TECHNICAL MEMORANDUM

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Arcadis Project No.:

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Subject:

Addendum to the Draft Baseline Human Health Risk Assessment Calculations for Site-Related Groundwater

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In May 2015, Arcadis U.S., Inc. (Arcadis) submitted the *Draft Baseline Human Health Risk Assessment for Site-Related Groundwater Area of Concern* (BHHRA; Arcadis 2015a) at the Ringwood Mines/Landfill Site located in Ringwood, New Jersey (Site) to the United States Environmental Protection Agency (USEPA) on behalf of Ford Motor Company. Many of the assumptions used in the BHHRA were agreed upon in an iterative process with USEPA, and on June 16, 2015, USEPA approved the BHHRA for Site-related groundwater.

This revised BHHRA Addendum has been prepared to incorporate additional groundwater analytical data collected during site-wide annual sampling events from the Site from April 2008 through August 2017. This BHHRA Addendum was submitted to the USEPA Region 2 as a draft on December 21, 2017. In a

letter dated February 14, 2018, the USEPA provided comments on the draft BHHRA Addendum, which were discussed with the USEPA in subsequent conference calls and electronic mail exchanges. The USEPA then provided final follow up comments in an electronic mail message dated April 10, 2018. Based on comments from the USEPA, mine water quality data within the Peter's Mine Pit (PMP) Air Shaft has been incorporated into this BHHRA Addendum as a separate, distinct hypothetical exposure point. This BHHRA Addendum otherwise follows the same methodology put forth in the BHHRA. Therefore, detailed descriptions of the methodology used have not been repeated herein. Please refer to the BHHRA for a full discussion of site history and methodology for the risk assessment process (Arcadis 2015a).

BHHRA SUMMARY

The 2015 BHHRA found that potential cancer risks and non-cancer hazards estimated for the hypothetical future resident under both reasonable maximum exposure (RME) and central tendency (CT) exposure scenarios are within or below USEPA's benchmarks. Potential exposures to lead concentrations in Site-related groundwater under both RME and CT exposure scenarios were evaluated using USEPA's Integrated Exposure Biokinetic and Uptake (IEUBK) model for assessing lead exposures in a young child. This evaluation resulted in estimated blood lead levels that are below USEPA's current lead goal of no more than a 5% chance that any child will have a blood lead value above 10 micrograms per deciliter (µg/dL) under both RME and CT exposure scenarios.

All compounds of potential concern (COPCs) were retained for analysis in the BHHRA, including benzene, lead, and arsenic which were identified as primary constituents of concern for Site-related groundwater in the *Site-Wide Groundwater Remedial Investigation Report* (RIR; Arcadis 2015b).

GROUNDWATER AND MINE WATER DATA

This BHHRA Addendum includes data collected from Site overburden and bedrock wells during Site-wide annual sampling events between April 28, 2008 and August 30, 2017. In addition, this BHHRA Addendum includes mine water data collected from the PMP Air Shaft during the same Site-wide annual sampling events between May 7, 2008 and August 23, 2017. Figure 1 shows the Site groundwater well locations and the location of the PMP Air Shaft. Site-wide groundwater and mine water data used in this Addendum are presented in Appendix A.

All constituents detected above laboratory detection limits at least once in each specific data set were screened as COPCs for that exposure area (i.e. Site-wide or PMP Air Shaft). Consistent with previous BHHRA methodology, any compound detected at a frequency less than 5% was excluded from further analysis in this BHHRA Addendum. For those compounds detected at a frequency greater than 5%, the maximum detected concentrations were compared with USEPA's Regional Screening Levels (RSLs) for tap water (USEPA 2016a) to identify COPCs. The RSLs based on cancer endpoints were derived based on a $1x10^{-6}$ target cancer risk limit. The RSLs based on effects other than cancer (non-carcinogenic effects) were derived by USEPA based on a hazard quotient of 0.1. All Class A (known) human carcinogens detected were retained as COPCs regardless of their detection frequency or the comparison to risk-based screening concentrations.

An Addendum to the Remedial Investigation Report (RIR) was issued in October 2017 (Cornerstone 2017) which updated the RIR based on groundwater, mine water, and surface water sampling performed between March 2015 and August 2017. The additional groundwater quality data were compared to the New Jersey Groundwater Quality Standards (GWQS), Interim Specific Groundwater Quality Standards (ISGWQS), and Interim Generic Groundwater Quality Criteria (IGGWQC). Based on this comparison and

evaluation of the Site data, five Site-related COPCs were identified in the RIR Addendum, including benzene, chloroethane, 1,4-dioxane, arsenic, and lead. In the RIR Addendum, chloroethane was identified as a COPC primarily because it is above the IGGWQC of 5 micrograms per liter (µg/L). However, the IGGWQC is not compound specific. Consistent with the approved BHHRA, all detected compounds, including chloroethane, were screened against EPA RSLs for residential tapwater (Table 2.1). The maximum detected groundwater concentration of chloroethane, 18.6 µg/L, and mine water concentration, 48 µg/L, are significantly below the risk-based RSL of 21,000 µg/L. Consequently, the COPCs identified in the RIR and RIR Addendum were retained for analysis, except for chloroethane. The COPC screening for Site-wide groundwater and mine water are presented in Table 2.1 and Table 2.2, respectively. Note that table numbers identified in this Addendum follow USEPA 2001 standardized tables, therefore only table numbers applicable to the Site were included.

Exposure Point Concentrations

Similar to the BHHRA, USEPA's ProUCL software (version 5.1.002; USEPA 2016b) was used to derive exposure point concentrations (EPCs). The 95th percentile upper confidence limits on the arithmetic mean (95th UCL) were selected as EPCs. Table 3.1 presents the EPCs for Site-wide groundwater and Table 3.2 presents the EPCs for PMP Air Shaft mine water. The ProUCL Output is provided in Appendix B.

As previously agreed upon with USEPA, the shower air EPCs were calculated using the Schaum shower model (Schaum et al. 1994). This shower model estimates the amount of a volatile compound that is released and/or volatilizes into the air of a single shower room compartment during showering.

Table 3.3 presents the Site-wide groundwater EPCs and Table 3.4 presents the PMP Air Shaft mine water EPCs for shower air. Appendix C presents the calculation of shower air concentrations from the Site-wide groundwater and PMP Air Shaft mine water EPCs.

POTENTIAL HUMAN RECEPTORS

Consistent with the BHHRA, this BHHRA Addendum estimates potential risks to a hypothetical future resident receptor who could be exposed to groundwater from the Site. In addition, as noted above, at the request of the USEPA Region 2, a separate, distinct exposure point has been added for mine water from the PMP Air Shaft.

Because the New Jersey Department of Environmental Protection has classified the aquifers at the Site as Class IIA, the hypothetical future resident is assumed to be exposed to groundwater used as a potable water source via ingestion, dermal contact while showering, and inhalation of volatile compounds while showering, even though groundwater is not used as a potable water source at the Site and it is highly unlikely that it would be used as such in the future. Similarly, mine water from the PMP Air Shaft is even less likely to be used as a potable water source in the future, and is questionably even considered a Class IIA groundwater, but at the request of the USEPA Region 2 has been added as a potential exposure point. Water for potable use is supplied to residents in the Borough of Ringwood primarily from well fields located within a different watershed located approximately 2 miles southeast of the Site as well as from the Wanaque Reservoir.

Exposure assumptions used in the BHHRA were agreed upon during a conference call on February 20, 2013. With the exception of the exposure duration for the RME adult, most of the exposure assumptions were standard USEPA residential exposure assumptions at that time. In 2013, the standard residential

exposure duration was a total of 30 years (all ages), which would be 14 years for the adult instead of the 36 years for the adult required by USEPA Region 2.

In 2014, USEPA released revised standard default exposure assumptions (USEPA 2014). Many of the residential exposure assumptions were revised from prior standard exposure assumptions, including reducing the total exposure duration to 26 years. For a hypothetical exposure, the standard default exposure assumptions are appropriate to assess potential risk. This BHHRA Addendum includes exposure assumptions that were included in the 2015 BHHRA (both RME and CT scenarios) as well as current standard default residential exposure assumptions. Tables 4.1.CT, 4.1.RME, 4.2.RME, and 4.3 present the exposure assumptions for the RME and CT exposure scenarios from the 2015 BHHRA and revised standard default RME assumptions, respectively.

TOXICITY ASSESSMENT

Tables 5.1 and 5.2 present the non-cancer toxicity values and Tables 6.1 and 6.2 present the cancer toxicity values used in this BHHRA Addendum. Toxicity values follow the same priority used in the BHHRA, in accordance with USEPA guidance (USEPA 2003).

Consistent with the 2015 BHHRA, age-dependent adjustment factors were applied to carcinogenic COPCs defined by USEPA to act via a mutagenic mode of action in accordance with USEPA (2005) guidance. Potentially mutagenic COPCs in Site-related groundwater include vinyl chloride and chromium, assumed for purposes of this evaluation to be hexavalent chromium. Appendix D presents the calculation of the age-dependent adjustment factors for the mutagenic compounds in Site-related groundwater.

Historically, Site groundwater samples were analyzed for total cyanide, and the BHHRA conservatively assumed that the form of cyanide is free cyanide. During the Site-wide sampling event in August 2017, total cyanide was analyzed on a rapid turnaround basis for 11 groundwater monitoring wells in which total cyanide was detected in the 2015 and 2016 annual sampling events. This permitted total cyanide results to be reported in time for free cyanide testing to follow within holding times. For each of these 11 wells in which there was a detection of total cyanide (10 total wells), free cyanide was then analyzed. As shown in Appendix A, free cyanide was not detected in any of these 10 groundwater samples. In the absence of free cyanide, the next most conservative form of cyanide, sodium cyanide, was assumed as a surrogate for deriving toxicity values for cyanide.

RISK CHARACTERIZATION

The risk characterization combines the results of the exposure assessment and the toxicity assessment to provide a quantitative estimate of the potential risks associated with exposure to Site-related COPCs in groundwater. The potential for carcinogenic risks and non-carcinogenic health hazards are evaluated separately. Conservative estimates of cancer and non-cancer risks for all receptors potentially exposed to the COPCs detected in Site-related groundwater and mine water (i.e., water within the PMP Air Shaft) are presented below.

The estimates of potential cancer risk are compared to USEPA's acceptable cancer risk range of $1x10^{-6}$ to $1x10^{-4}$, and for non-cancer effects, the estimated hazards are compared to a hazard index limit of 1 to determine whether the estimated potential future risks exceed either of these benchmarks and thus may present an unacceptable level of risk. A summary of the potential cancer risks and hazard indices by age categories for the hypothetical future resident receptor under the RME and CT exposure scenarios are presented in Tables 11.1.RME and 11.1.CT, respectively.

The potential hazard due to lead exposures by the hypothetical young child resident was evaluated using USEPA's IEUBK Model for Lead in Children (USEPA 2010). The IEUBK model takes into account default intake and uptake components of lead exposure using Site-specific data to predict concentration(s) of lead in blood (blood lead levels).

The IEUBK model is a biokinetic model that allows users to calculate blood lead levels in a young child who has potentially been exposed to lead at background levels as well as from lead in a variety of media, including drinking water. The IEUBK model output provides an estimate of the percentage of the exposed population that would have blood levels that exceed USEPA's "safe" level of lead in blood, 10 µg/dL. It is USEPA's current policy that potential exposures to lead are deemed to be acceptable as long as no more than 5% of the exposed population will exceed that regulatory benchmark of blood lead level of 10 µg/dL. However, based on USEPA comments on the draft BHHRA Addendum dated December 2017, the IEUBK model was also run using benchmarks of 2, 5, and 8 µg/dL. For these additional benchmarks, the model was run with the same parameters used in the BHHRA and as defined in this Addendum; using the IEUBK defaults for ingestion of food, soil, dust, and inhalation of air with Site-specific ingestion of drinking water. However, to isolate the portion of total lead exposure that would result from Site-related groundwater, the IEUBK model was run utilizing two additional sets of parameters. The IEUBK model was run using default parameters for all pathways to show the potential health effects and blood lead levels at default. Additionally, the IEUBK model was run to show the potential health effects and blood lead levels resulting from just the ingestion of Site groundwater.

Site-wide Groundwater RME Summary

The cumulative potential cancer risk for the hypothetical future resident RME scenario for the adult, older child (or youth), and young child using the exposure assumptions from the 2015 BHHRA is $2x10^{-4}$, which is nominally higher than the upper limit of USEPA's acceptable cancer risk range of $1x10^{-6}$ to $1x10^{-4}$. The cumulative potential cancer risk for the hypothetical future resident RME scenario for the adult, older child (or youth), and young child using the standard default exposure assumptions is $1x10^{-4}$, which is at the upper limit of USEPA's acceptable cancer risk range of $1x10^{-6}$ to $1x10^{-4}$. The cumulative potential cancer risk driver is arsenic. The potential cancer and non-cancer risk estimates are summarized in Tables 7.1.RME through 7.6.RME. In addition, as shown in Tables 9.1 RME through 9.6.RME, when the hazard index is assessed by target organ for the future hypothetical resident RME scenario for the adult, older child, and young child, all target organ hazard indices are at or below the USEPA's target hazard index limit of 1.

Site-wide Groundwater CT Summary

The cumulative potential cancer risk for the hypothetical future resident CT scenario for the older child (or youth) and young child is $2x10^{-5}$, which is within USEPA's acceptable risk range of $1x10^{-6}$ to $1x10^{-4}$, as shown in Tables 7.2.CT and 7.3.CT, respectively. When the non-cancer hazard index is assessed by target organ for the future hypothetical resident CT scenario for the young child and older child, all target organ hazard indices are below the USEPA's target hazard index of 1. Tables 7.2.CT and 7.3.CT present the potential cancer and non-cancer risks for the older child and young child resident, respectively.

Site-wide Groundwater Lead Summary

Estimated blood lead levels following potential exposure to lead in Site-related groundwater for a young child resident under an RME scenario are predicted to exceed 10 µg/dL blood lead level in 0.064% of the

hypothetically exposed population, which is below USEPA's target threshold of 5%. Table 12.1.RME presents the results of the IEUBK model for the young child resident for the 10 µg/dL benchmark.

Estimated blood lead levels following potential exposure to lead in Site-related groundwater for a young child resident under a CT exposure scenario are predicted to exceed 10 µg/dL in less than 0.037% of the hypothetically exposed population, which is significantly below USEPA's target threshold of 5%. Table 12.1.CT presents the results of the IEUBK model for the young child resident for the 10 µg/dL benchmark.

As requested by USEPA Region 2, the table below summarizes the percentage of the young-child resident population expected to be above the 2, 5, 8, and 10 µg/dL benchmarks (see Appendix E for details of the model output).

Benchmarks	10 ug/dL	8 ug/dL	5 ug/dL	2 ug/dL
Percent of Population Above Benchmark				
CTE Scenario	0.037%	0.187%	2.878%	52.014%
RME Scenario	0.064%	0.302%	4.047%	58.093%
IEUBK Default Scenario	0.075%	0.346%	4.447%	59.816%
Site RME Water Ingestion Only Scenario	0.000%	0.000%	0.000%	0.001%

This tabulation shows that the highest calculated percentages of the exposed population occur when the IEUBK default inputs are utilized (i.e., the percentage of the exposed population is highest for the default exposure scenario for each benchmark). When only the water ingestion pathway is run using site-specific inputs, the results demonstrate that the percentage of the population above a benchmark is controlled by the default exposure assumptions from other media and not from the ingestion of Site groundwater (i.e., the groundwater only scenario shows a trivial contribution to the percentage of the exposed population). Therefore, the above tabulation demonstrates that site groundwater does not pose a potential hazard due to lead exposures above the USEPA benchmark of 10 µg/dL, as well as the 8, 5, and 2 µg/dL benchmarks.

PMP Air Shaft Mine Water RME Summary

The cumulative potential cancer risk for the hypothetical future resident RME exposure scenario for mine water in the PMP Air Shaft for the adult, older child (or youth), and young child is $4x10^{-4}$, which is slightly above the upper limit of USEPA's acceptable cancer risk range of $1x10^{-6}$ to $1x10^{-4}$. The cumulative potential cancer risk for the hypothetical future resident RME scenario for mine water in the PMP Air Shaft for the adult, older child (or youth), and young child using the standard default exposure assumptions is $2x10^{-4}$, which is slightly above the upper limit of USEPA's acceptable cancer risk range of $1x10^{-6}$ to $1x10^{-4}$. The potential cancer and non-cancer risk estimates are summarized in Tables 7.7.RME through 7.12.RME. In addition, as shown in Tables 9.7 RME through 9.12 RME, when the hazard index is assessed by target organ for the future hypothetical resident RME scenario for the adult, older child, and young child, target organ hazard indices are all at or below the USEPA's target hazard index limit of 1 with the exception of the GI tract target organ, which is due to the naturally occurring, non-Site related (background) iron concentrations in the PMP Air Shaft.

PMP Air Shaft Mine Water CT Summary

The cumulative potential cancer risk for the hypothetical future resident CT exposure scenario for mine water in the PMP Air Shaft for the older child (or youth) and young child is $3x10^{-5}$, which is within USEPA's acceptable risk range of $1x10^{-6}$ to $1x10^{-4}$, as shown in Tables 7.8.CT and 7.9.CT, respectively. When the non-cancer hazard index is assessed by target organ for the future hypothetical resident CT scenario for the young child and older child, target organ hazard indices are all below the USEPA's target hazard index of 1. Tables 7.8.CT and 7.9.CT present the potential cancer and non-cancer risks for the older child and young child resident, respectively.

