
| Total Depth: | N/A | Pump intake depth: | 180' |
| Depth to Water: | 6.87' | | |
| Water Column: | NA | Total Volume Purged: | 8 gal + sample |
| Gallons/Foot: | N/A | Pump on: | 11:59 Off: 14:15 |
| Gallons in Well: | N/A | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:09 | 10 | 550 | 1.50 | 0.0 | 128.0 | 6.92 | 0.680 | 11.00 | 6.87 | 6.15 | |
| 12:29 | 30 | 550 | 3.00 | 0.0 | 200.0 | 6.54 | 0.057 | 10.90 | 6.87 | 5.66 | |
| 12:44 | 45 | 550 | 4.50 | 0.0 | 202.0 | 6.50 | 0.057 | 10.89 | 6.87 | 5.55 | |
| 13:04 | 65 | 550 | 6.00 | 0.0 | 207.0 | 6.47 | 0.039 | 10.84 | 6.87 | 6.25 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Purge to ground |
| Color | | Turbidity(qualitative): | |
| Odor: | | Other (OVA, HNU,etc.): | |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | PMAirShaft-230 |
| Date: | 4/24/12 | Sampled By: | P. Krupin, C. Goldsmith | | |
| Sampling Time: | 10:25 | Recorded By: | P. Krupin | | |
| Weather: | Partly Cloudy, 50s | Replicate/Split: | DUP (042412) | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | N/A | Purge Method: | **3 volume purge** |
| Casing Diameter: | N/A | | |
| Total Depth: | N/A | Pump intake depth: | 230' |
| Depth to Water: | 6.99' | | |
| Water Column: | NA | Total Volume Purged: | ~8gal |
| Gallons/Foot: | N/A | Pump on: | 9:30 Off: 11:45 |
| Gallons in Well: | N/A | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:35 | 5 | 600 | 0.80 | 1.4 | 94.0 | 7.04 | 0.076 | 11.20 | 6.99 | 10.64 | |
| 9:50 | 20 | 600 | 3.20 | 0 | 174.0 | 6.76 | 0.069 | 11.00 | 7.01 | 9.28 | |
| 10:05 | 35 | 600 | 5.50 | 0 | 189.0 | 6.73 | 0.065 | 11.00 | 7.01 | 9.95 | |
| 10:20 | 50 | 600 | 8.00 | 0 | 180.0 | 6.62 | 0.065 | 11.00 | 7.01 | 9.01 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Good | Purge Water Disposal: | Purge to ground |
| Color | Clear | Turbidity(qualitative): | Clear |
| Odor: | No Odor | Other (OVA, HNU,etc.): | None |

Duplicate sample (DUP (042412) ) collected

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | CM Shaft (50) (050712) |
| Date: | 5/7/12 | Sampled By: | CC/PK | | |
| Sampling Time: | 11:05 | Recorded By: | CC/PK | | |
| Weather: | Partly Cloudy, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**PURGING INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** | | |
| Casing Diameter: | 2" | | | | |
| Total Depth: | N/A | Pump intake depth: | 50' | | |
| Depth to Water: | 7.26 TOC 2" | | | | |
| Water Column: | NA | Total Volume Purged: | NA | | |
| Gallons/Foot: | NA | Pump on: | 10:12 | Off: | 12:09 |
| Gallons in Well: | N/A | | | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10:15 | 3 | 230 | 0.18 | 0.0 | -19.0 | 7.05 | 1.030 | 16.65 | 7.25 | 2.70 | |
| 10:30 | 18 | 230 | 1.00 | 0.0 | -94.0 | 7.41 | 0.727 | 17.98 | 7.25 | 2.74 | |
| 10:45 | 33 | 230 | 2.00 | 0.0 | -98.0 | 7.28 | 1.100 | 15.58 | 7.25 | 2.40 | |
| 11:00 | 51 | 230 | 3.00 | 0.0 | -82.0 | 7.06 | 1.130 | 14.41 | 7.25 | 2.86 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Ok | Purge Water Disposal: | Frac tank on site |
| Color | None | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | CM Shaft (100) (050712) |
| Date: | 5/7/12 | Sampled By: | C. Cifelli | | |
| Sampling Time: | 13:15 | Recorded By: | C. Cifelli | | |
| Weather: | Cloudy, 60's | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | PVC | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | | |
| Total Depth: | N/A | Pump intake depth: | 100' |
| Depth to Water: | 7.25 | | |
| Water Column: | NA | Total Volume Purged: | 2.5 gal + sample |
| Gallons/Foot: | 0.163 | Pump on: | 12:22 Off: 14:03 |
| Gallons in Well: | N/A | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:26 | 4 | 100 | 0.10 | 0.3 | -89.0 | 7.22 | 1.040 | 16.46 | 7.25 | 5.13 | |
| 12:40 | 18 | ~150 | 0.60 | 0.0 | -104.0 | 7.27 | 1.020 | 18.41 | 7.25 | 3.32 | |
| 12:55 | 33 | ~150 | 1.20 | 0.0 | -88.0 | 7.10 | 0.837 | 18.39 | 7.25 | 3.02 | |
| 13:10 | 48 | ~250 | 2.20 | 0.0 | -95.0 | 7.12 | 1.110 | 14.82 | 7.25 | 3.01 | |
| 13:15 | Sample | ~250 | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Ok | Purge Water Disposal: | Frac tank on site |
| Color | None | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