PMP Air Shaft Mine Water Lead Summary

Estimated blood lead levels following potential exposure to lead in PMP Air Shaft mine water for a young child resident under an RME scenario are predicted to exceed 10 µg/dL blood lead level in 1.746% of the hypothetically exposed population, which is below USEPA's target threshold of 5%. Table 12.2.RME presents the results of the IEUBK model for the young child resident for the 10 µg/dL benchmark.

Estimated blood lead levels following potential exposure to lead in PMP Air Shaft mine water for a young child resident under a CT exposure scenario are predicted to exceed 10 µg/dL in less than 0.189% of the hypothetically exposed population, which is below USEPA's target threshold of 5%. Table 12.2.CT presents the results of the IEUBK model for the young child resident for the 10 µg/dL benchmark.

As requested by USEPA Region 2, the table below summarizes the percentage of the young-child resident population expected to be above the 2, 5, 8, and 10 µg/dL benchmarks for potential exposure to PMP Air Shaft mine water.

Benchmarks	10 ug/dL	8 ug/dL	5 ug/dL	2 ug/dL
Percent of Population Above Benchmark				
CTE Scenario	0.189%	0.772%	7.756%	70.120%
RME Scenario	1.746%	5.108%	26.289%	90.576%
IEUBK Default Scenario	0.075%	0.346%	4.447%	59.816%
Site RME Water Ingestion Only Scenario	0.024%	0.128%	2.193%	47.371%

The above tabulation demonstrates that site groundwater does not pose a potential hazard due to lead exposures above the USEPA benchmark of 10 µg/dL even under the assumption that the water in the PMP Air Shaft is used as a groundwater supply. At the 8, 5, and 2 µg/dL benchmarks and the assumption of mine water as a potable supply, the calculated percentages of the exposed population are greater than the 5% target threshold (RME scenario) because contributions from the other media (i.e., air, soil, and diet) default assumptions represent a sizable proportion of the lead uptake, as demonstrated by the comparison of IEUBK default results and the RME mine water ingestion only results.

SUMMARY AND CONCLUSIONS

The most recent Site-wide groundwater and mine water data used in this revised BHHRA Addendum combined with the prior data utilized in the BHHRA which, taken together, represents the April 2008 through August 2017 time period, indicate the following:

- A nominal exceedance of USEPA's acceptable cancer risk range for the hypothetical future resident for the RME Site-wide groundwater exposure scenario related to arsenic. However, there is no exceedance when USEPA default exposure assumptions are used.
- All non-cancer target organ risk estimates for Site-wide groundwater are at or below USEPA's target hazard index of 1.
- An exceedance of USEPA's acceptable cancer risk range for the hypothetical future resident for the RME PMP Air Shaft mine water as a potable water supply.
- All non-cancer target organ risk estimates for PMP Air Shaft mine water are at or below USEPA's target hazard index of 1 with the exception of the GI tract, which is due to naturally occurring, non-Site related (background) iron.

These calculations include multiple levels of conservatism to be protective of hypothetical future receptors. Even with these multiple conservative assumptions, the $2x10^{-4}$ cancer risk level for the RME scenario for groundwater is nominally outside the USEPA acceptable risk range of $1x10^{-6}$ to $1x10^{-4}$, due to the presence of arsenic in particulate matter in the overburden groundwater. Including overburden groundwater is an additional layer of conservatism in the calculations for two primary reasons:

- Average overburden thickness at the Site is in the range of 30 to 50 feet, and in accordance with the requirements for potable well installations in New Jersey at NJAC 7:9D-2.3(a)3i, the upper 50 feet of a well must be cased off regardless of whether it is a Class IIA aquifer, and therefore, overburden groundwater would not contribute directly to a potable water supply well. Instead, the overburden groundwater would have to flow through the bedrock aquifer, and this interaction of the overburden and bedrock groundwater already exists and any influence on bedrock groundwater quality is already reflected in the groundwater data base.
- The overburden groundwater quality data for COPCs associated with particulate matter (i.e., total metals) would not be representative of the quality of water used for the hypothetical potable water exposure scenario. Particulates are present in the overburden groundwater sampling and are reflected in the analytical results but would not be present in a potable water supply. If the overburden were contributing to a potable water supply, through continuous use over time, such a well would become fully developed and particulates would dissipate much more so than for a monitoring well purged one or twice a year.

For the above reasons, the bedrock groundwater is considered representative of the hypothetical exposure scenario, and not the overburden groundwater. If the carcinogenic risk calculations are performed with only the bedrock groundwater analytical data and not the overburden groundwater analytical data, the resultant carcinogenic risk estimate is within the USEPA's acceptable risk range ($1x10^{-4}$). Also of note, while arsenic is a Site-related COPC, it is also naturally occurring and found in the bedrock and the mine tailings at the Site. The relative risk contributions from these various potential sources are not distinguishable.

In addition to the conservatism resulting from the use of the overburden groundwater data, the risk calculations employ other conservative assumptions atypical of current risk assessment guidance, including an exposure duration of 52 years, double the current USEPA default exposure duration assumption of 26 years, and use of the Schaum shower model. As discussed in the 2015 BHHRA, the Schaum shower model likely overestimates risk, particularly for less volatile compounds, and does not consider the effects of air exchange on exposure concentrations. It assumes that volatile compounds are released to the air at a constant rate regardless of the potential for a steady-state condition to occur between the air and the shower water. If there is no other change to the risk calculations other than using the USEPA default exposure duration, once again, the result is within the USEPA acceptable risk levels for groundwater ($1x10^{-4}$).

1,4-Dioxane was not previously analyzed for in Site groundwater but data generated from 2015 through 2017 indicate that concentrations are above the human health-based screening level and it is therefore included in this BHHRA Addendum. As shown in Tables 7.1 through 7.3, the RME cancer risk from 1,4-dioxane is $4x10^{-5}$ and the CT cancer risk is $3x10^{-6}$ in Site-wide groundwater. This BHHRA Addendum demonstrates that the risk associated with reported concentrations of 1,4-dioxane in groundwater at the Site are within USEPA's acceptable range.

As previously noted, at the request of the USEPA Region 2, risk estimates were calculated separately for the mine water in the PMP Air Shaft. However, the mine water would not be used as a potable water supply, and the mine water characterization data from the Air Shaft are not considered representative of groundwater. For all intents and purposes, the water in the Air Shaft and larger mine workings is generally stagnant and it is not possible to collect a representative sample after purging the stagnant water because of the significant volume of stagnant water (millions of gallons) within the former mine workings. To the extent that the mine water is interconnected with the bedrock groundwater, albeit at a very low flow rate because of the low hydraulic conductivity of the bedrock aquifer, this interconnection is accounted for in the groundwater data because bedrock groundwater monitoring wells are located directly down gradient of the PMP Air Shaft. As such, while the risk estimates for the PMP Air Shaft have been calculated, they do not represent any plausible or realistic hypothetical future potable water use exposure scenario.

In addition, the water quality in the PMP Air Shaft cannot be attributed solely to Site-related activities, given that there is no indication of a discrete, definitive Site-related source at the Site, including within the Air Shaft, and water quality in the Shaft may be as much associated with the larger mine workings than with past Site-related activities. Also, despite the unrepresentative nature of the mine water in the PMP Air Shaft to a potable water use scenario, the carcinogenic risk estimate of $4x10^{-4}$ for the RME exposure scenario is only slightly outside the USEPA's acceptable risk range.

All COPCs (as determined by the screening) were retained for analysis in this BHHRA Addendum, including benzene, arsenic, lead, and 1,4-dioxane, which were determined to be primary constituents of concern for Site-related groundwater in the RIR (Arcadis 2015b) and RIR Addendum (Cornerstone 2017). As determined by the evaluation conducted in the BHHRA as supplemented by this BHHRA Addendum, while the concentrations of COPCs in groundwater contribute to the cancer risk estimates, when considering the multiple levels of conservatism in the risk calculations and the regulatory requirement for casing off the overburden groundwater for any potable well, the risk characterization is consistent with USEPA's acceptable carcinogenic risk range of $1x10^{-6}$ to $1x10^{-4}$, even though it is possible to hypothesize a scenario that results in a risk estimate nominally outside of this range.

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Table 7.5.RME Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Youth – Site-wide Groundwater – USEPA Standard Default Reasonable Maximum Exposure

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Table 7.7.CT Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident - Adult – Mine Water - Central Tendency Exposure

Table 7.7.RME Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Adult – Mine Water - Reasonable Maximum Exposure

Table 7.8.CT Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Youth – Mine Water – Central Tendency Exposure

Table 7.8.RME Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Youth – Mine Water – Reasonable Maximum Exposure

Table 7.9.CT Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Young Child – Mine Water – Central Tendency Exposure

Table 7.9.RME Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Young Child – Mine Water – Reasonable Maximum Exposure

Table 7.10.RME Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Adult – Mine Water - USEPA Standard Default Reasonable Maximum Exposure

Table 7.11.RME Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Youth – Mine Water – USEPA Standard Default Reasonable Maximum Exposure

Table 7.12.RME Calculation of Chemical Cancer Risks and Non-Cancer Hazards – Hypothetical Future Resident – Young Child – Mine Water – USEPA Standard Default Reasonable Maximum Exposure

Table 9.1.CT Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Adult – Site-wide Groundwater – Central Tendency Exposure

Table 9.1.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Adult – Site-wide Groundwater – Reasonable Maximum Exposure

Table 9.2.CT Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Youth – Site-wide Groundwater – Central Tendency Exposure

Table 9.2.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Youth – Site-wide Groundwater – Reasonable Maximum Exposure

Table 9.3.CT Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Young Child – Site-wide Groundwater – Central Tendency Exposure

Table 9.3.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Young Child – Site-wide Groundwater – Reasonable Maximum Exposure

Table 9.4.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Adult – Site-wide Groundwater – USEPA Standard Default Reasonable Maximum Exposure

Table 9.5.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Youth – Site-wide Groundwater – USEPA Standard Default Reasonable Maximum Exposure

Table 9.6.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Young Child – Site-wide Groundwater – USEPA Standard Default Reasonable Maximum Exposure

Table 9.7.CT Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Adult – Mine Water – Central Tendency Exposure

Table 9.7.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Adult – Mine Water – Reasonable Maximum Exposure

Table 9.8.CT Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Youth – Mine Water – Central Tendency Exposure

Table 9.8.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Youth – Mine Water – Reasonable Maximum Exposure

Table 9.9.CT Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Young Child – Mine Water – Central Tendency Exposure

Table 9.9.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Young Child – Mine Water – Reasonable Maximum Exposure

Table 9.10.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Adult – Mine Water – USEPA Standard Default Reasonable Maximum Exposure

Table 9.11.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Youth – Mine Water – USEPA Standard Default Reasonable Maximum Exposure

Table 9.12.RME Summary of Receptor Risks and Hazards for COPCs – Hypothetical Future Resident – Young Child – Mine Water – USEPA Standard Default Reasonable Maximum Exposure

Table 11.1.CT Summary of Estimated Potential Human Health Risks and Hazards – Central Tendency Exposure

Table 11.1.RME Summary of Estimated Potential Human Health Risks and Hazards – Reasonable Maximum Exposure

Table 12.1.CT Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child – Central Tendency Exposure – Site-wide Groundwater

Table 12.1.RME Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child – Reasonable Maximum Exposure – Site-wide Groundwater

Table 12.2.CT Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child – Central Tendency Exposure –Mine Water

Table 12.2.RME Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child – Reasonable Maximum Exposure – Mine Water

Figure

Figure 1 Annual Groundwater Sampling

Appendices

Appendix A 2008 – 2017 Annual Groundwater Data

Appendix B ProUCL Output

Appendix C Shower Model Calculations

Appendix D Mutagenic Exposure Calculations

Appendix E IEUBK Sensitivity Analysis

TABLES

Table 0
Site Risk Assessment Identification Information

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Site Name/Operable Unit:	Ringwood Mines/Landfill Superfund Site
Region:	USEPA Region 2
USEPA ID Number:	NJD980529739
State:	New Jersey
Status:	
Federal Facility (Y/N):	
USEPA Project Manager:	Joseph Gowers
USEPA Risk Assessor:	Michael Sivak
Prepared by (Organization):	Arcadis U.S., Inc.
Prepared for (Organization):	Ford Motor Company
Document Title:	Site-Wide Groundwater Baseline Human Health Risk Assessment Update
Document Date:	May 2018
Probabilistic Risk Assessment (Y/N):	No
Comments:	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
USEPA = U.S. Environmental Protection Agency

Table 1
Selection of Exposure Pathways

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Groundwater / Mine Water	Groundwater / Mine Water	Tap Water	Hypothetical Future Resident	Adult	Ingestion	None	Exposure pathways incomplete. Site groundwater is not currently used for domestic water supply.
						Dermal (showering)		
						Inhalation (showering)		
					Youth	Ingestion		
						Dermal (showering)		
						Inhalation (showering)		
					Young Child	Ingestion		
						Dermal (showering)		
						Inhalation (showering)		
Future	Groundwater / Mine Water	Groundwater / Mine Water	Tap Water	Hypothetical Future Resident	Adult	Ingestion	Quantitative	Exposure pathways potentially complete. USEPA requires that Class IIa groundwater be assessed for future potable use.
						Dermal (showering)		
						Inhalation (showering)		
					Youth	Ingestion		
						Dermal (showering)		
						Inhalation (showering)		
					Young Child	Ingestion		
						Dermal (showering)		
						Inhalation (showering)		

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
USEPA = U.S. Environmental Protection Agency

Table 2.1
Occurrence, Distribution, and Selection of Constituents of Potential Concern in Site-wide Groundwater

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: 2008-2017 Site-wide Annual Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Screening Toxicity Value (N/C) (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Tap Water	Polychlorinated Biphenyls (PCBs)														
	12672-29-6	Aroclor-1248	0.33	0.77	µg/L	RW-2(452-462)-082216	0.4%	0.015 - 2	0.77	0.0078	c	NA		N	FOD
	11097-69-1	Aroclor-1254	0.18	1.3	µg/L	RW-4A (113-123)-082415	0.4%	0.014 - 2	1.3	0.0078	c**	NA		N	FOD
	1336-36-3	Total PCBs	0.33	1.3	µg/L	RW-4A (113-123)-082415	0.4%	0.098 - 0.66	1.3			0.5	MCL	N	FOD
Tap Water	Volatile Organic Compounds (VOCs)														
	71-55-6	1,1,1-Trichloroethane	1.2	2.5	µg/L	OB-27(051811)	0.3%	0.2 - 1	2.5	800	n	200	MCL	N	FOD
	75-34-3	1,1-Dichloroethane	0.24	89.3	µg/L	OB-27(051811)	13.5%	0.16 - 1	89.3	2.8	c	NA		Y	ASL
	95-50-1	1,2-Dichlorobenzene	0.39	0.39	µg/L	RW-2(279-289)-082216	0.2%	0.15 - 1	0.39	30	n	600	MCL	N	FOD
	541-73-1	1,3-Dichlorobenzene	0.77	0.77	µg/L	RW-2(279-289)-082216	0.2%	0.19 - 1	0.77	NA		NA		N	FOD
	10061-01-5	cis-1,3-Dichloropropene	0	0	µg/L	0	0.0%	0.15 - 1	0	NA		NA		N	FOD
	106-46-7	1,4-Dichlorobenzene	0.2	1.5	µg/L	RW-2(279-289)-082216	1.2%	0.22 - 1	1.5	0.48	c	75	MCL	N	FOD
	78-93-3	2-Butanone (MEK)	2.4	29	µg/L	RW-11D (262-267)-082615	5.1%	1.6 - 50	29	560	n	NA		N	BSL
	591-78-6	2-Hexanone	0.75	3	µg/L	RW-15D(127-137)-081717	1.0%	0.72 - 10	3	3.8	n	NA		N	FOD
	108-10-1	4-methyl-2-pentanone (MIBK)	0.78	1	µg/L	RW-12 (55-65)-081715	0.4%	0.63 - 10	1	630	n	NA		N	FOD
	67-64-1	Acetone	1.6	95	µg/L	RW-2 (279-289)	21.7%	1.1 - 25	95	1400	n	NA		N	BSL
	71-43-2	Benzene	0.092	43.8	µg/L	RW-2 (103-133)	18.5%	0.05 - 6	43.8	0.46	c**	5	MCL	Y	ASL
	75-27-4	Bromodichloromethane	0.37	0.585	µg/L	RW-2(20-50)10/26/2009)(10/26/2009)	0.5%	0.14 - 1	0.585	0.13	c	80	MCL	N	FOD
	75-15-0	Carbon disulfide	0.26	63	µg/L	RW-11D (262-267)-082615	12.7%	0.13 - 1	63	81	n	NA		N	BSL
	108-90-7	Chlorobenzene	0.22	12	µg/L	RW-2(279-289)-082216	1.7%	0.14 - 1	12	7.8	n	100	MCL	N	FOD
	75-00-3	Chloroethane	0.39	208	µg/L	OB-27 (042512)	13.8%	0.22 - 1	208	2100	n	NA		N	BSL
	67-66-3	Chloroform	0.21	15.8	µg/L	RW-2(20-50)10/26/2009)(10/26/2009)	3.5%	0.14 - 1	15.8	0.22	c*	80	MCL	N	FOD
	74-87-3	Chloromethane	0.28	0.53	µg/L	RW-8 (204-214) (111413)	1.9%	0.22 - 1	0.53	19	n	NA		N	FOD
	156-59-2	cis-1,2-Dichloroethene	0.22	0.6	µg/L	OB-27 (042512)	2.6%	0.19 - 1	0.6	3.6	n	70	MCL	N	FOD
	110-82-7	Cyclohexane	0.14	4.1	µg/L	RW-6A-080415	8.9%	0.18 - 5	4.1	1300	n	NA		N	BSL
	75-71-8	Dichlorodifluoromethane	0.19	0.97	µg/L	RW-6 (111813)	0.3%	0.14 - 1	0.97	20	n	NA		N	FOD
	100-41-4	Ethylbenzene	0.245	2.7	µg/L	OB-27(051811)	1.9%	0.21 - 1	2.7	1.5	c*	700	MCL	N	FOD
	98-82-8	Isopropylbenzene	0.28	7.5	µg/L	RW-6A (110813)	7.3%	0.15 - 1	7.5	45	n	NA		N	BSL
	1634-04-4	Methyl tert butyl ether	0.17	171	µg/L	OB-25(070609)	6.6%	0.13 - 1	171	14	c*	NA		Y	ASL
	108-87-2	Methylcyclohexane	0.22	1.6	µg/L	OB-27-082217	7.0%	0.11 - 5	1.6	NA		NA		N	BSL
	75-09-2	Methylene chloride	0.22	2.1	µg/L	OB-24-081717	9.8%	0.16 - 5	2.1	11	n	5	MCL	N	BSL
	127-18-4	Tetrachloroethene	0.69	0.73	µg/L	W-2 (279-289) (111913),RW-2 (452-462) (11191	0.5%	0.12 - 6	0.73	4.1	n	5	MCL	N	FOD
	108-88-3	Toluene	0.2	72.4	µg/L	RW-2 (103-133)(5/1/2008)	14.8%	0.15 - 45	72.4	110	n	1000	MCL	N	BSL
	79-01-6	Trichloroethene	0.24	13.7	µg/L	OB-3(080909)	2.3%	0.18 - 1	13.7	0.28	n	5	MCL	N	FOD
	75-69-4	Trichlorofluoromethane	0.3	0.3	µg/L	OB-2(051611)	0.2%	0.15 - 1	0.3	520	n	NA		N	FOD
	75-01-4	Vinyl Chloride	0.11	0.24	µg/L	RW-8(204-214)-082516	0.8%	0.06 - 1	0.24	0.019	c	2	MCL	Y	CLA
	1330-20-7	Xylenes, Total	0.22	49.6	µg/L	RW-6A (080915)	5.6%	0.17 - 3	49.6	19	n	10000	MCL	Y	ASL