Slight sleen noted in purge water

Not able to get high purge rate in adjusted flow cycle ~20s recharge/ 40s discharge

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | CM Shaft (160) (050912) |
| Date: | 5/9/12 | Sampled By: | R. Kelly | | |
| Sampling Time: | 10:23 | Recorded By: | R. Kelly | | |
| Weather: | Overcast, 60s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**PURGING INFORMATION**

| | | | | | |
|---|---|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** | | |
| Casing Diameter: | 2" | | | | |
| Total Depth: | N/A | Pump intake depth: | 160 | | |
| Depth to Water: | 7.25 | | | | |
| Water Column: | NA | Total Volume Purged: | 5 gallons | | |
| Gallons/Foot: | 0.163 | Pump on: | 9:32 | Off: | 11:15 |
| Gallons in Well: | N/A | | | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9:35 | 3 | 200 | 0.16 | 30.3 | -64.0 | 7.33 | 1.060 | 18.29 | 7.25 | 5.15 | |
| 9:50 | 18 | 200 | 0.90 | 0.0 | -98.0 | 7.22 | 1.040 | 16.33 | 7.25 | 2.89 | |
| 10:05 | 33 | 200 | 1.75 | 0.0 | -98.0 | 7.17 | 1.030 | 16.88 | 7.25 | 2.69 | |
| 10:20 | 48 | 200 | 2.50 | 0.0 | -95.0 | 7.11 | 1.000 | 18.85 | 7.25 | 1.85 | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Ok | Purge Water Disposal: | Frac tank on site |
| Color | None | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

Sheen in water

**ARCADIS-US**
Groundwater Sampling Form

| | | | | | |
|---|---|---|---|---|---|
| Project Number: | NJ000604.0035 | Task: | 00034 | Well ID: | CM Shaft (275) (050912) |
| Date: | 5/9/12 | Sampled By: | C. Cifelli/ R. Kelly | | |
| Sampling Time: | 13:15 | Recorded By: | C. Cifelli/ R. Kelly | | |
| Weather: | Humid, 70s | Replicate/Split: | None | | |

**INSTRUMENT IDENTIFICATION**

| | PID | Water-Level Meter | Water Quality Meter(s) |
|---|---|---|---|
| Serial #: | MiniRAE | Solinst | YSI- 600 XL |

**PURGING INFORMATION**

| | | | |
|---|---|---|---|
| Casing Material: | Stainless Steel | Purge Method: | **Low Flow Bladder Pump** |
| Casing Diameter: | 2" | | |
| Total Depth: | N/A | Pump intake depth: | 275 |
| Depth to Water: | 7.25 | | |
| Water Column: | NA | Total Volume Purged: | 3.5 gallons |
| Gallons/Foot: | 0.163 | Pump on: | 12:24 Off: 14:20 |
| Gallons in Well: | N/A | | |

FIELD PARAMETERS

| Time | Minutes Elapsed | Rate (ml/m) | Gallons Purged | Turbidity (NTUs) | REDOX (mV) | pH (SI Units) | Conductivity (mmhos/cm) | Temp (ºC) | Depth to Water | Diss. Oxygen | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12:28 | 4 | 250 | 0.26 | 0.0 | -107.0 | 7.27 | 0.873 | 24.67 | 7.25 | 5.30 | |
| 12:43 | 19 | 250 | 1.30 | 0.0 | -80.0 | 7.00 | 0.880 | 23.51 | 7.25 | 3.58 | |
| 12:58 | 34 | 250 | 2.20 | 0.0 | -105.0 | 7.12 | 0.881 | 20.99 | 7.25 | 3.12 | |
| 13:13 | 49 | 250 | 3.20 | 0.0 | -116.0 | 7.23 | 0.852 | 22.32 | 7.25 | 4.01 | |
| | | | | | | | | | | | |
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**OBSERVATIONS DURING SAMPLING**

| | | | |
|---|---|---|---|
| Well Condition: | Ok | Purge Water Disposal: | Frac tank on site |
| Color | None | Turbidity(qualitative): | Clear |
| Odor: | None | Other (OVA, HNU,etc.): | None |