Table 2.1
Occurrence, Distribution, and Selection of Constituents of Potential Concern in Site-wide Groundwater

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: 2008-2017 Site-wide Annual Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Screening Toxicity Value (N/C) (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Tap Water	Semivolatile Organic Compounds (SVOCs)														
	123-91-1	1,4-Dioxane	0.079	201	µg/L	RW-13(71-91)-082516	45.6%	0.0735 - 80.65	201	0.46	c*	NA		Y	ASL
	51-28-5	2,4-Dinitrophenol	6.5	6.7	µg/L	RW-3DS (155-160)-082515(8/25/2015)	0.5%	0.74 - 170	6.7	3.9	n	NA		N	FOD
	91-57-6	2-Methylnaphthalene	0.43	1.3	µg/L	RW-6A-081816	1.8%	0.29 - 3.8	1.3	3.6	n	NA		N	FOD
	83-32-9	Acenaphthene	0.107	1.83	µg/L	OB-23(051911)	3.2%	0.014 - 2.5	1.83	53	n	NA		N	FOD
	208-96-8	Acenaphthylene	0.119	0.17	µg/L	RW-10 (120-130)(041912)	0.4%	0.007 - 2.5	0.17	NA		NA		N	FOD
	98-86-2	Acetophenone	0.47	3.4	µg/L	RW-2 (452-462)(6/29/2010)	4.9%	0.29 - 19.9	3.4	190	n	NA		N	FOD
	120-12-7	Anthracene	0.124	0.15	µg/L	OB-27(111113) & DUP(11/11/2013)	0.7%	0.01 - 2.5	0.15	180	n	NA		N	FOD
	1912-24-9	Atrazine	0.91	1.8	µg/L	RW-6A-081816	0.7%	0.28 - 13	1.8	0.3	c	3	MCL	N	FOD
	56-55-3	Benzo(a)anthracene	0.142	0.233	µg/L	RW-6 (042712)	0.4%	0.012 - 0.24	0.233	0.03	c	NA		N	FOD
	50-32-8	Benzo(a)pyrene	0.035	1.25	µg/L	RW-6 (042712)	0.4%	0.0049 - 0.27	1.25	0.025	c*	0.2	MCL	N	FOD
	205-99-2	Benzo(b)fluoranthene	0.025	0.714	µg/L	RW-6 (042712)	0.9%	0.01 - 0.25	0.714	0.25	c	NA		N	FOD
	191-24-2	Benzo(g,h,i)perylene	1.95	3.25	µg/L	RW-6 (042712)	0.4%	0.01 - 2.5	3.25	NA		NA		N	FOD
	207-08-9	Benzo(k)fluoranthene	0.283	1.24	µg/L	RW-6 (042712)	0.4%	0.013 - 2.5	1.24	2.5	c	NA		N	FOD
	111-44-4	bis(2-Chloroethyl)ether	0.033	3.4	µg/L	RW-6A-080415	0.7%	0.009 - 13	3.4	0.014	c	NA		N	FOD
	117-81-7	bis(2-Ethylhexyl)phthalate	0.84	156	µg/L	RW-10A (75-85)(060211)	9.7%	0.33 - 17.1	156	5.6	c**	6	MCL	Y	ASL
	105-60-2	Caprolactam	1.2	5.1	µg/L	RW-5A (110813)	0.5%	0.2 - 13	5.1	990	n	NA		N	FOD
	86-74-8	Carbazole	0.47	0.59	µg/L	OB-23(080502)	0.5%	0.17 - 13	0.59	NA		NA		N	FOD
	218-01-9	Chrysene	0.15	0.15	µg/L	RW-6 (042712)	0.2%	0.012 - 2.5	0.15	25	c	NA		N	FOD
	53-70-3	Dibenzo(a,h)anthracene	0.402	0.616	µg/L	RW-6 (042712)	0.4%	0.017 - 2.5	0.616	0.025	c	NA		N	FOD
	132-64-9	Dibenzofuran	0.69	0.86	µg/L	OB-23(051911)	0.4%	0.23 - 13	0.86	0.79	n	NA		N	FOD
	84-66-2	Diethyl phthalate	1.1	3.4	µg/L	OB-20B (110813)	0.4%	0.17 - 13	3.4	1500	n	NA		N	FOD
	131-11-3	Dimethyl phthalate	1.5	6.9	µg/L	RW-13(71-91) (090914) & DUP	0.4%	0.23 - 13	6.9	NA		NA		N	FOD
	84-74-2	di-n-butyl phthalate	1	4.7	µg/L	OB-4(091514)	3.1%	0.19 - 13	4.7	90	n	NA		N	FOD
	117-84-0	di-n-octylphthalate	0.98	1.1	µg/L	RW-4A (62-72)(052511)	0.4%	0.25 - 13	1.1	20	n	NA		N	FOD
	86-73-7	Fluorene	0.129	0.865	µg/L	OB-23(051911)	2.9%	0.015 - 2.5	0.865	29	n	NA		N	FOD
	118-74-1	Hexachlorobenzene	0.011	0.046	µg/L	OB-3-082117	0.7%	0.0052 - 0.51	0.046	0.0098	c	1	MCL	N	FOD
	193-39-5	Indeno(1,2,3-cd)pyrene	0.036	0.818	µg/L	RW-6 (042712)	0.7%	0.011 - 2.5	0.818	0.25	c	NA		N	FOD
	78-59-1	Isophorone	0.76	12.5	µg/L	RW-3D (140-165)(052411)	2.7%	0.25 - 13	12.5	78	c**	NA		N	FOD
	91-20-3	Naphthalene	0.128	9.1	µg/L	RW-6A (110813),RW-6A-081816	10.3%	0.014 - 6.9	9.1	0.17	c**	NA		Y	ASL
	86-30-6	N-Nitrosodiphenylamine	0.4	1.6	µg/L	OB-23(070809)	2.7%	0.21 - 13	1.6	12	c	NA		N	FOD
	87-86-5	Pentachlorophenol	0.1	1.47	µg/L	RW-10 (120-130)(041912)	1.6%	0.068 - 1.5	1.47	0.041	c*	1	MCL	N	FOD
	85-01-8	Phenanthrene	0.122	1.49	µg/L	RW-3DS (155-160)(043012)	7.6%	0.016 - 2.5	1.49	NA		NA		N	BSL
	108-95-2	Phenol	1.1	103	µg/L	RW-10 (70-90),RW-8(158-178)	7.9%	0.41 - 13	103	580	n	NA		N	BSL

Table 2.1
Occurrence, Distribution, and Selection of Constituents of Potential Concern in Site-wide Groundwater

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: 2008-2017 Site-wide Annual Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Screening Toxicity Value (N/C) (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Tap Water	Metals - Total														
	7429-90-5	Aluminum	9.6	43100	µg/L	OB-25(080918)	69.2%	7.2 - 254	43100	2000	n	NA		Y	ASL
	7440-36-0	Antimony	0.51	17.8	µg/L	RW-4 (56-77)	3.6%	0.62 - 6	17.8	0.78	n	6	MCL	N	FOD
	7440-38-2	Arsenic	0.59	36.8	µg/L	RW-15S(110-120)-081717	43.2%	0.64 - 5.9	36.8	0.052	c*	10	MCL	Y	ASL
	7440-39-3	Barium	2	1570	µg/L	RW-11D (262-267) (111413)	97.8%	7.7 - 200	1570	380	n	2000	MCL	Y	ASL
	7440-41-7	Beryllium	0.2	4.7	µg/L	RW-4(393-403) (111113)	2.5%	0.1 - 2	4.7	2.5	n	4	MCL	N	FOD
	7440-43-9	Cadmium	0.2	11.8	µg/L	RW-5 (102709)	9.7%	0.17 - 3	11.8	0.92	n	NA		Y	ASL
	7440-47-3	Chromium	0.55	191	µg/L	RW-13(100-120)(091614)	36.5%	0.53 - 20.8	191	0.035	c	100	MCL	Y	ASL
	7440-48-4	Cobalt	0.4	34.7	µg/L	RW-5 (102709)	26.0%	0.3 - 50	34.7	0.6	n	NA		Y	ASL
	7440-50-8	Copper	0.5	307	µg/L	RW-2(452-462)(092614)	42.9%	0.7 - 10	307	80	n	1300	MCL	Y	ASL
	7439-89-6	Iron	14	84500	µg/L	OB-11R-081717	90.1%	7.4 - 143	84500	1400	n	NA		Y	ASL
	7439-92-1	Lead	0.2	53.6	µg/L	OB-25(060110)	28.9%	0.38 - 4.2	53.6	15	L	15	MCL	Y	ASL
	7439-95-4	Magnesium	23.2	50200	µg/L	OB-5(080909)	93.2%	16 - 5000	50200	NA		NA		N	NTX
	7439-96-5	Manganese	0.3	16300	µg/L	OB-15B(061110)	85.8%	0.12 - 15	16300	43	n	NA		Y	ASL
	7439-97-6	Mercury	0.071	0.49	µg/L	RW-11S(236-241)-082316	2.9%	0.049 - 0.2	0.49	0.063	n	2	MCL	N	FOD
	7440-02-0	Nickel	0.57	104	µg/L	OB-15B(061110)	59.1%	0.41 - 40.9	104	39	n	NA		Y	ASL
	7782-49-2	Selenium	0.65	24	µg/L	RW-13(100-120)(091614)	19.7%	0.73 - 10	24	10	n	50	MCL	Y	ASL
	7440-22-4	Silver	0.6	10.2	µg/L	OB-11R (091114) & DUP	15.9%	0.53 - 10	10.2	9.4	n	NA		Y	ASL
	7440-28-0	Thallium	0.2	17.9	µg/L	RW-4(393-403) (111113)	4.1%	0.17 - 6.6	17.9	0.02	n	2	MCL	N	FOD
	7440-62-2	Vanadium	0.5	77.8	µg/L	OB-25(080918)	49.1%	0.43 - 50	77.8	8.6	n	NA		Y	ASL
	7440-66-6	Zinc	1.9	10700	µg/L	RW-2 (442-472)	47.3%	1.4 - 30	10700	600	n	NA		Y	ASL
Tap Water	Other														
	57-12-5	Cyanide	2.1	16	µg/L	RW-4A (113-123)-082415	23.2%	2 - 10	16	0.15	n	200	MCL	Y	ASL

General Notes:

1. Concentrations in micrograms per liter (µg/L).
2. All annual site-wide data (2008-2017) were used for COPC screening. Only constituents detected in one or more sample(s) are presented. Metals data are total (rather than dissolved) concentrations, assuming conservatively that groundwater used as drinking water is unfiltered.

Table 2.1
Occurrence, Distribution, and Selection of Constituents of Potential Concern in Site-wide Groundwater

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: 2008-2017 Site-wide Annual Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Screening Toxicity Value (N/C) (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

Footnotes:

(1) Maximum detected concentration used for screening.

(2) USEPA Regional Screening Levels (RSLs) for tap water May 2016. RSLs based on noncarcinogenic effects were based on an THQ of 0.1. RSLs based on carcinogenic effects where the noncarcinogenic RSL is <10 times the carcinogenic RSL were represented by noncarcinogenic RSLs based on an THQ of 0.1. The following surrogates and assumptions regarding inorganic speciation were used for screening:

Chromium = Chromium VI

Codes used for "Screening Toxicity Value":

c = screening value is based on carcinogenic effects
L = lead (screening value is the Action Level in drinking water)
n = screening value is based on noncarcinogenic effects

(3) The following surrogates were used to identify potential Applicable or Relevant and Appropriate Requirement (ARAR)/To be Considered (TBC) values:

Bromodichloromethane, chloroform = Total Trihalomethanes
Chromium = Total Chromium

Codes used for "Potential ARAR/TBC Source":

MCL = Maximum Contaminant Level, http://water.epa.gov/drink/contaminants/index.cfm

(4) Codes used for the "Rationale for Selection or Deletion":

ASL = above screening level
BSL = below screening level
CLA = chemical is classified as a class A carcinogen by USEPA
FOD = frequency of detection below 5 percent
NTX = no toxicity data and no screening value; compound will be discussed qualitatively
NUT = essential nutrient

Acronyms and Abbreviations Not Defined Elsewhere:

ARAR = Applicable or Relevant and Appropriate Requirement
BHHRA = Baseline Human Health Risk Assessment
CAS = Chemical Abstract Service
COPC = constituent of potential concern
N = no
NA = not available or not applicable
TBC = to be considered
THQ = target hazard quotient
USEPA = U.S. Environmental Protection Agency
Y = yes

Table 2.2
Occurrence, Distribution, and Selection of Constituents of Potential Concern in Mine Water

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: PMP Air Shaft Mine Water
Exposure Medium: Mine Water

Exposure Point	CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Screening Toxicity Value (N/C) (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Tap Water	Volatile Organic Compounds (VOCs)														
	75-34-3	1,1-Dichloroethane	0.23	2.1	µg/L	PM AIRSHAFT(180),PM AIRSHAFT(230)	23%	0.11 - 0.35	2.1	2.8	c	NA		N	BSL
	95-50-1	1,2-Dichlorobenzene	0.28	0.8	µg/L	PMP-AS-230-082317	30%	0.16 - 0.26	0.8	30	n	600	MCL	N	BSL
	107-06-2	1,2-Dichloroethane	0.33	0.33	µg/L	PMP-AS-230-082316	3%	0.18 - 0.35	0.33	0.17	c**	5	MCL	N	FOD
	541-73-1	1,3-Dichlorobenzene	0.76	3.4	µg/L	PM AIRSHAFT-230(052411)	37%	0.18 - 0.33	3.4	NA		NA		N	BSL
	106-46-7	1,4-Dichlorobenzene	0.29	8.2	µg/L	PMP-AS-230-082317	63%	0.17 - 0.33	8.2	0.48	c	75	MCL	Y	ASL
	67-64-1	Acetone	3.3	3.3	µg/L	PMP-AS-230-082317	3%	1.1 - 7.6	3.3	1400	n	NA		N	FOD
	71-43-2	Benzene	0.6	33.2	µg/L	PM AIRSHAFT-230(052411)	63%	0.09 - 0.26	33.2	0.46	c**	5	MCL	Y	ASL
	98-82-8	Benzene, (1-methylethyl)-	0.67	14.6	µg/L	PM AIRSHAFT-230(052411)	67%	0.19 - 0.57	14.6	45	n	NA		N	BSL
	75-15-0	Carbon disulfide	0.24	0.24	µg/L	PMP-AS-180-082316	3%	0.15 - 0.74	0.24	81	n	NA		N	FOD
	108-90-7	Chlorobenzene	0.49	23.8	µg/L	PM AIRSHAFT-230(052411)	63%	0.14 - 0.39	23.8	7.8	n	100	MCL	Y	ASL
	75-00-3	Chloroethane	0.39	44	µg/L	PMP-AS-180-082316	63%	0.22 - 0.56	44	2100	n	NA		N	BSL
	156-59-2	cis-1,2-Dichloroethene	0.27	0.63	µg/L	PMAIRSHAFT-180(091614)	10%	0.19 - 0.33	0.63	3.6	n	70	MCL	N	BSL
	110-82-7	Cyclohexane	0.79	3.6	µg/L	PM AIRSHAFT-230(052411)	50%	0.13 - 1.9	3.6	1300	n	NA		N	BSL
	100-41-4	Ethylbenzene	0.52	1.3	µg/L	PM AIRSHAFT(230)	10%	0.19 - 0.4	1.3	1.5	c*	700	MCL	N	BSL
	98-82-8	Isopropylbenzene	0.67	14.6	µg/L	PM AIRSHAFT-230(052411)	67%	0.19 - 0.57	14.6	45	n	NA		N	BSL
	108-87-2	Methylcyclohexane	0.17	1.1	µg/L	PM AIRSHAFT-230(052411)	47%	0.09 - 0.35	1.1	NA		NA		N	BSL
	75-09-2	Methylene Chloride	0.25	0.81	µg/L	PMP-AS-230-082316	20%	0.16 - 0.81	0.81	11	n	5	MCL	N	BSL
	108-88-3	Toluene	0.18	0.45	µg/L	PM AIRSHAFT-230(071112)	30%	0.15 - 0.3	0.45	110	n	1000	MCL	N	BSL
	75-01-4	Vinyl chloride	0.12	0.25	µg/L	PM AIR SHAFT-180-081715	7%	0.06 - 0.44	0.25	0.019	c	2	MCL	Y	CLA
	1330-20-7	Xylenes, Total	0.77	27.5	µg/L	PM AIRSHAFT(230)	53%	0.17 - 0.58	27.5	19	n	10000	MCL	Y	ASL
Tap Water	Semivolatile Organic Compounds (SVOCs)														
	123-91-1	1,4-Dioxane	5.7	146	µg/L	PMP-AS-230-082316	75%	0.0735 - 0.27	146	0.46	c*	NA		Y	ASL
	83-32-9	Acenaphthene	0.176	0.356	µg/L	PM AIRSHAFT-230(052411)	13%	0.014 - 0.92	0.356	53	n	NA		N	BSL
	80-30-8	Benzenesulfonamide, N-cyclohe	3.5	16	µg/L	PMAIRSHAFT-230(091714),PMP-AS-230-08231	100%	NA	16	NA		NA		N	BSL
	117-81-7	Bis(2-ethylhexyl)phthalate	2.2	39.2	µg/L	PMAIRSHAFT-230(091714)	13%	0.33 - 6	39.2	5.6	c**	6	MCL	Y	ASL
	80-05-7	Bisphenol-A	3.5	8.2	µg/L	PMAIRSHAFT-230(091714)	100%	NA	8.2	77	n	NA		N	BSL
	105-60-2	Caprolactam	4.4	4.4	µg/L	PMAIR SHAFT-230	3%	0.2 - 2.4	4.4	990	n	NA		N	FOD
	117-84-0	Di-n-octyl phthalate	5.6	5.6	µg/L	PMAIRSHAFT-230(091714)	3%	0.25 - 2.5	5.6	20	n	NA		N	FOD
	86-73-7	Fluorene	0.106	0.199	µg/L	PM AIRSHAFT-230(052411)	7%	0.015 - 0.83	0.199	29	n	NA		N	BSL
	91-20-3	Naphthalene	0.293	8.3	µg/L	PMP-AS-230-082317	60%	0.016 - 0.83	8.3	0.17	c**	NA		Y	ASL
	86-30-6	N-Nitrosodiphenylamine	0.82	1.3	µg/L	PM AIRSHAFT(230)	37%	0.21 - 3.6	1.3	12	c	NA		N	BSL
	85-01-8	Phenanthrene	0.104	0.104	µg/L	PM AIRSHAFT-230(052411)	3%	0.016 - 0.68	0.104	NA		NA		N	FOD

Table 2.2
Occurrence, Distribution, and Selection of Constituents of Potential Concern in Mine Water

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: PMP Air Shaft Mine Water
Exposure Medium: Mine Water

Exposure Point	CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Screening Toxicity Value (N/C) (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Tap Water	Metals - Total														
	7429-90-5	Aluminum	0.035	256	µg/L	PM AIR SHAFT-50(042312)	73%	7.8 - 200	256	2000	n	NA		N	BSL
	7440-36-0	Antimony	0.00061	2.2	µg/L	PM AIRSHAFT-230(071112)	7%	0.0005 - 4	2.2	0.78	n	6	MCL	Y	ASL
	7440-38-2	Arsenic	0.0013	4.2	µg/L	PMAIRSHAFT-230(091714)	23%	0.64 - 2.6	4.2	0.052	c*	10	MCL	Y	ASL
	7440-39-3	Barium	0.0093	643	µg/L	PMAIR SHAFT-230	100%	NA	643	380	n	2000	MCL	Y	ASL
	7440-41-7	Beryllium	0.6	0.6	µg/L	PM AIRSHAFT 230	3%	0.0005 - 0.5	0.6	2.5	n	4	MCL	N	FOD
	7440-43-9	Cadmium	1.8	2.6	µg/L	PM AIRSHAFT-230	10%	0.0004 - 3	2.6	0.92	n	NA		Y	ASL
	7440-47-3	Chromium	0.00076	10.2	µg/L	PMP-AS-230-082317	43%	0.53 - 10	10.2	0.035	c	100	MCL	Y	ASL
	7440-48-4	Cobalt	0.0016	3.3	µg/L	PMPAS-230(080507)	20%	0.0005 - 50	3.3	0.6	n	NA		Y	ASL
	7440-50-8	Copper	0.0024	11.4	µg/L	PMP-AS-230-082317	50%	1.1 - 10	11.4	80	n	1300	MCL	N	BSL
	7439-89-6	Iron	0.47	169000	µg/L	PM AIRSHAFT-230	97%	143 - 143	169000	1400	n	NA		Y	ASL
	7439-92-1	Lead	0.0045	203	µg/L	PMP-AS-230-082317	50%	1.3 - 3	203	15	L	15	MCL	Y	ASL
	7439-95-4	Magnesium	1.8	13000	µg/L	PMP-AS-230-082316	100%	NA	13000	NA		NA		N	NTX
	7439-96-5	Manganese	0.017	2810	µg/L	PM AIRSHAFT-230	100%	NA	2810	43	n	NA		Y	ASL
	7440-02-0	Nickel	0.0029	6.2	µg/L	PMP-AS-230-082317	47%	0.51 - 10	6.2	39	n	NA		N	BSL
	7782-49-2	Selenium	2.2	5.7	µg/L	PM AIRSHAFT-180	10%	0.0006 - 3.7	5.7	10	n	50	MCL	N	BSL
	7440-22-4	Silver	2.5	3	µg/L	PM AIRSHAFT 230	7%	0.0005 - 10	3	9.4	n	NA		N	BSL
	7440-28-0	Thallium	0.00067	0.00067	µg/L	PM AIRSHAFT-50-081215	3%	0.0002 - 2	0.00067	0.02	n	2	MCL	N	FOD
	7440-62-2	Vanadium	0.01	25.7	µg/L	PM AIRSHAFT-230	50%	0.43 - 50	25.7	8.6	n	NA		Y	ASL
	7440-66-6	Zinc	1.6	9230	µg/L	PMAIRSHAFT-180(091614)	87%	4 - 20	9230	600	n	NA		Y	ASL
Tap Water	Other														
	57-12-5	Cyanide	3.8	3.9	µg/L	PMP-AS-50-082317	23%	0.007 - 10	3.9	0.15	n	200	MCL	Y	ASL

General Notes:

1. Concentrations in micrograms per liter (µg/L), except radon in picoCuries per liter (pCi/L).

2. Annual Peter's Mine Pit Air Shaft data (2008-2017) were used for COPC screening. Only constituents detected in one or more sample(s) are presented. Metals data are total (rather than dissolved) concentrations, assuming conservatively that groundwater used as drinking water is unfiltere

Table 2.2
Occurrence, Distribution, and Selection of Constituents of Potential Concern in Mine Water

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: PMP Air Shaft Mine Water
Exposure Medium: Mine Water

Exposure Point	CAS Number	Chemical	Minimum Concentration	Maximum Concentration	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Screening Toxicity Value (N/C) (2)		Potential ARAR/TBC Value	Potential ARAR/TBC Source (3)	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

Footnotes:

(1) Maximum detected concentration used for screening.

(2) USEPA Regional Screening Levels (RSLs) for tap water May 2016. RSLs based on noncarcinogenic effects were based on an THQ of 0.1. RSLs based on carcinogenic effects where the noncarcinogenic RSL is <10 times the carcinogenic RSL were represented by noncarcinogenic RSLs based on an THQ of 0.1. The following surrogates and assumptions regarding inorganic speciation were used for screening:

Chromium = Chromium VI

Codes used for "Screening Toxicity Value":

c = screening value is based on carcinogenic effects

L = lead (screening value is the Action Level in drinking water)

n = screening value is based on noncarcinogenic effects

(3) The following surrogates were used to identify potential Applicable or Relevant and Appropriate Requirement (ARAR)/To be Considered (TBC) values:

Bromodichloromethane, chloroform = Total Trihalomethanes

Chromium = Total Chromium

Codes used for "Potential ARAR/TBC Source":

MCL = Maximum Contaminant Level, http://water.epa.gov/drink/contaminants/index.cfm

(4) Codes used for the "Rationale for Selection or Deletion":

ASL = above screening level

BSL = below screening level

CLA = chemical is classified as a class A carcinogen by USEPA

FOD = frequency of detection below 5 percent

NTX = no toxicity data and no screening value; compound will be discussed qualitatively

NUT = essential nutrient

Acronyms and Abbreviations Not Defined Elsewhere:

ARAR = Applicable or Relevant and Appropriate Requirement
BHHRA = Baseline Human Health Risk Assessment
CAS = Chemical Abstract Service
COPC = constituent of potential concern
N = no
NA = not available or not applicable
TBC = to be considered
THQ = target hazard quotient
USEPA = U.S. Environmental Protection Agency
Y = yes

Table 3.1
Exposure Point Concentration Summary - Site-wide Groundwater

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: 2008-2017 Site-wide Annual Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (3)	95% UCL (Distribution) (1)	Minimum Concentration	Maximum Concentration	Detection Frequency	Exposure Point Concentration			
								Value (2)	Units	Statistic (2)	Rationale (2)
Tap Water	**Volatile Organic Compounds (VOCs)**										
	1,1-Dichloroethane	µg/L	4.6E-01	1.2E+00	2.4E-01	8.9E+01	13%	1.2E+00	µg/L	95th% UCL	UCL < Max
	Benzene	µg/L	5.5E-01	9.0E-01	9.2E-02	4.4E+01	19%	9.0E-01	µg/L	95th% UCL	UCL < Max
	Methyl tert butyl ether	µg/L	4.7E-01	1.8E+00	1.7E-01	1.7E+02	7%	1.8E+00	µg/L	95th% UCL	UCL < Max
	Vinyl Chloride	µg/L	1.6E-01	6.8E-02	1.1E-01	2.4E-01	0.8%	6.8E-02	µg/L	95th% UCL	UCL < Max
	Semivolatile Organic Compounds (SVOCs)										
	1,4-Dioxane	µg/L	8.4E+00	1.4E+01	7.9E-02	2.0E+02	46%	1.4E+01	µg/L	95th% UCL	UCL < Max
	bis(2-Ethylhexyl)phthalate	µg/L	1.4E+00	2.3E+00	8.4E-01	1.6E+02	10%	2.3E+00	µg/L	95th% UCL	UCL < Max
	Naphthalene	µg/L	3.7E-01	3.0E-01	1.3E-01	9.1E+00	10%	3.0E-01	µg/L	95th% UCL	UCL < Max
	Metals - Total										
	Aluminum	µg/L	6.5E+02	1.2E+03	9.6E+00	4.3E+04	69%	1.2E+03	µg/L	95th% UCL	UCL < Max
	Arsenic	µg/L	3.2E+00	4.1E+00	5.9E-01	3.7E+01	43%	4.1E+00	µg/L	95th% UCL	UCL < Max
	Barium	µg/L	6.3E+01	6.3E+01	2.0E+00	1.6E+03	98%	6.3E+01	µg/L	95th% UCL	UCL < Max
	Cadmium	µg/L	4.5E-01	4.3E-01	2.0E-01	1.2E+01	10%	4.3E-01	µg/L	95th% UCL	UCL < Max
	Chromium	µg/L	4.0E+00	6.0E+00	5.5E-01	1.9E+02	37%	6.0E+00	µg/L	95th% UCL	UCL < Max
	Cobalt	µg/L	3.4E+00	2.7E+00	4.0E-01	3.5E+01	26%	2.7E+00	µg/L	95th% UCL	UCL < Max
	Copper	µg/L	4.8E+00	7.5E+00	5.0E-01	3.1E+02	43%	7.5E+00	µg/L	95th% UCL	UCL < Max
	Iron	µg/L	8.9E+03	1.2E+04	1.4E+01	8.5E+04	90%	1.2E+04	µg/L	95th% UCL	UCL < Max
	Lead	µg/L	1.8E+00	1.2E+00	2.0E-01	5.4E+01	29%	1.8E+00	µg/L	Arithmetic Mean	Lead
	Manganese	µg/L	1.4E+03	1.9E+03	3.0E-01	1.6E+04	86%	1.9E+03	µg/L	95th% UCL	UCL < Max
	Nickel	µg/L	5.6E+00	7.1E+00	5.7E-01	1.0E+02	59%	7.1E+00	µg/L	95th% UCL	UCL < Max
	Selenium	µg/L	1.8E+00	1.2E+00	6.5E-01	2.4E+01	20%	1.2E+00	µg/L	95th% UCL	UCL < Max
	Vanadium	µg/L	5.1E+00	5.0E+00	5.0E-01	7.8E+01	49%	5.0E+00	µg/L	95th% UCL	UCL < Max
	Zinc	µg/L	2.1E+02	3.8E+02	1.9E+00	1.1E+04	47%	3.8E+02	µg/L	95th% UCL	UCL < Max
Tap Water	**Other**										
	Cyanide	µg/L	3.5E+00	2.7E+00	2.1E+00	1.6E+01	23%	2.7E+00	µg/L	95th% UCL	UCL < Max

Table 3.1
Exposure Point Concentration Summary - Site-wide Groundwater

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: 2008-2017 Site-wide Annual Groundwater
Exposure Medium: Groundwater

General Notes:

Metals data are total (rather than dissolved) concentrations, assuming conservatively that groundwater used as drinking water is unfiltered.

Footnotes;

(1) ProUCL version 5.0 used to calculate 95th percentile upper confidence limits (UCLs) on the mean. The UCL presented is the UCL recommended by the software, except where the software recommended a 97.5% or 99% KM (Chebyshev) UCL; in this case, the UCL is the 95% KM (Chebyshev) or 95% Chebyshev (Mean, Sd) UCL.

(2) EPC is the lower of the 95th% UCL (where calculable) and the maximum detected concentration. The arithmetic average concentration will be used to estimate risks associated with lead in water.

(3) Arithmetic mean concentrations calculated using one-half the detection limit for non-detects.