Sheen in water

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Infrastructure, environment, facilities

## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID: SR-3 Seep 1
Project Name and No.: Ford Ringwood- NJ000604.0035.00034
Date: 5/3/2012
Sampling Personnel: C. Cifelli, P. Krupin
Time: 10:00
Weather: Cloudy, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body: SR-3 Seep
Depth of Water: 0.5'
Velocity: 0.35ft./sec.
Other Comments: N/A
Substrate Description: Non Native Fill
Sample Location and Depth (ft): Seep clear to SR-7 0-0.2'

Description of Nearby Vegetation: High Grass, Native Herbaceous Plants

**FIELD PARAMETERS:**

Sample Method: Grab sample with transfer bottle
Sample Description: Clear

Temperature (°C/°F): 12 (°C)
pH: 6.81 (SI Units)
Dissolved Oxygen: 7.53 mg/c
SC: 0.142 ms/cm
Salinity: 0.1 ppt

**CONTAINER DESCRIPTION** From _____ Lab X ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | BNA, PCB | None |
| Plastic | Hardness & Total Metals | $HNO_3$ |
| Glass | TOC | HCl |
| Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** 15 | | |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SR-3 Seep 2 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/4/2012 | Sampling Personnel C. Cifelli

Time 10:00

Weather Cloudy, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body SR-3 Seep 2

Depth of Water 3" | Velocity No measurable flow - too shallow

Other Comments Seep closer to site entrance

Substrate Description Orange/oxidized sediments

Sample Location and Depth (ft) SR-3 Seep 2 ~0.2'

Description of Nearby Vegetation Grasses, small trees

**FIELD PARAMETERS:**

Sample Method Grab sample

Sample Description Clear, minimal orange/oxidized

Temperature (°C/°F) 13.24 (°C) | pH 6.66 (SI Units)

Dissolved Oxygen 6.86 mg/c | SC 0.226 ms/cm

Salinity 0.1 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | 14 | | |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID: SR-3 Pond
Project Name and No.: Ford Ringwood- NJ000604.0035.00034
Date: 5/3/2012
Sampling Personnel: C. Cifelli, P. Krupin
Time: 11:00
Weather: Cloudy, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body: SR-3 Pond
Depth of Water: 1.5'
Velocity: 0.01ft./sec/
Other Comments: N/A
Substrate Description: Non Native Fill
Sample Location and Depth (ft): Sample taken from end of log that goes into SR-3 water 0-0.5'

Description of Nearby Vegetation: Replanted Nursery Stock and Native plants

**FIELD PARAMETERS:**

Sample Method: Grab sample with transfer bottle
Sample Description: Clear

Temperature (°C/°F): 12.8 (°C)
pH: 7 (SI Units)
Dissolved Oxygen: 7.54 mg/c
SC: 0.166 ms/cm
Salinity: 0.1 ppt

**CONTAINER DESCRIPTION** From _____ Lab X ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | SVOCs, PCB | None |
| Plastic | Total Metals | $HNO_3$ |
| Glass | Dissolved Metals | None Lab Filtered |
| Plastic | Alk, Chl, $SO_4$ | None |
| **TOTAL:** 15 | | |

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Infrastructure, environment, facilities

## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID: Cannon Seep
Project Name and No.: Ford Ringwood- NJ000604.0035.00034
Date: 5/1/2012
Sampling Personnel: C. Goldsmith, P. Krupin
Time: 15:40
Weather: Mostly cloudy, 60's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body: Cannon Seep
Depth of Water: 1"
Velocity: Not deep enough for flow meter
Other Comments: N/A
Substrate Description: Street-side seep
Sample Location and Depth (ft): Cannon Nne Road 0.1"

Description of Nearby Vegetation: Ivy, Trees, Shrubs

**FIELD PARAMETERS:**

Sample Method: Grab sample with transfer bottle
Sample Description: Clear with subspended orange material