Acronyms and Abbreviations Not Defined Elsewhere:

BHHRA = Baseline Human Health Risk Assessment

EPC = exposure point concentration

µg/L = micrograms per liter

Table 3.2
Exposure Point Concentration Summary - Mine Water

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: PMP Air Shaft Mine Water
Exposure Medium: Mine Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (3)	95% UCL (Distribution) (1)	Minimum Concentration (Qualifier) (4)	Maximum Concentration (Qualifier) (4)	Detection Frequency	Exposure Point Concentration			
								Value (2)	Units	Statistic (2)	Rationale (2)
Tap Water	**Volatile Organic Compounds (VOCs)**										
	1,4-Dichlorobenzene	µg/L	2.1E+00	4.3E+00	2.9E-01	8.2E+00	63%	4.3E+00	µg/L	95th% UCL	UCL < Max
	Benzene	µg/L	1.2E+01	2.4E+01	6.0E-01	3.3E+01	63%	2.4E+01	µg/L	95th% UCL	UCL < Max
	Chlorobenzene	µg/L	4.9E+00	8.2E+00	4.9E-01	2.4E+01	63%	8.2E+00	µg/L	95th% UCL	UCL < Max
	Vinyl chloride	µg/L	1.2E-01	1.6E-01	1.2E-01	2.5E-01	7%	1.6E-01	µg/L	95th% UCL	UCL < Max
	Semivolatile Organic Compounds (SVOCs)										
	1,4-Dioxane	µg/L	3.1E+01	9.8E+01	5.7E+00	1.5E+02	75%	9.8E+01	µg/L	95th% UCL	UCL < Max
	Bis(2-ethylhexyl)phthalate	µg/L	2.3E+00	1.5E+00	2.2E+00	3.9E+01	13%	1.5E+00	µg/L	95th% UCL	UCL < Max
	Naphthalene	µg/L	2.1E+00	2.9E+00	2.9E-01	8.3E+00	60%	2.9E+00	µg/L	95th% UCL	UCL < Max
	Metals - Total										
	Aluminum	µg/L	5.7E+01	6.3E+01	3.5E-02	2.6E+02	73%	6.3E+01	µg/L	95th% UCL	UCL < Max
	Arsenic	µg/L	9.4E-01	5.4E-01	1.3E-03	4.2E+00	23%	5.4E-01	µg/L	95th% UCL	UCL < Max
	Barium	µg/L	2.8E+02	3.6E+02	9.3E-03	6.4E+02	100%	3.6E+02	µg/L	95th% UCL	UCL < Max
	Cadmium	µg/L	5.4E-01	3.5E-01	1.8E+00	2.6E+00	10%	3.5E-01	µg/L	95th% UCL	UCL < Max
	Chromium	µg/L	2.2E+00	1.3E+00	7.6E-04	1.0E+01	43%	1.3E+00	µg/L	95th% UCL	UCL < Max
	Cobalt	µg/L	2.4E+00	5.6E-01	1.6E-03	3.3E+00	20%	5.6E-01	µg/L	95th% UCL	UCL < Max
	Iron	µg/L	6.2E+04	8.1E+04	4.7E-01	1.7E+05	97%	8.1E+04	µg/L	95th% UCL	UCL < Max
	Lead	µg/L	1.4E+01	2.5E+01	4.5E-03	2.0E+02	50%	1.4E+01	µg/L	Arithmetic Mean	Lead
	Manganese	µg/L	9.9E+02	1.6E+03	1.7E-02	2.8E+03	100%	1.6E+03	µg/L	95th% UCL	UCL < Max
	Vanadium	µg/L	7.3E+00	5.9E+00	1.0E-02	2.6E+01	50%	5.9E+00	µg/L	95th% UCL	UCL < Max
Tap Water	**Other**										
	Cyanide	ug/L	3.2E+00	3.2E+00	3.8E+00	3.9E+00	23%	3.2E+00	ug/L	95th% UCL	UCL < Max

Table 3.2
Exposure Point Concentration Summary - Mine Water

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: PMP Air Shaft Mine Water
Exposure Medium: Mine Water

General Notes:

Metals data are total (rather than dissolved) concentrations, assuming conservatively that groundwater used as drinking water is unfiltered.

Footnotes;

(1) ProUCL version 5.0 used to calculate 95th percentile upper confidence limits (UCLs) on the mean. The UCL presented is the UCL recommended by the software, except where the software recommended a 97.5% or 99% KM (Chebyshev) UCL; in this case, the UCL is the 95% KM (Chebyshev) or 95% Chebyshev (Mean, Sd) UCL.

(2) EPC is the lower of the 95th% UCL (where calculable) and the maximum detected concentration. The arithmetic average concentration will be used to estimate risks associated with lead in water.

(3) Arithmetic mean concentrations calculated using one-half the detection limit for non-detects.

(4) Qualifier codes:

B (inorganic) = estimated result is between the detection limit and quantitation limit

D = diluted result

J = estimated result

Acronyms and Abbreviations Not Defined Elsewhere:

BHHRA = Baseline Human Health Risk Assessment

EPC = exposure point concentration

µg/L = micrograms per liter

Table 3.3
Exposure Point Concentration Summary - Shower Air from Site-wide Groundwater

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: 2008-2017 Site-wide Annual Groundwater
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Cgw (1)	Exposure Point Concentration						
				Adult - CT (2)	Adult - RME (2)	Youth - CT (2)	Youth - RME (2)	Child - CT (2)	Child - RME (2)	Units
Shower Air	**Volatile Organic Compounds (VOCs)**									
	1,1-Dichloroethane	µg/L	1.2E+00	4.1E+00	1.2E+01	3.7E+00	1.0E+01	3.8E+00	9.4E+00	µg/m^3
	Benzene	µg/L	9.0E-01	3.0E+00	9.1E+00	2.8E+00	7.5E+00	2.8E+00	7.0E+00	µg/m^3
	Methyl tert butyl ether	µg/L	1.8E+00	5.2E+00	1.6E+01	4.7E+00	1.3E+01	4.8E+00	1.2E+01	µg/m^3
	Vinyl Chloride	µg/L	6.8E-02	2.6E-01	7.7E-01	2.3E-01	6.3E-01	2.4E-01	5.9E-01	µg/m^3
	Semivolatile Organic Compounds (SVOCs)									
	1,4-Dioxane	µg/L	1.4E+01	7.6E+00	2.3E+01	7.0E+00	1.9E+01	7.2E+00	1.8E+01	µg/m^3
	Naphthalene	µg/L	3.0E-01	8.2E-01	2.5E+00	7.5E-01	2.0E+00	7.7E-01	1.9E+00	µg/m^3

General Notes:

Volatile COPCs only.

Footnotes:

(1) Concentration in groundwater; see Table 3.1.

(2) EPC in shower air estimated using the Andelman model as modified by Schaum et al. (1994) (see Appendix D).

Acronyms and Abbreviations:

BHHRA = Baseline Human Health Risk Assessment
Cgw = concentration in groundwater
COPC = constituent of potential concern
CT = central tendency exposure
EPC = exposure point concentration
RME = reasonable maximum exposure
µg/L = micrograms per liter
µg/m^3 = micrograms per cubic meter

References:

Schaum, J., K. Hoang, R. Kinerson, J. Moya and R.G.M. Wang. 1994. *Estimating Dermal and Inhalation Exposure to Volatile Chemicals in Domestic Water.* In: Water Contamination and Health. R.G.M. Wang, ed. Marcel Dekker, Inc., New York, pp.305-321.

Table 3.4
Exposure Point Concentration Summary - Shower Air from Mine Water

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Medium: PMP Air Shaft Mine Water
Exposure Medium: Air

Exposure Point	Chemical of Potential Concern	Units	Cgw (1)	Exposure Point Concentration						
				Adult - CT (2)	Adult - RME (2)	Youth - CT (2)	Youth - RME (2)	Child - CT (2)	Child - RME (2)	Units
Shower Air	**Volatile Organic Compounds (VOCs)**									
	1,4-Dichlorobenzene	µg/L	4.3E+00	1.3E+01	3.8E+01	1.2E+01	3.2E+01	1.2E+01	2.9E+01	µg/m^3
	Benzene	µg/L	2.4E+01	8.0E+01	2.4E+02	7.3E+01	2.0E+02	7.5E+01	1.9E+02	µg/m^3
	Chlorobenzene	µg/L	8.2E+00	2.6E+01	7.9E+01	2.4E+01	6.5E+01	2.5E+01	6.1E+01	µg/m^3
	Vinyl Chloride	µg/L	1.6E-01	5.9E-01	1.8E+00	5.4E-01	1.5E+00	5.5E-01	1.4E+00	µg/m^3
	Semivolatile Organic Compounds (SVOCs)									
	1,4-Dioxane	µg/L	9.8E+01	5.6E+01	1.7E+02	5.1E+01	1.4E+02	5.2E+01	1.3E+02	µg/m^3
	Naphthalene	µg/L	2.9E+00	8.1E+00	2.5E+01	7.4E+00	2.0E+01	7.6E+00	1.9E+01	µg/m^3

General Notes:

Volatile COPCs only.

Footnotes:

(1) Concentration in groundwater; see Table 3.2.

(2) EPC in shower air estimated using the Andelman model as modified by Schaum et al. (1994) (see Appendix D).

Acronyms and Abbreviations:

BHHRA = Baseline Human Health Risk Assessment
Cgw = concentration in groundwater
COPC = constituent of potential concern
CT = central tendency exposure
EPC = exposure point concentration
RME = reasonable maximum exposure
µg/L = micrograms per liter
µg/m^3 = micrograms per cubic meter

References:

Schaum, J., K. Hoang, R. Kinerson, J. Moya and R.G.M. Wang. 1994. *Estimating Dermal and Inhalation Exposure to Volatile Chemicals in Domestic Water.* In: Water Contamination and Health. R.G.M. Wang, ed. Marcel Dekker, Inc., New York, pp.305-321.

Table 4.1.CT
Values for Daily Intake Calculations
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Hypothetical Future Resident	Adult	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	Chronic Daily Intake (CDI) (mg/kg-day) = CW x CF x IRW x EF x ED x 1/BW x 1/AT
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	1.0	L/day	USEPA 2011 (a)	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	0	years	USEPA 1997 (b)	
				BW	Body Weight	70	kg	USEPA 1989	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (c)	
				ATnc	Averaging Time - Non-Cancer	0	days	Based on ED of 0 years	
		Youth (7 to 16 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	0.48	L/day	USEPA 2011 (d)	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	3	years	USEPA 1997 (b)	
				BW	Body Weight	45	kg	USEPA 1997	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (c)	
				ATnc	Averaging Time - Non-Cancer	1,095	days	Based on ED of 3 years	
		Young Child (1 to 6 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	0.33	L/day	USEPA 2011 (e)	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	6	years	USEPA 1997 (b)	
				BW	Body Weight	15	kg	USEPA 1991	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (c)	
				ATnc	Averaging Time - Non-Cancer	2,190	days	Based on ED of 6 years	

Table 4.1.CT
Values for Daily Intake Calculations
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Hypothetical Future Resident	Adult	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	Dermal Absorbed Dose (DAD) (mg/kg-day) = DAevent x EvF x EF x ED x SA x 1/BW x 1/AT Absorbed Dose per Event (DAevent) (mg/cm^2-event) = For organics (t-event ≤ t*): 2 FA x Kp x CW x CF1 x CF2 x SQRT(6 x tau-event x t-event x 1/pi) For organics (t-event > t*): FA x Kp x CW x CF1 x CF2 x {(t-event/(1 + B)) + 2 x tau-event x ((1 + (3B) + (3 B^2)) / (1 + B)^2)} For inorganics: Kp x CW x CF1 x CF2 x t-event and where t-event = ET
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	19,619	cm^2	USEPA 2011 (f)	
				ET	Exposure Time/Event Duration	0.33	hours/event	USEPA 2011 (g)	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	0	years	USEPA 1997 (b)	
				BW	Body Weight	70	kg	USEPA 1989	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (c)	
				ATnc	Averaging Time - Non-Cancer	0	days	Based on ED of 0 years	
		Youth (7 to 16 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	14,110	cm^2	USEPA 2011 (h)	
				ET	Exposure Time/Event Duration	0.30	hours/event	USEPA 2011 (i)	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	3	years	USEPA 1997 (b)	
				BW	Body Weight	45	kg	USEPA 1997	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (c)	
				ATnc	Averaging Time - Non-Cancer	1,095	days	Based on ED of 3 years	
		Young Child (1 to 6 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	7,500	cm^2	USEPA 2011 (j)	
				ET	Exposure Time/Event Duration	0.31	hours/event	USEPA 2011 (k)	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	6	years	USEPA 1997 (b)	
				BW	Body Weight	15	kg	USEPA 1991	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (c)	
				ATnc	Averaging Time - Non-Cancer	2,190	days	Based on ED of 6 years	

Table 4.1.CT
Values for Daily Intake Calculations
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Inhalation	Hypothetical Future Resident	Adult	Tap Water	CA	Chemical Concentration in Air	chemical-specific	µg/m^3	See Tables 3.3 & 3.4	Inhaled Dose (µg/m^3) = CA x ET x EvF x EF x ED x 1/AT
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	0	years	USEPA 1997 (b)	
				ET	Exposure Time/Event Duration	0.46	hours/event	USEPA 2011 (g)	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (c)	
				ATnc	Averaging Time - Non-Cancer	0	hours	Based on ED of 0 years	
		Youth (7 to 16 years)	Tap Water	CA	Chemical Concentration in Air	chemical-specific	µg/m^3	See Tables 3.3 & 3.4	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	3	years	USEPA 1997 (b)	
				ET	Exposure Time/Event Duration	0.42	hours/event	USEPA 2011 (i)	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (c)	
				ATnc	Averaging Time - Non-Cancer	26,280	hours	Based on ED of 3 years	
		Young Child (1 to 6 years)	Tap Water	CA	Chemical Concentration in Air	chemical-specific	µg/m^3	See Tables 3.3 & 3.4	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	6	years	USEPA 1997 (b)	
				ET	Exposure Time/Event Duration	0.43	hours/event	USEPA 2011 (k)	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (c)	
				ATnc	Averaging Time - Non-Cancer	52,560	hours	Based on ED of 6 years	

Footnotes:
(a) Age-weighted mean value of per capita drinking water ingestion rate for individuals ages 17 to 52 years (Table 3-1, USEPA 2011).
(b) The total exposure duration is 9 years (USEPA 1997). Assumes 6 years of exposure as a young child, 3 years of exposure as a youth, and 0 years of exposure as an adult.
(c) The averaging time for cancer risk is the expected lifespan of 70 years expressed in days.
(d) Age-weighted mean value of per capita drinking water ingestion rate for individuals ages 7 to 16 years (Table 3-1, USEPA 2011).
(e) Age-weighted mean value of per capita drinking water ingestion rate for individuals ages 1 to 6 years (Table 3-1, USEPA 2011).
(f) Age-weighted mean total body skin surface area value, male and female combined, ages 17 to 52 years (Table 7-1, USEPA 2011).
(g) Represents the mean showering time for ages 16 to <21 years; total exposure time for inhalation includes mean time spent in the shower room after showering (Table 16-28, USEPA 2011).
(h) Age-weighted mean total body skin surface area value, male and female combined, ages 7 to 16 years (Table 7-1, USEPA 2011).
(i) Age-weighted average of the mean showering time for ages 7 to 16 years; total exposure time for inhalation includes age-weighted average of mean time spent in the shower room after showering (Table 16-28, USEPA 2011).
(j) Age-weighted mean total body skin surface area value, male and female combined, ages 1 to 6 years (Table 7-1, USEPA 2011).
(k) Age-weighted average of the mean showering time for ages 1 to 6 years; total exposure time for inhalation includes age-weighted average of mean time spent in the shower room after showering (Table 16-28, USEPA 2011).

Acronyms and Abbreviations:
-- = not applicable
BHHRA = Baseline Human Health Risk Assessment
cm/hour = centimeters per hour
cm^2 = square centimeters
kg = kilograms
L/cm^3 = liters per cubic centimeter
L/day = liters per day
mg/µg = milligrams per microgram
mg/kg-day = milligram per kilogram per day
µg/L = micrograms per liter
µg/m^3 = micrograms per cubic meter
USEPA = U.S. Environmental Protection Agency

References:

USEPA. 1989. *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual-Part A.* Office of Emergency and Remedial Response. EPA/540/1-89/002. December.
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USEPA. 2011. *Exposure Factors Handbook: 2011 Edition.* Office of Research and Development. National Center for Environmental Assessment, Washington, DC. EPA/600/R-09/052F. September.

Table 4.1.RME
Values for Daily Intake Calculations
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Hypothetical Future Resident	Adult	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	Chronic Daily Intake (CDI) (mg/kg-day) = CW x CF x IRW x EF x ED x 1/BW x 1/AT
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	2.0	L/day	USEPA 1989	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	36	years	USEPA Decision (a)	
				BW	Body Weight	70	kg	USEPA 1989	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	13,140	days	Based on ED of 36 years	
		Youth (7 to 16 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	2	L/day	USEPA 1989	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	10	years	USEPA Decision (a)	
				BW	Body Weight	45	kg	USEPA 1997	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	3,650	days	Based on ED of 10 years	
		Young Child (1 to 6 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	1	L/day	USEPA 1989	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	6	years	USEPA Decision (a)	
				BW	Body Weight	15	kg	USEPA 1991	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	2,190	days	Based on ED of 6 years	

Table 4.1.RME
Values for Daily Intake Calculations
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Hypothetical Future Resident	Adult	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	19,619	cm^2	USEPA 2011 (c)	
				ET	Exposure Time/Event Duration	0.67	hours/event	USEPA 2011 (d)	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	36	years	USEPA Decision (a)	
				BW	Body Weight	70	kg	USEPA 1989	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	13,140	days	Based on ED of 36 years	
		Youth (7 to 16 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	Dermal Absorbed Dose (DAD) (mg/kg-day) = DAevent x EvF x EF x ED x SA x 1/BW x 1/AT Absorbed Dose per Event (DAevent) (mg/cm^2-event) = For organics (t-event ≤ t*): 2 FA x Kp x CW x CF1 x CF2 x SQRT(6 x tau-event x t-event x 1/pi) For organics (t-event > t*): FA x Kp x CW x CF1 x CF2 x {(t-event/(1 + B)) + 2 x tau-event x ((1 + (3B) + ($3B^2$)) / $(1 + B)^2$)} For inorganics: Kp x CW x CF1 x CF2 x t-event and where t-event = ET
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	14,110	cm^2	USEPA 2011 (e)	
				ET	Exposure Time/Event Duration	0.52	hours/event	USEPA 2011 (f)	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	10	years	USEPA Decision (a)	
				BW	Body Weight	45	kg	USEPA 1997	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	3,650	days	Based on ED of 10 years	
		Young Child (1 to 6 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Tables 3.1 & 3.2	
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	7,500	cm^2	USEPA 2011 (g)	
				ET	Exposure Time/Event Duration	0.5	hours/event	USEPA 2011 (h)	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	6	years	USEPA Decision (a)	
				BW	Body Weight	15	kg	USEPA 1991	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	2,190	days	Based on ED of 6 years	