Temperature (°C/°F): 13.2 (°C)
pH: 6.93 (SI Units)
Dissolved Oxygen: 10.2 mg/c
SC: 0.48 ms/cm
Salinity: 0.2 ppt

**CONTAINER DESCRIPTION** From _____ Lab X ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | SVOCs, PCB | None |
| Plastic | Total Metals | $HNO_3$ |
| Glass | Dissolved Metals | None Lab Filtered |
| Plastic | Alk, Chl, $SO_4$ | None |
| **TOTAL:** 15 | | |

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Infrastructure, environment, facilities

## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-PAB 00 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/4/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 11:00

Weather Cloudy, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Park Brook

Depth of Water 0.8' | Velocity 0.70ft /sec

Other Comments N/A

Substrate Description Fine to coarse gravel, pebbles and boulders

Sample Location and Depth (ft) Park Brook 0-0.5'

Description of Nearby Vegetation Trees, Ivy, Ferns

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 13.3 (°C) | pH 7.65 (SI Units)

Dissolved Oxygen 13.45 mg/c | SC 0.055 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | 22 | | |

Geochem + Isotopes

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Infrastructure, environment, facilities

## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-PAB-01 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/3/2012 | Sampling Personnel C. Cifelli, P. Krupin

Time 12:00

Weather Cloudy, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Park Brook

Depth of Water 0.7' | Velocity 0.31ft./sec.

Other Comments N/A

Substrate Description Fines

Sample Location and Depth (ft) Park Brook ~0-0.5'

Description of Nearby Vegetation Grasses, shrubs, small trees

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 13.4 (°C) | pH 7.47 (SI Units)

Dissolved Oxygen 11.82 mg/c | SC 0.067 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | 22 | | |

Geochem + Isotopes

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-PAB-01A

Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/2/2012

Sampling Personnel C. Goldsmith, P. Krupin, C. Cifelli

Time 14:50

Weather Cloudy, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Park Brook

Depth of Water 0.6'

Velocity 0.14ft./sec.

Other Comments N/A

Substrate Description Cobbles and Boulders

Sample Location and Depth (ft) Surface water sample between 2005 SW-19 sample 0-0.5'

Description of Nearby Vegetation Ivy, Ferns, Trees

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 11.5 (°C)

pH 7.67 (SI Units)

Dissolved Oxygen 10.91 mg/c

SC 0.084 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ Lab X ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | BNA, PCB | None |
| Plastic | Hardness & Total Metals | $HNO_3$ |
| Glass | TOC | HCl |
| Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |

**TOTAL:** 22

Geochem + Isotopes

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Infrastructure, environment, facilities

## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-PAB-02 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/2/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 13:30

Weather Cloudy, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Park Brook

Depth of Water 0.9' | Velocity 0.02ft./sec.

Other Comments N/A

Substrate Description Fines, leaf liter

Sample Location and Depth (ft) Park Brook 0-0.5'

Description of Nearby Vegetation Shrubs, Grass, Ivy

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 12.3 (°C) | pH 7.81 (SI Units)

Dissolved Oxygen 14.37 mg/c | SC 0.1 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | BNA, PCB | None |
| Plastic | Hardness & Total Metals | $HNO_3$ |
| Glass | TOC | HCl |
| Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** 22 | | |

Geochem + Isotopes

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-PAB-03 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/2/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 12:50

Weather Cloudy, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Park Brook

Depth of Water 0.4' | Velocity 0.56ft./sec.

Other Comments N/A

Substrate Description Cobbles, Boulders, fine to coarse gravel

Sample Location and Depth (ft) Park Brook surface water sample 0-0.5'

Description of Nearby Vegetation Ivy, Trees, Grasses

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 12.2 (°C) | pH 8.12 (SI Units)

Dissolved Oxygen 15.63 mg/c | SC 0.098 ms/cm

Salinity 0.1 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | | | |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID: SW-PAB-04
Project Name and No.: Ford Ringwood- NJ000604.0035.00034
Date: 5/1/2012
Sampling Personnel: P. Krupin, C. Goldsmith
Time: 14:30
Weather: Cloudy, 60's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body: Park Brook
Depth of Water: 1.2'
Velocity: 0.36ft./sec/
Other Comments: N/A
Substrate Description: Park Brook Chennel, Cobbles
Sample Location and Depth (ft): Park Brook 0-0.5'

Description of Nearby Vegetation: Ivy, Shrubs, Trees

**FIELD PARAMETERS:**

Sample Method: Grab sample with transfer bottle
Sample Description: Clear

Temperature (°C/°F): 11.8 (°C)
pH: 7.74 (SI Units)
Dissolved Oxygen: 13.5 mg/c
SC: 0.102 ms/cm
Salinity: 0.0 ppt

**CONTAINER DESCRIPTION** From _____ Lab X ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | 15 | | |
| | Plastic | $XNO_3O$, COD, $TPO_4$ | $H_2SO_4$ |
| | Plastic | ALK | None |
| | Amber 1L | LL Mercury | None |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-MRB-00 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/4/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 12:30

Weather Cloudy, 60's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Mine Brook

Depth of Water 0.45' | Velocity 1.30ft./sec.