Table 4.1.RME
Values for Daily Intake Calculations
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Inhalation	Hypothetical Future Resident	Adult	Tap Water	CA	Chemical Concentration in Air	chemical-specific	µg/m^3	See Tables 3.3 & 3.4	Inhaled Dose (µg/m^3) = CA x ET x EvF x EF x ED x 1/AT
				EvF	Exposure Time/Event Duration	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	36	years	USEPA Decision (a)	
				ET	Exposure Time/Event Duration	0.92	hours/event	USEPA 2011 (d)	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (b)	
				ATnc	Averaging Time - Non-Cancer	315,360	hours	Based on ED of 36 years	
		Youth (7 to 16 years)	Tap Water	CA	Chemical Concentration in Air	chemical-specific	µg/m^3	See Tables 3.3 & 3.4	
				EvF	Exposure Time/Event Duration	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	10	years	USEPA Decision (a)	
				ET	Exposure Time/Event Duration	0.79	hours/event	USEPA 2011 (f)	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (b)	
				ATnc	Averaging Time - Non-Cancer	87,600	hours	Based on ED of 10 years	
		Young Child (1 to 6 years)	Tap Water	CA	Chemical Concentration in Air	chemical-specific	µg/m^3	See Tables 3.3 & 3.4	
				EvF	Exposure Time/Event Duration	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	6	years	USEPA Decision (a)	
				ET	Exposure Time/Event Duration	0.72	hours/event	USEPA 2011 (h)	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (b)	
				ATnc	Averaging Time - Non-Cancer	52,560	hours	Based on ED of 6 years	

Notes:
(a) The total exposure duration is 52 years (USEPA decision presented during a conference call on September 30, 2010). Assumes 6 years of exposure as a young child, 10 years of exposure as a youth, and 36 years of exposure as an adult.
(b) The averaging time for cancer risk is the expected lifespan of 70 years expressed in days.
(c) Age-weighted mean total body skin surface area value, male and female combined, ages 17 to 52 years (Table 7-1, USEPA 2011).
(d) Represents the 90th percentile showering time for ages 16 to <21 years; total exposure time for inhalation includes 90th percentile of time spent in the shower room after showering (Table 16-28, USEPA 2011).
(e) Age-weighted mean total body skin surface area value, male and female combined, ages 7 to 16 years (Table 7-1, USEPA 2011).
(f) Age-weighted average of the 90th percentile showering time for ages 7 to 16 years; total exposure time for inhalation includes age-weighted average of 90th percentile time spent in the shower room after showering (Table 16-28, USEPA 2011).
(g) Age-weighted mean total body skin surface area value, male and female combined, ages 1 to 6 years (Table 7-1, USEPA 2011).
(h) Age-weighted average of the 90th percentile showering time for ages 1 to 6 years; total exposure time for inhalation includes age-weighted average of 90th percentile time spent in the shower room after showering (Table 16-28, USEPA 2011).

Acronyms and Abbreviations:
-- = not applicable
BHHRA = Baseline Human Health Risk Assessment
cm/hour = centimeters per hour
cm^2 = square centimeters
kg = kilograms
L/cm^3 = liters per cubic centimeter
L/day = liters per day
mg/µg = milligrams per microgram
mg/kg-day = milligram per kilogram per day
µg/L = micrograms per liter
µg/m^3 = micrograms per cubic meter
USEPA = U.S. Environmental Protection Agency

References:

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Table 4.2.RME
Values for Daily Intake Calculations
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Hypothetical Future Resident	Adult	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Table 3.1	Chronic Daily Intake (CDI) (mg/kg-day) = CW x CF x IRW x EF x ED x 1/BW x 1/AT
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	2.5	L/day	USEPA 2014	
				EF	Exposure Frequency	350	days/year	USEPA 2014	
				ED	Exposure Duration	10	years	USEPA 2014	
				BW	Body Weight	80	kg	USEPA 2014	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	3,650	days	Based on ED of 36 years	
		Youth (7 to 16 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Table 3.1	
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	1.5566	L/day	USEPA 2011 using methodology from USEPA 2014	
				EF	Exposure Frequency	350	days/year	USEPA 2014	
				ED	Exposure Duration	10	years	USEPA 2014	
				BW	Body Weight	46.8	kg	USEPA 2011 using methodology from USEPA 2014	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	3,650	days	Based on ED of 10 years	
		Young Child (1 to 6 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Table 3.1	
				CF	Conversion Factor	0.001	mg/µg	--	
				IRW	Ingestion Rate of Drinking Water	0.78	L/day	USEPA 2014	
				EF	Exposure Frequency	350	days/year	USEPA 2014	
				ED	Exposure Duration	6	years	USEPA 2014	
				BW	Body Weight	15	kg	USEPA 2014	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	2,190	days	Based on ED of 6 years	

Table 4.2.RME
Values for Daily Intake Calculations
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal	Hypothetical Future Resident	Adult	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Table 3.1	Dermal Absorbed Dose (DAD) (mg/kg-day) = DAevent x EvF x EF x ED x SA x 1/BW x 1/AT Absorbed Dose per Event (DAevent) (mg/cm^2-event) = For organics (t-event ≤ t*): 2 FA x Kp x CW x CF1 x CF2 x SQRT(6 x tau-event x t-event x 1/pi) For organics (t-event > t*): FA x Kp x CW x CF1 x CF2 x {(t-event/(1 + B)) + 2 x tau-event x ((1 + (3B) + (3 B^2)) / (1 + B)^2)} For inorganics: Kp x CW x CF1 x CF2 x t-event and where t-event = ET
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	19,652	cm^2	USEPA 2014	
				ET	Exposure Time/Event Duration	0.71	hours/event	USEPA 2014	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	10	years	USEPA 2014	
				BW	Body Weight	80	kg	USEPA 2014	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	3,650	days	Based on ED of 36 years	
		Youth (7 to 16 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Table 3.1	
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	17,400	cm^2	USEPA 2011 using methodology from USEPA 2014 for youth age range.	
				ET	Exposure Time/Event Duration	0.607	hours/event	USEPA 2011 using methodology from USEPA 2014 for youth age range.	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	10	years	USEPA Decision (a)	
				BW	Body Weight	46.8	kg	USEPA 2011 using methodology from USEPA 2014 for youth age range.	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	3,650	days	Based on ED of 10 years	
		Young Child (1 to 6 years)	Tap Water	CW	Chemical Concentration in Groundwater	chemical-specific	µg/L	See Table 3.1	
				CF1	Conversion Factor	0.001	mg/µg	--	
				CF2	Conversion Factor	0.001	L/cm^3	--	
				FA	Fraction Absorbed Water	chemical-specific	unitless	USEPA 2004	
				Kp	Permeability Coefficient	chemical-specific	cm/hour	USEPA 2004	
				B	Permeability Ratio	chemical-specific	unitless	USEPA 2004	
				t*	Time to Reach Steady State	chemical-specific	hours	USEPA 2004	
				tau-event	Lag Time per Event	chemical-specific	hours/event	USEPA 2004	
				SA	Skin Surface Area Available for Contact	6,365	cm^2	USEPA 2014	
				ET	Exposure Time/Event Duration	0.54	hours/event	USEPA 2014	
				EvF	Event Frequency	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	6	years	USEPA Decision (a)	
				BW	Body Weight	15	kg	USEPA 1991	
				ATc	Averaging Time - Cancer	25,550	days	USEPA 1989 (b)	
				ATnc	Averaging Time - Non-Cancer	2,190	days	Based on ED of 6 years	

Table 4.2.RME
Values for Daily Intake Calculations
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor: Hypothetical Future Resident
Medium: Groundwater / Mine Water
Exposure Medium: Groundwater / Mine Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Inhalation	Hypothetical Future Resident	Adult	Tap Water	CA	Chemical Concentration in Air	chemical-specific	$\mu g/m^3$	See shower model (i)	Inhaled Dose ($\mu g/m^3$) = CA x ET x EvF x EF x ED x 1/AT
				EvF	Exposure Time/Event Duration	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	10	years	USEPA 2014	
				ET	Exposure Time/Event Duration	0.83	hours/event	USEPA 2014	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (b)	
				ATnc	Averaging Time - Non-Cancer	87,600	hours	Based on ED of 36 years	
		Youth (7 to 16 years)	Tap Water	CA	Chemical Concentration in Air	chemical-specific	$\mu g/m^3$	See shower model (i)	
				EvF	Exposure Time/Event Duration	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	10	years	USEPA Decision (a)	
				ET	Exposure Time/Event Duration	0.787	hours/event	USEPA 2011 using methodology from USEPA 2014 for youth age range.	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (b)	
				ATnc	Averaging Time - Non-Cancer	87,600	hours	Based on ED of 10 years	
		Young Child (1 to 6 years)	Tap Water	CA	Chemical Concentration in Air	chemical-specific	$\mu g/m^3$	See shower model (i)	
				EvF	Exposure Time/Event Duration	1	events/day	USEPA 2004	
				EF	Exposure Frequency	350	days/year	USEPA 1991	
				ED	Exposure Duration	6	years	USEPA Decision (a)	
				ET	Exposure Time/Event Duration	0.74	hours/event	USEPA 2014	
				ATc	Averaging Time - Cancer	613,200	hours	USEPA 2009. Equivalent to 25,550 days. (b)	
				ATnc	Averaging Time - Non-Cancer	52,560	hours	Based on ED of 6 years	

Notes:
(a) The total exposure duration is 52 years (USEPA decision presented during a conference call on September 30, 2010). Assumes 6 years of exposure as a young child, 10 years of exposure as a youth, and 36 years of exposure as an adult.
(b) The averaging time for cancer risk is the expected lifespan of 70 years expressed in days.
(c) Age-weighted mean total body skin surface area value, male and female combined, ages 17 to 52 years (Table 7-1, USEPA 2011).
(d) Represents the 90th percentile showering time for ages 16 to <21 years; total exposure time for inhalation includes 90th percentile of time spent in the shower room after showering (Table 16-28, USEPA 2011).
(e) Age-weighted mean total body skin surface area value, male and female combined, ages 7 to 16 years (Table 7-1, USEPA 2011).
(f) Age-weighted average of the 90th percentile showering time for ages 7 to 16 years; total exposure time for inhalation includes age-weighted average of 90th percentile time spent in the shower room after showering (Table 16-28, USEPA 2011).
(g) Age-weighted mean total body skin surface area value, male and female combined, ages 1 to 6 years (Table 7-1, USEPA 2011).
(h) Age-weighted average of the 90th percentile showering time for ages 1 to 6 years; total exposure time for inhalation includes age-weighted average of 90th percentile time spent in the shower room after showering (Table 16-28, USEPA 2011).
(i) Concentrations of volatile constituents in shower air will be estimated using the Andelman model as modified by Schaum et al. (1994).

Acronyms and Abbreviations:
-- = not applicable
BHHRA = Baseline Human Health Risk Assessment
cm/hour = centimeters per hour
cm^2 = square centimeters
kg = kilograms
L/cm^3 = liters per cubic centimeter
L/day = liters per day
mg/µg = milligrams per microgram
mg/kg-day = milligram per kilogram per day
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
USEPA = U.S. Environmental Protection Agency

References:

USEPA. 1989. *Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual-Part A.* Office of Emergency and Remedial Response. EPA/540/1-89/002. December.
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Table 4.3
Parameters Used to Calculate Estimated Dermal Absorption

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Chemical of Potential Concern	COPC in Groundwater ? (Y/N)	Kp cm/hour (3),(4)	B unitless (1)	FA unitless (1)	tau-event hours/event (1),(4)	t* hours (1)	DA-event t-event = 0.30 hours/event cm/event (1),(2)	DA-event t-event = 0.31 hours/event cm/event (1),(2)	DA-event t-event = 0.33 hours/event cm/event (1),(2)	DA-event t-event = 0.50 hours/event cm/event (1),(2)	DA-event t-event = 0.52 hours/event cm/event (1),(2)	DA-event t-event = 0.54 hours/event cm/event (1),(2)	DA-event t-event = 0.61 hours/event cm/event (1),(2)	DA-event t-event = 0.67 hours/event cm/event (1),(2)	DA-event t-event = 0.71 hours/event cm/event (1),(2)
Volatile Organic Compounds (VOCs)															
1,4-Dichlorobenzene	Y	4.2E-02	2.0E-01	1.0E+00	7.0E-01	1.7E+00	5.3E-02	5.4E-02	5.6E-02	6.9E-02	7.0E-02	7.1E-02	7.6E-02	7.9E-02	8.2E-02
1,1-Dichloroethane	Y	6.7E-03	2.6E-02	1.0E+00	3.8E-01	9.0E-01	6.3E-03	6.4E-03	6.6E-03	8.1E-03	8.2E-03	8.4E-03	8.9E-03	9.4E-03	9.6E-03
Benzene	Y	1.5E-02	5.1E-02	1.0E+00	2.9E-01	6.9E-01	1.2E-02	1.2E-02	1.3E-02	1.6E-02	1.6E-02	1.6E-02	1.7E-02	1.8E-02	1.9E-02
Chlorobenzene	Y	2.8E-02	1.2E-01	1.0E+00	4.5E-01	1.1E+00	2.9E-02	2.9E-02	3.0E-02	3.7E-02	3.8E-02	3.8E-02	4.1E-02	4.3E-02	4.4E-02
Methyl tert butyl ether	Y	2.1E-03	7.6E-03	1.0E+00	3.3E-01	7.9E-01	1.8E-03	1.9E-03	1.9E-03	2.4E-03	2.4E-03	2.5E-03	2.6E-03	2.7E-03	2.8E-03
Vinyl Chloride	Y	5.6E-03	1.7E-02	1.0E+00	2.4E-01	5.6E-01	4.1E-03	4.2E-03	4.3E-03	5.3E-03	5.4E-03	5.5E-03	6.0E-03	6.4E-03	6.6E-03
Semivolatile Organic Compounds (SVOCs)															
1,4-Dioxane	Y	3.3E-04	1.2E-03	1.0E+00	3.3E-01	7.8E-01	2.9E-04	2.9E-04	3.0E-04	3.7E-04	3.8E-04	3.9E-04	4.1E-04	4.3E-04	4.4E-04
bis(2-Ethylhexyl)phthalate	Y	2.5E-02	1.9E-01	8.0E-01	1.6E+01	3.9E+01	1.2E-01	1.2E-01	1.3E-01	1.6E-01	1.6E-01	1.6E-01	1.7E-01	1.8E-01	1.9E-01
Naphthalene	Y	6.3E-03	2.7E-02	1.0E+00	5.5E-01	1.3E+00	7.1E-03	7.2E-03	7.4E-03	9.1E-03	9.3E-03	9.5E-03	1.0E-02	1.1E-02	1.1E-02
Metals - Total															
Aluminum	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Arsenic	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Barium	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Cadmium	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Chromium	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Cobalt	Y	4.0E-04	—	—	—	—	1.2E-04	1.2E-04	1.3E-04	2.0E-04	2.1E-04	2.2E-04	2.4E-04	2.7E-04	2.8E-04
Copper	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Iron	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Lead	Y	1.0E-04	—	—	—	—	3.0E-05	3.1E-05	3.3E-05	5.0E-05	5.2E-05	5.4E-05	6.1E-05	6.7E-05	7.1E-05
Manganese	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Nickel	Y	2.0E-04	—	—	—	—	6.0E-05	6.2E-05	6.6E-05	1.0E-04	1.0E-04	1.1E-04	1.2E-04	1.3E-04	1.4E-04
Selenium	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Vanadium	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04
Zinc	Y	6.0E-04	—	—	—	—	1.8E-04	1.9E-04	2.0E-04	3.0E-04	3.1E-04	3.2E-04	3.6E-04	4.0E-04	4.3E-04
Other															
Cyanide	Y	1.0E-03	—	—	—	—	3.0E-04	3.1E-04	3.3E-04	5.0E-04	5.2E-04	5.4E-04	6.1E-04	6.7E-04	7.1E-04

Footnotes:

(1) Obtained from or calculated from equations in USEPA 2004. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), July 2004, EPA/540/R/99/005. Lead in water evaluated separately via USEPA lead models.

(2) Calculation of DA-event does not include the term for constituent concentration in water expressed in milligrams per cubic centimeter (mg/cm^3).

(3) Obtained from chemical-specific parameters from USEPA 2004.

(4) Kp and tau-event values for naphthalene obtained from Sartorelli et al. (1999) (Sartorelli, P., A. Cenni, G. Matteucci, L. Montomoli, M.T. Novelli and S. Palmi. 1999. *Dermal exposure assessment of polycyclic aromatic hydrocarbons: in vitro percutaneous penetration from lubricating oil* . Int. Arch. Occup. Environ. Health 72: 528-532.)