Other Comments N/A

Substrate Description Cobbles, Fine to Coarse Gravel

Sample Location and Depth (ft) Mine Brook 0-0.5'

Description of Nearby Vegetation Trees, Ivy, Shrubs

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 14.9 (°C) | pH 7.49 (SI Units)

Dissolved Oxygen 12.65 mg/c | SC 0.053 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | 13 | | |

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Infrastructure, environment, facilities

## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-MRB-01 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/2/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 9:30

Weather Light Rain, 50's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Mine Brook

Depth of Water 0.8' | Velocity 0.01ft./sec.

Other Comments N/A

Substrate Description Silts, Low flow area

Sample Location and Depth (ft) Mine Brook surface water sample 0-0.5'

Description of Nearby Vegetation Cat-tails, Grasses, Trees

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 12.5 (°C) | pH 7.41 (SI Units)

Dissolved Oxygen 6.85 mg/c | SC 0.142 ms/cm

Salinity 0.1 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | 22 | | |

Geochem + Isotopes

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-MRB-02 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/1/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 13:40

Weather Cloudy, 60's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Mine Brook

Depth of Water 0.5' | Velocity 0.46ft./sec.

Other Comments Near Colvart

Substrate Description Corase gravel and cobbles

Sample Location and Depth (ft) Mine Brook surface water sampel 0-0.5'

Description of Nearby Vegetation Grasses, Ivy, Shrubs

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 15.1 (°C) | pH 7.08 (SI Units)

Dissolved Oxygen 11.33 mg/c | SC 0.055 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, ChI, pH, TDS, BOD | None |
| **TOTAL:** | 15 | | |
| | Plastic | $XNO_3O$, COD, $TPO_4$ | $H_2SO_4$ |
| | Plastic | ALK | None |
| | Amber 1L | LL Mercury | None |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID: SW-MRB-03
Project Name and No.: Ford Ringwood- NJ000604.0035.00034
Date: 5/1/2012
Sampling Personnel: C. Goldsmith, P. Krupin
Time: 13:00
Weather: Cloudy, 60's

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body: Mine Brook
Depth of Water: 2.75'
Velocity: 0.06ft./sec.
Other Comments: N/A
Substrate Description: Fines, Gravel
Sample Location and Depth (ft): Mine Brook 0-0.5'

Description of Nearby Vegetation: Ivy, Trees, Shrubs

**FIELD PARAMETERS:**

Sample Method: Grab sample with transfer bottle
Sample Description: Clear

Temperature (°C/°F): 14.2 (°C)
pH: 7.04 (SI Units)
Dissolved Oxygen: 11.55 mg/c
SC: 0.07 ms/cm
Salinity: 0.0 ppt

**CONTAINER DESCRIPTION** From _____ Lab X ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, ChI, pH, TDS, BOD | None |
| **TOTAL:** | 15 | | |
| | Plastic | $XNO_3O$, COD, $TPO_4$ | $H_2SO_4$ |
| | Plastic | ALK | None |
| | Amber 1L | LL Mercury | None |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-NOB-01 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/4/2012 | Sampling Personnel C. Goldsmith, P.Krupin

Time 13:30

Weather Mostly cloudy, 70s

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body North Brook

Depth of Water 0.5' | Velocity 0.18 ft/sec

Other Comments N/A

Substrate Description Boulders, Cobbles, Fine to Coarse Gravel

Sample Location and Depth (ft) North Brook ~ 0.2'

Description of Nearby Vegetation Ive, Trees, Ferns

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 18.1 (°C) | pH 7.06 (SI Units)

Dissolved Oxygen 11.63 mg/c | SC 0.068 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | 13 | | |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-NOB-02 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/1/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 14:45

Weather Cloudy, 60s

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body North Brook

Depth of Water 1.0' | Velocity 0.15 ft/sec

Other Comments N/A

Substrate Description Brook chennal, cobbles and boulders

Sample Location and Depth (ft) North Brook off access road 0-0.5'