Acronyms and Abbreviations:

— = not applicable
B = ratio of permeability coefficients through stratum corneum and viable epidermis
BHHRA = Baseline Human Health Risk Assessment
cm = centimeters
cm/hour = centimeters per hour
COPC = constituent of potential concern
DA-event = absorbed dose per event
FA = fraction of absorbed water
Kp = dermal permeability coefficient
N = no
t* = time to reach steady state
t-event = time per event
tau-event = lag time per event
USEPA = U.S. Environmental Protection Agency
Y = yes

Table 5.1
Non-Cancer Toxicity Data -- Oral and Dermal Pathways

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

CAS Number	Chemical of Potential Concern (2),(5)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal		Primary Target Organ(s) (3)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
			Value	Units		Value (1)	Units			Source(s) (4)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds (VOCs)											
106-46-7	1,4-Dichlorobenzene	chronic	7.0E-02	mg/kg/day	1	7.0E-02	mg/kg/day	Hepatic	100	ATSDR	4/20/2018
75-34-3	1,1-Dichloroethane	chronic	2.0E-01	mg/kg/day	1	2.0E-01	mg/kg/day	Kidney	3000	PPRTV	4/20/2018
71-43-2	Benzene	chronic	4.0E-03	mg/kg/day	1	4.0E-03	mg/kg/day	Immune System	300	IRIS	4/20/2018
108-90-7	Chlorobenzene	chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Hepatic	1000	IRIS	4/20/2018
1634-04-4	Methyl tert butyl ether	NA	NA	mg/kg/day	1	NA	mg/kg/day	NA	NA	NA	4/20/2018
75-01-4	Vinyl Chloride	chronic	3.0E-03	mg/kg/day	1	3.0E-03	mg/kg/day	Hepatic	30	IRIS	4/20/2018
Semivolatile Organic Compounds (SVOCs)											
123-91-1	1,4-Dioxane	chronic	3.0E-02	mg/kg/day	1	3.0E-02	mg/kg/day	Hepatic, Urinary	300	IRIS	4/20/2018
117-81-7	bis(2-Ethylhexyl)phthalate	chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Hepatic	1000	IRIS	4/20/2018
91-20-3	Naphthalene	chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	Body Weight	3000	IRIS	4/20/2018
Metals - Total											
7429-90-5	Aluminum	chronic	1.0E+00	mg/kg/day	1	1.0E+00	mg/kg/day	Developmental, Nervous System	100	PPRTV	4/20/2018
7440-38-2	Arsenic	chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Cardiovascular, Dermal	3	IRIS	4/20/2018
7440-39-3	Barium	chronic	2.0E-01	mg/kg/day	0.07	1.4E-02	mg/kg/day	Urinary	300	IRIS	4/20/2018
7440-43-9	Cadmium	chronic	1.0E-03	mg/kg/day	0.025	2.5E-05	mg/kg/day	Kidney	10	IRIS	4/20/2018
18540-29-9	Chromium	chronic	3.0E-03	mg/kg/day	0.025	7.5E-05	mg/kg/day	NR	NA	IRIS	4/20/2018
7440-48-4	Cobalt	chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Thyroid	3000	PPRTV	4/20/2018
7440-50-8	Copper	chronic	4.0E-02	mg/kg/day	1	4.0E-02	mg/kg/day	NR	NA	HEAST	4/20/2018
7439-89-6	Iron	chronic	7.0E-01	mg/kg/day	1	7.0E-01	mg/kg/day	GI	1.5	PPRTV	4/20/2018
7439-92-1	Lead	NA	NA	mg/kg/day	1	NA	mg/kg/day	NA	NA	NA	4/20/2018
7439-96-5	Manganese	chronic	1.4E-01	mg/kg/day	1	1.4E-01	mg/kg/day	CNS	1	IRIS	4/20/2018
7440-02-0	Nickel	chronic	2.0E-02	mg/kg/day	0.04	8.0E-04	mg/kg/day	Body Weight, Organ Weight	300	IRIS	4/20/2018
7782-49-2	Selenium	chronic	5.0E-03	mg/kg/day	1	5.0E-03	mg/kg/day	Nervous System, Hematologic, Derma	3	IRIS	4/20/2018
7440-62-2	Vanadium	chronic	5.0E-03	mg/kg/day	0.026	1.3E-04	mg/kg/day	Dermal	NA	IRIS	4/20/2018
7440-66-6	Zinc	chronic	3.0E-01	mg/kg/day	1	3.0E-01	mg/kg/day	Immune System, Hematological	3	IRIS	4/20/2018
Other											
57-12-5	Cyanide	chronic	1.0E-03	mg/kg/day	1	1.0E-03	mg/kg/day	Reproductive	3000	IRIS	4/20/2018

Footnotes:

(1) Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), July 2004, EPA/540/R/99/005. If not available, assumed to be 100%. The absorbed dermal RfD is derived by multiplying the oral RfD by the oral absorption efficiency.

(2) Toxicity value for cadmium (water) used for cadmium; toxicity value for chromium VI used for chromium; toxicity value for manganese (non-diet) used for manganese; toxicity value for sodium cyanide used for cyanide.

(3) Primary target(s) listed are those associated with the critical effect(s) on which the RfD was based.

(4) Date is the date the database was searched.

(5) Lead is evaluated separately using USEPA lead models.

Table 5.1
Non-Cancer Toxicity Data -- Oral and Dermal Pathways

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
Cal EPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Chronic Reference Exposure Levels (RELs); http://oehha.ca.gov/air/allrels.html
CAS = Chemical Abstract Service
CNS = central nervous system
GI = gastrointestinal tract
HEAST = Health Effect Assessment Summary Tables, http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=2877#Download
IRIS = Integrated Risk Information System; http://www.epa.gov/iris/
mg/kg/day = milligrams per kilogram per day
NA= not available or not applicable
NR = none reported
PPRTV = Provisional Peer-Reviewed Toxicity Values; http://hhpprtv.ornl.gov
RfD = reference dose

Table 5.2
Non-Cancer Toxicity Data -- Inhalation Pathway

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

CAS Number	Chemical of Potential Concern (1)	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s) (2)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
			Value	Units			Source(s) (3)	Date(s) MM/DD/YYYY
Volatile Organic Compounds (VOCs)								
106-46-7	1,4-Dichlorobenzene	chronic	8.0E-01	mg/m^3	Hepatic	100	IRIS	4/20/2018
75-34-3	1,1-Dichloroethane	NA	NA	mg/m^3	NA	NA	NA	4/20/2018
71-43-2	Benzene	chronic	3.0E-02	mg/m^3	Immune System	300	IRIS	4/20/2018
108-90-7	Chlorobenzene	chronic	5.0E-02	mg/m^3	Hepatic, Urinary	100	PPRTV	4/20/2018
1634-04-4	Methyl tert butyl ether	chronic	3.0E+00	mg/m^3	Hepatic, Urinary	100	IRIS	4/20/2018
75-01-4	Vinyl Chloride	chronic	1.0E-01	mg/m^3	Hepatic	30	IRIS	4/20/2018
Semivolatile Organic Compounds (SVOCs)								
123-91-1	1,4-Dioxane	chronic	3.0E-02	mg/m^3	Nervous System, Respiratory	1000	IRIS	4/20/2018
117-81-7	bis(2-Ethylhexyl)phthalate	NA	NA	mg/m^3	NA	NA	NA	4/20/2018
91-20-3	Naphthalene	chronic	3.0E-03	mg/m^3	Nervous System, Respiratory	3000	IRIS	4/20/2018
Metals - Total								
7429-90-5	Aluminum	chronic	5.0E-03	mg/m^3	Neurological	300	PPRTV	4/20/2018
7440-38-2	Arsenic	chronic	1.5E-05	mg/m^3	Developmental, Nervous System, Cardiovascular	NA	CalEPA	4/20/2018
7440-39-3	Barium	chronic	5.0E-04	mg/m^3	Fetus	1000	HEAST	4/20/2018
7440-43-9	Cadmium	chronic	1.0E-05	mg/m^3	Kidney	NA	ATSDR	4/20/2018
18540-29-9	Chromium	chronic	1.0E-04	mg/m^3	Respiratory	300	IRIS	4/20/2018
7440-48-4	Cobalt	chronic	6.0E-06	mg/m^3	Lung	300	PPRTV	4/20/2018
7440-50-8	Copper	NA	NA	mg/m^3	NA	NA	NA	4/20/2018
7439-89-6	Iron	NA	NA	mg/m^3	NA	NA	NA	4/20/2018
7439-92-1	Lead	NA	NA	mg/m^3	NA	NA	NA	4/20/2018
7439-96-5	Manganese	chronic	5.0E-05	mg/m^3	CNS	1000	IRIS	4/20/2018
7440-02-0	Nickel	chronic	9.0E-05	mg/m^3	Respiratory	30	ATSDR	4/20/2018
7782-49-2	Selenium	chronic	2.0E-02	mg/m^3	Hepatic, Cardiovascular, Nervous System	NA	CalEPA	4/20/2018
7440-62-2	Vanadium	chronic	1.0E-04	mg/m^3	Respiratory	30	ATSDR	4/20/2018
7440-66-6	Zinc	NA	NA	mg/m^3	NA	NA	NA	4/20/2018
Other								
57-12-5	Cyanide	NA	NA	mg/m^3	NA	NA	IRIS	4/20/2018

Footnotes:
(1) Toxicity value for chromium VI used for chromium. Toxicity value for hydrogen cyanide used for cyanide.
(2) Primary target(s) listed are those associated with the critical effect(s) on which the RfC was based.
(3) Date is the date the database was searched.

Table 5.2
Non-Cancer Toxicity Data -- Inhalation Pathway

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Acronyms and Abbreviations:
ATSDR = Agency for Toxic Substances & Disease Registry, Minimal Risk Levels, http://www.atsdr.cdc.gov/mrls/mrllist.asp
BHHRA = Baseline Human Health Risk Assessment
Cal EPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Inhalation Reference Exposure Levels, http://www.oehha.ca.gov/air/allrels.html
CAS = Chemical Abstract Service
CNS = central nervous system
HEAST = Health Effect Assessment Summary Tables, http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=2877#Download
IRIS = Integrated Risk Information System; http://www.epa.gov/iris/
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable. If inhalation toxicity data are not available, toxicity will be discussed qualitatively.
PPRTV = Provisional Peer-Reviewed Toxicity Values; http://hhpprtv.ornl.gov
RfC = reference concentration

Table 6.1
Cancer Toxicity Data -- Oral and Dermal Pathways

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

CAS Number	Chemical of Potential Concern (2)	Mutagen (3)	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description (4)	Oral CSF	
			Value	Units		Value (1)	Units		Source(s) (5)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds (VOCs)										
106-46-7	1,4-Dichlorobenzene		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	C	NA	4/20/2018
75-34-3	1,1-Dichloroethane		5.7E-03	$(mg/kg\text{-}day)^{-1}$	1	5.7E-03	$(mg/kg\text{-}day)^{-1}$	C	CalEPA	4/20/2018
71-43-2	Benzene		5.5E-02	$(mg/kg\text{-}day)^{-1}$	1	5.5E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	4/20/2018
108-90-7	Chlorobenzene		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
1634-04-4	Methyl tert butyl ether		1.8E-03	$(mg/kg\text{-}day)^{-1}$	1	1.8E-03	$(mg/kg\text{-}day)^{-1}$	NA	CalEPA	4/20/2018
75-01-4	Vinyl Chloride	M	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1	7.2E-01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	4/20/2018
Semivolatile Organic Compounds (SVOCs)										
123-91-1	1,4-Dioxane		1.0E-01	$(mg/kg\text{-}day)^{-1}$	1	1.0E-01	$(mg/kg\text{-}day)^{-1}$	NA	IRIS	4/20/2018
117-81-7	bis(2-Ethylhexyl)phthalate		1.4E-02	$(mg/kg\text{-}day)^{-1}$	1	1.4E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	4/20/2018
91-20-3	Naphthalene		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
Metals - Total										
7429-90-5	Aluminum		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7440-38-2	Arsenic		1.5E+00	$(mg/kg\text{-}day)^{-1}$	1	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	4/20/2018
7440-39-3	Barium		NA	$(mg/kg\text{-}day)^{-1}$	0.07	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7440-43-9	Cadmium		NA	$(mg/kg\text{-}day)^{-1}$	0.025	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
18540-29-9	Chromium	M	NA	$(mg/kg\text{-}day)^{-1}$	0.025	NA	$(mg/kg\text{-}day)^{-1}$	D	IRIS	4/20/2018
7440-48-4	Cobalt		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7440-50-8	Copper		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7439-89-6	Iron		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7439-92-1	Lead		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7439-96-5	Manganese		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7440-02-0	Nickel		NA	$(mg/kg\text{-}day)^{-1}$	0.04	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7782-49-2	Selenium		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7440-62-2	Vanadium		NA	$(mg/kg\text{-}day)^{-1}$	0.026	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
7440-66-6	Zinc		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018
Other										
57-12-5	Cyanide		NA	$(mg/kg\text{-}day)^{-1}$	1	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	4/20/2018

Table 6.1
Cancer Toxicity Data -- Oral and Dermal Pathways

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Footnotes:

(1) Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), July 2004, EPA/540/R/99/005. If not available, assumed to be 100%. The dermal cancer slope factor is derived by dividing the oral CSF by the oral absorption efficiency.

(2) Toxicity value for chromium VI used for chromium.

(3) In accordance with USEPA guidance, constituents considered to have a mutagenic mode of action will be evaluated using the following age-dependent adjustment factors (ADAFs): for ages 0 - <2, ADAF = 10; for ages 2 - <16, ADAF=3; for ages ≥16, ADAF=1.

(4) USEPA (1986) cancer weight-of-evidence categories are as follows:

Group A: Carcinogenic to Humans (sufficient evidence of carcinogenicity in humans)
Group B: Probably Carcinogenic to Humans
B1 - limited evidence of carcinogenicity in humans
B2 - sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans
Group C: Possibly Carcinogenic to Humans (limited evidence of carcinogenicity in animals and inadequate or lack of human data)
Group D: Not Classifiable as to Human Carcinogenicity (inadequate or no evidence)
Group E: Evidence of Non-carcinogenicity for Humans

(5) Date is the date the database was searched.

Acronyms and Abbreviations:

BHHRA = Baseline Human Health Risk Assessment
Cal EPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Cancer Potency Values, https://oehha.ca.gov/media/downloads/crnr/appendixa.pdf
CAS = Chemical Abstract Service
CSF = cancer slope factor
IRIS = Integrated Risk Information System; http://www.epa.gov/iris/
M = mutagen
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
NA = not available or not applicable

Table 6.2
Cancer Toxicity Data -- Inhalation Pathway

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

CAS Number	Chemical of Potential Concern (1)	Mutagen (2)	Unit Risk		Weight of Evidence/ Cancer Guideline Description (3)	IUR	
			Value	Units		Source(s) (4)	Date(s) (MM/DD/YYYY)
Volatile Organic Compounds (VOCs)							
106-46-7	1,4-Dichlorobenzene		1.1E-05	$(\mu g/m^3)^{-1}$	NA	CalEPA	4/20/2018
75-34-3	1,1-Dichloroethane		1.6E-06	$(\mu g/m^3)^{-1}$	NA	CalEPA	4/20/2018
71-43-2	Benzene		7.8E-06	$(\mu g/m^3)^{-1}$	A	IRIS	4/20/2018
108-90-7	Chlorobenzene		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
1634-04-4	Methyl tert butyl ether		2.6E-07	$(\mu g/m^3)^{-1}$	NA	CalEPA	4/20/2018
75-01-4	Vinyl Chloride	M	4.4E-06	$(\mu g/m^3)^{-1}$	A	IRIS	4/20/2018
Semivolatile Organic Compounds (SVOCs)							
123-91-1	1,4-Dioxane		5.0E-06	$(\mu g/m^3)^{-1}$	NA	IRIS	4/20/2018
117-81-7	bis(2-Ethylhexyl)phthalate		2.4E-06	$(\mu g/m^3)^{-1}$	NA	CalEPA	4/20/2018
91-20-3	Naphthalene		3.4E-05	$(\mu g/m^3)^{-1}$	B2	CalEPA	4/20/2018
Metals - Total							
7429-90-5	Aluminum		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
7440-38-2	Arsenic		4.3E-03	$(\mu g/m^3)^{-1}$	A	IRIS	4/20/2018
7440-39-3	Barium		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
7440-43-9	Cadmium		1.8E-03	$(\mu g/m^3)^{-1}$	NA	IRIS	4/20/2018
18540-29-9	Chromium	M	1.2E-02	$(ug/m^3)^{-1}$	A	IRIS	4/20/2018
7440-48-4	Cobalt		9.0E-03	$(\mu g/m^3)^{-1}$	NA	PPRTV	4/20/2018
7440-50-8	Copper		NA	$(ug/m^3)^{-1}$	NA	NA	4/20/2018
7439-89-6	Iron		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
7439-92-1	Lead		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
7439-96-5	Manganese		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
7440-02-0	Nickel		2.6E-04	$(\mu g/m^3)^{-1}$	A,B2	CalEPA	4/20/2018
7782-49-2	Selenium		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
7440-62-2	Vanadium		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
7440-66-6	Zinc		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018
Other							
57-12-5	Cyanide		NA	$(\mu g/m^3)^{-1}$	NA	NA	4/20/2018

Footnotes:

(1) Toxicity value for chromium VI used for chromium.

(2) In accordance with USEPA guidance, constituents considered to have a mutagenic mode of action will be evaluated using the following age-dependent adjustment factors (ADAFs): for ages 0 - <2, ADAF = 10; for ages 2 - <16, ADAF=3; for ages ≥16, ADAF=1.

(3) USEPA (1986) cancer weight-of-evidence categories are as follows:

Group A: Carcinogenic to Humans (sufficient evidence of carcinogenicity in humans)

Group B: Probably Carcinogenic to Humans

B1 - limited evidence of carcinogenicity in humans

B2 - sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans

Group C: Possibly Carcinogenic to Humans (limited evidence of carcinogenicity in animals and inadequate or lack of human data)

Group D: Not Classifiable as to Human Carcinogenicity (inadequate or no evidence)

Group E: Evidence of Non-carcinogenicity for Humans

(4) Date is the date the database was searched.