Description of Nearby Vegetation Ivy, Trees, Shrubs

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 11.4 (°C) | pH 7.72 (SI Units)

Dissolved Oxygen 13.96 mg/c | SC 0.072 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| | Bottle Type | Analysis | Preservative |
|---|---|---|---|
| | Clear, glass, vials | TCL VOCs | HCl |
| | Amber, glass 1 liter | BNA, PCB | None |
| | Plastic | Hardness & Total Metals | $HNO_3$ |
| | Glass | TOC | HCl |
| | Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** | 15 | | |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-3 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/4/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 9:30

Weather Cloudy, 50s

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body

Depth of Water 0.9' | Velocity 2.27 ft/sec

Other Comments N/A

Substrate Description Boulders

Sample Location and Depth (ft) Boulders 0-0.5'

Description of Nearby Vegetation Trees, vines

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 15.5 (°C) | pH 7.52 (SI Units)

Dissolved Oxygen 10.19 mg/c | SC 0.107 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | BNA, PCB | None |
| Plastic | Hardness & Total Metals | $HNO_3$ |
| Glass | TOC | HCl |
| Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** 13 | | |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-11 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/3/2012 | Sampling Personnel C. Cifelli, P. Krupin

Time 13:30

Weather Cloudy, 50s

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body

Depth of Water 0.5' | Velocity 1.51 ft/sec

Other Comments DUP/MS/MSD

Substrate Description

Sample Location and Depth (ft) North Brook off access road 0-0.5'

Description of Nearby Vegetation Ivy, Trees, Shrubs

**FIELD PARAMETERS:**

Sample Method

Sample Description

Temperature (°C/°F) 13.5 (°C) | pH 7.49 (SI Units)

Dissolved Oxygen 10.96 mg/c | SC 0.054 ms/cm

Salinity 0.0 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | BNA, PCB | None |
| Plastic | Hardness & Total Metals | $HNO_3$ |
| Glass | TOC | HCl |
| Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** 13 | | |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-PMB-01 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/2/2012 | Sampling Personnel C. Goldsmith, P.Krupin

Time 10:40

Weather Light rain, 50s

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Peters Mine Brook

Depth of Water 0.4' | Velocity 0.1 ft/sec

Other Comments N/A

Substrate Description Cobbles, Fine to Coarse Gravel

Sample Location and Depth (ft) Peters Mine Brook 0-0.5'

Description of Nearby Vegetation Ivy, Trees, Shrubs

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

Temperature (°C/°F) 11.2 (°C) | pH 6.88 (SI Units)

Dissolved Oxygen 8.31 mg/c | SC 1.04 ms/cm

Salinity 0.5 ppt

**CONTAINER DESCRIPTION** From _____ | Lab X | ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | BNA, PCB | None |
| Plastic | Hardness & Total Metals | $HNO_3$ |
| Glass | TOC | HCl |
| Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** 15 | | |

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## SURFACE WATER SAMPLE COLLECTION LOG

Sample ID SW-PMB-02 | Project Name and No. Ford Ringwood- NJ000604.0035.00034

Date 5/1/2012 | Sampling Personnel C. Goldsmith, P. Krupin

Time 16:15

Weather Mostly cloudy, 60s

**DESCRIPTION OF SAMPLE LOCATION:**

Name of Water Body Peters Mine Brook

Depth of Water 0.25' | Velocity 1.04 ft/sec

Other Comments

Substrate Description Cobbles, Boulders, Fine to Coarse Gravel

Sample Location and Depth (ft) Peters Mine Brook 0.3'

Description of Nearby Vegetation Native herbacous plants

**FIELD PARAMETERS:**

Sample Method Grab sample with transfer bottle

Sample Description Clear

***Next to "Children at Play" sign***

Temperature (°C/°F) 15.2 (°C) | pH 7.88 (SI Units)

Dissolved Oxygen 7.67 mg/c | SC 0.371 ms/cm

Salinity 0.2 ppt

**CONTAINER DESCRIPTION** From _____ Lab X ARCADIS _____

| Bottle Type | Analysis | Preservative |
|---|---|---|
| Clear, glass, vials | TCL VOCs | HCl |
| Amber, glass 1 liter | BNA, PCB | None |
| Plastic | Hardness & Total Metals | $HNO_3$ |
| Glass | TOC | HCl |
| Plastic | $XNO_3$, CHl, pH, TDS, BOD | None |
| **TOTAL:** 22 | Geochem and Isotopes | |