Acronyms and Abbreviations:

BHHRA = Baseline Human Health Risk Assessment

Cal EPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Cancer Potency Values, http://www.oehha.ca.gov/risk/pdf/tcdb072109alpha.pdf

CAS = Chemical Abstract Service

IRIS = Integrated Risk Information System; http://www.epa.gov/iris/

IUR = inhalation unit risk

M = mutagen

NA = not available or not applicable. If inhalation toxicity data are not available, toxicity will be discussed qualitatively.

PPRTV = Provisional Peer-Reviewed Toxicity Values; http://hhpprtv.ornl.gov

$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.1.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	NA	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	NA
				Benzene	9.0E-01	µg/L	NA	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-03	mg/kg-day	NA
				Methyl tert butyl ether	1.8E+00	µg/L	NA	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	NA	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	NA	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-02	mg/kg-day	NA
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	NA	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Naphthalene	3.0E-01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Metals - Total												
				Aluminum	1.2E+03	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	NA
				Arsenic	4.1E+00	µg/L	NA	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
				Barium	6.3E+01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	NA
				Cadmium	4.3E-01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-03	mg/kg-day	NA
				Chromium	6.0E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
				Cobalt	2.7E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
				Copper	7.5E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	NA
				Iron	1.2E+04	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	NA
				Lead	1.8E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-01	mg/kg-day	NA
				Nickel	7.1E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Selenium	1.2E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA
				Vanadium	5.0E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA
				Zinc	3.8E+02	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	NA
				Other												
				Cyanide	2.7E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-03	mg/kg-day	NA
			Exp. Route Total								0E+00					0E+00

Table 7.1.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	NA	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	NA
				Benzene	9.0E-01	µg/L	NA	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-03	mg/kg-day	NA
				Methyl tert butyl ether	1.8E+00	µg/L	NA	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	NA	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	NA	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-02	mg/kg-day	NA
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	NA	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Naphthalene	3.0E-01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Metals - Total												
				Aluminum	1.2E+03	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	NA
				Arsenic	4.1E+00	µg/L	NA	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
				Barium	6.3E+01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	NA
				Cadmium	4.3E-01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.5E-05	mg/kg-day	NA
				Chromium	6.0E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	NA
				Cobalt	2.7E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
				Copper	7.5E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	NA
				Iron	1.2E+04	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	NA
				Lead	1.8E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-01	mg/kg-day	NA
				Nickel	7.1E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	NA
				Selenium	1.2E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA
				Vanadium	5.0E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA
				Zinc	3.8E+02	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	NA
				Other												
				Cyanide	2.7E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-03	mg/kg-day	NA
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					0E+00
	Exposure Medium Total										0E+00					0E+00

Table 7.1.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	4.1E+00	µg/m^3	NA	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Benzene	3.0E+00	µg/m^3	NA	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	3.0E-02	mg/m^3	NA
				Methyl tert butyl ether	5.2E+00	µg/m^3	NA	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	3.0E+00	mg/m^3	NA
				Vinyl Chloride	2.6E-01	µg/m^3	NA	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-01	mg/m^3	NA
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	7.6E+00	µg/m^3	NA	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	3.0E-02	mg/m^3	NA
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	8.2E-01	µg/m^3	NA	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	3.0E-03	mg/m^3	NA
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					0E+00
	Exposure Medium Total										0E+00					0E+00
Medium Total											0E+00					0E+00
Receptor Total								Total of Receptor Risks Across All Media			0E+00		Total of Receptor Hazards Across All Media			0E+00

Table 7.1.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Footnotes:
(1) The exposure duration (ED) for the hypothetical future adult resident under a central tendency (CT) scenario is set to 0 years (see Table 4.1.CT); therefore, risks and hazards are not calculated for this receptor.

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.1.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	1.7E-05	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	9.5E-08	3.2E-05	mg/kg-day	2.0E-01	mg/kg-day	1.6E-04
				Benzene	9.0E-01	µg/L	1.3E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	6.9E-07	2.5E-05	mg/kg-day	4.0E-03	mg/kg-day	6.1E-03
				Methyl tert butyl ether	1.8E+00	µg/L	2.5E-05	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	4.5E-08	4.9E-05	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	9.6E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	6.9E-07	1.9E-06	mg/kg-day	3.0E-03	mg/kg-day	6.2E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	1.9E-04	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-05	3.7E-04	mg/kg-day	3.0E-02	mg/kg-day	1.2E-02
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	3.3E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	4.6E-07	6.4E-05	mg/kg-day	2.0E-02	mg/kg-day	3.2E-03
				Naphthalene	3.0E-01	µg/L	4.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	8.1E-06	mg/kg-day	2.0E-02	mg/kg-day	4.0E-04
				Metals - Total												
				Aluminum	1.2E+03	µg/L	1.7E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-02	mg/kg-day	1.0E+00	mg/kg-day	3.4E-02
				Arsenic	4.1E+00	µg/L	5.8E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-05	1.1E-04	mg/kg-day	3.0E-04	mg/kg-day	3.7E-01
				Barium	6.3E+01	µg/L	8.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-03	mg/kg-day	2.0E-01	mg/kg-day	8.7E-03
				Cadmium	4.3E-01	µg/L	6.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-05	mg/kg-day	1.0E-03	mg/kg-day	1.2E-02
				Chromium	6.0E+00	µg/L	8.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-04	mg/kg-day	3.0E-03	mg/kg-day	5.5E-02
				Cobalt	2.7E+00	µg/L	3.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.5E-05	mg/kg-day	3.0E-04	mg/kg-day	2.5E-01
				Copper	7.5E+00	µg/L	1.1E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-04	mg/kg-day	4.0E-02	mg/kg-day	5.1E-03
				Iron	1.2E+04	µg/L	1.7E-01	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-01	mg/kg-day	7.0E-01	mg/kg-day	4.7E-01
				Lead	1.8E+00	µg/L	2.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.9E-05	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	2.7E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-02	mg/kg-day	1.4E-01	mg/kg-day	3.8E-01
				Nickel	7.1E+00	µg/L	1.0E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-04	mg/kg-day	2.0E-02	mg/kg-day	9.8E-03
				Selenium	1.2E+00	µg/L	1.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-05	mg/kg-day	5.0E-03	mg/kg-day	6.5E-03
				Vanadium	5.0E+00	µg/L	7.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-04	mg/kg-day	5.0E-03	mg/kg-day	2.7E-02
				Zinc	3.8E+02	µg/L	5.3E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-02	mg/kg-day	3.0E-01	mg/kg-day	3.4E-02
				Other												
				Cyanide	2.7E+00	µg/L	3.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-05	mg/kg-day	1.0E-03	mg/kg-day	7.3E-02
			Exp. Route Total								1E-04					2E+00

Table 7.1.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	1.5E-06	mg/kg-day	5.7E-03	$(mg/kg-day)^{-1}$	8.7E-09	3.0E-06	mg/kg-day	2.0E-01	mg/kg-day	1.5E-05
				Benzene	9.0E-01	µg/L	2.2E-06	mg/kg-day	5.5E-02	$(mg/kg-day)^{-1}$	1.2E-07	4.3E-06	mg/kg-day	4.0E-03	mg/kg-day	1.1E-03
				Methyl tert butyl ether	1.8E+00	µg/L	6.7E-07	mg/kg-day	1.8E-03	$(mg/kg-day)^{-1}$	1.2E-09	1.3E-06	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	6.0E-08	mg/kg-day	7.2E-01	$(mg/kg-day)^{-1}$	4.3E-08	1.2E-07	mg/kg-day	3.0E-03	mg/kg-day	3.9E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	8.0E-07	mg/kg-day	1.0E-01	$(mg/kg-day)^{-1}$	8.0E-08	1.6E-06	mg/kg-day	3.0E-02	mg/kg-day	5.2E-05
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	5.8E-05	mg/kg-day	1.4E-02	$(mg/kg-day)^{-1}$	8.2E-07	1.1E-04	mg/kg-day	2.0E-02	mg/kg-day	5.7E-03
				Naphthalene	3.0E-01	µg/L	4.3E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.4E-07	mg/kg-day	2.0E-02	mg/kg-day	4.2E-05
				Metals - Total												
				Aluminum	1.2E+03	µg/L	1.2E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.2E-04	mg/kg-day	1.0E+00	mg/kg-day	2.2E-04
				Arsenic	4.1E+00	µg/L	3.8E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	5.7E-07	7.4E-07	mg/kg-day	3.0E-04	mg/kg-day	2.5E-03
				Barium	6.3E+01	µg/L	5.9E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-05	mg/kg-day	1.4E-02	mg/kg-day	8.2E-04
				Cadmium	4.3E-01	µg/L	4.0E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.8E-08	mg/kg-day	2.5E-05	mg/kg-day	3.1E-03
				Chromium	6.0E+00	µg/L	5.6E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-06	mg/kg-day	7.5E-05	mg/kg-day	1.5E-02
				Cobalt	2.7E+00	µg/L	1.0E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.0E-07	mg/kg-day	3.0E-04	mg/kg-day	6.5E-04
				Copper	7.5E+00	µg/L	7.0E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.4E-06	mg/kg-day	4.0E-02	mg/kg-day	3.4E-05
				Iron	1.2E+04	µg/L	1.1E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.1E-03	mg/kg-day	7.0E-01	mg/kg-day	3.1E-03
				Lead	1.8E+00	µg/L	1.7E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.2E-08	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	1.8E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.5E-04	mg/kg-day	1.4E-01	mg/kg-day	2.5E-03
				Nickel	7.1E+00	µg/L	1.3E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.6E-07	mg/kg-day	8.0E-04	mg/kg-day	3.2E-04
				Selenium	1.2E+00	µg/L	1.1E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.1E-07	mg/kg-day	5.0E-03	mg/kg-day	4.2E-05
				Vanadium	5.0E+00	µg/L	4.6E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.9E-07	mg/kg-day	1.3E-04	mg/kg-day	6.9E-03
				Zinc	3.8E+02	µg/L	2.1E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.1E-05	mg/kg-day	3.0E-01	mg/kg-day	1.4E-04
				Other												
				Cyanide	2.7E+00	µg/L	2.5E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.8E-07	mg/kg-day	1.0E-03	mg/kg-day	4.8E-04
			Exp. Route Total								2E-06					4E-02
		Exposure Point Total									1E-04					2E+00
	Exposure Medium Total										1E-04					2E+00

Table 7.1.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+01	µg/m^3	2.3E-01	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	3.7E-07	4.5E-01	µg/m^3	NA	mg/m^3	NA
				Benzene	9.1E+00	µg/m^3	1.7E-01	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	1.3E-06	3.4E-01	µg/m^3	3.0E-02	mg/m^3	1.1E-02
				Methyl tert butyl ether	1.6E+01	µg/m^3	2.9E-01	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	7.6E-08	5.7E-01	µg/m^3	3.0E+00	mg/m^3	1.9E-04
				Vinyl Chloride	7.7E-01	µg/m^3	1.5E-02	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	6.4E-08	2.8E-02	µg/m^3	1.0E-01	mg/m^3	2.8E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	2.3E+01	µg/m^3	4.4E-01	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	2.2E-06	8.5E-01	µg/m^3	3.0E-02	mg/m^3	2.8E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.5E+00	µg/m^3	4.7E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.6E-06	9.1E-02	µg/m^3	3.0E-03	mg/m^3	3.0E-02
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								6E-06					7E-02
		Exposure Point Total									6E-06					7E-02
	Exposure Medium Total										6E-06					7E-02
Medium Total											1E-04					2E+00
Receptor Total								Total of Receptor Risks Across All Media			1E-04			Total of Receptor Hazards Across All Media		2E+00

Table 7.1.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.2.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	5.2E-07	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	2.9E-09	1.2E-05	mg/kg-day	2.0E-01	mg/kg-day	6.0E-05
				Benzene	9.0E-01	µg/L	3.9E-07	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-08	9.2E-06	mg/kg-day	4.0E-03	mg/kg-day	2.3E-03
				Methyl tert butyl ether	1.8E+00	µg/L	7.8E-07	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	1.4E-09	1.8E-05	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	8.9E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	6.4E-08	6.9E-07	mg/kg-day	3.0E-03	mg/kg-day	2.3E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	5.9E-06	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	5.9E-07	1.4E-04	mg/kg-day	3.0E-02	mg/kg-day	4.6E-03
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.0E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	1.4E-08	2.4E-05	mg/kg-day	2.0E-02	mg/kg-day	1.2E-03
				Naphthalene	3.0E-01	µg/L	1.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	3.0E-06	mg/kg-day	2.0E-02	mg/kg-day	1.5E-04
				Metals - Total												
				Aluminum	1.2E+03	µg/L	5.4E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-02	mg/kg-day	1.0E+00	mg/kg-day	1.3E-02
				Arsenic	4.1E+00	µg/L	1.8E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-06	4.2E-05	mg/kg-day	3.0E-04	mg/kg-day	1.4E-01
				Barium	6.3E+01	µg/L	2.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-04	mg/kg-day	2.0E-01	mg/kg-day	3.2E-03
				Cadmium	4.3E-01	µg/L	1.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4E-06	mg/kg-day	1.0E-03	mg/kg-day	4.4E-03
				Chromium	6.0E+00	µg/L	8.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-05	mg/kg-day	3.0E-03	mg/kg-day	2.1E-02
				Cobalt	2.7E+00	µg/L	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-05	mg/kg-day	3.0E-04	mg/kg-day	9.3E-02
				Copper	7.5E+00	µg/L	3.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.7E-05	mg/kg-day	4.0E-02	mg/kg-day	1.9E-03
				Iron	1.2E+04	µg/L	5.2E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-01	mg/kg-day	7.0E-01	mg/kg-day	1.7E-01
				Lead	1.8E+00	µg/L	7.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-05	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	8.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-02	mg/kg-day	1.4E-01	mg/kg-day	1.4E-01
				Nickel	7.1E+00	µg/L	3.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-05	mg/kg-day	2.0E-02	mg/kg-day	3.7E-03
				Selenium	1.2E+00	µg/L	5.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-05	mg/kg-day	5.0E-03	mg/kg-day	2.4E-03
				Vanadium	5.0E+00	µg/L	2.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.1E-05	mg/kg-day	5.0E-03	mg/kg-day	1.0E-02
				Zinc	3.8E+02	µg/L	1.6E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-03	mg/kg-day	3.0E-01	mg/kg-day	1.3E-02
				Other												
				Cyanide	2.7E+00	µg/L	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-05	mg/kg-day	1.0E-03	mg/kg-day	2.7E-02
			Exp. Route Total								3E-06					7E-01

Table 7.2.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	9.5E-08	mg/kg-day	5.7E-03	$(mg/kg-day)^{-1}$	5.4E-10	2.2E-06	mg/kg-day	2.0E-01	mg/kg-day	1.1E-05
				Benzene	9.0E-01	µg/L	1.4E-07	mg/kg-day	5.5E-02	$(mg/kg-day)^{-1}$	7.7E-09	3.2E-06	mg/kg-day	4.0E-03	mg/kg-day	8.1E-04
				Methyl tert butyl ether	1.8E+00	µg/L	4.2E-08	mg/kg-day	1.8E-03	$(mg/kg-day)^{-1}$	7.6E-11	9.8E-07	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	1.1E-08	mg/kg-day	7.2E-01	$(mg/kg-day)^{-1}$	7.8E-09	8.4E-08	mg/kg-day	3.0E-03	mg/kg-day	2.8E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	5.0E-08	mg/kg-day	1.0E-01	$(mg/kg-day)^{-1}$	5.0E-09	1.2E-06	mg/kg-day	3.0E-02	mg/kg-day	3.9E-05
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	3.6E-06	mg/kg-day	1.4E-02	$(mg/kg-day)^{-1}$	5.1E-08	8.5E-05	mg/kg-day	2.0E-02	mg/kg-day	4.2E-03
				Naphthalene	3.0E-01	µg/L	2.7E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.3E-07	mg/kg-day	2.0E-02	mg/kg-day	3.1E-05
				Metals - Total												
				Aluminum	1.2E+03	µg/L	4.8E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-04	mg/kg-day	1.0E+00	mg/kg-day	1.1E-04
				Arsenic	4.1E+00	µg/L	1.6E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.4E-08	3.7E-07	mg/kg-day	3.0E-04	mg/kg-day	1.2E-03
				Barium	6.3E+01	µg/L	2.4E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.7E-06	mg/kg-day	1.4E-02	mg/kg-day	4.1E-04
				Cadmium	4.3E-01	µg/L	1.7E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.9E-08	mg/kg-day	2.5E-05	mg/kg-day	1.6E-03
				Chromium	6.0E+00	µg/L	7.0E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.5E-07	mg/kg-day	7.5E-05	mg/kg-day	7.3E-03
				Cobalt	2.7E+00	µg/L	4.2E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	9.8E-08	mg/kg-day	3.0E-04	mg/kg-day	3.3E-04
				Copper	7.5E+00	µg/L	2.9E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.8E-07	mg/kg-day	4.0E-02	mg/kg-day	1.7E-05
				Iron	1.2E+04	µg/L	4.6E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-03	mg/kg-day	7.0E-01	mg/kg-day	1.5E-03
				Lead	1.8E+00	µg/L	6.9E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.6E-08	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	7.5E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.8E-04	mg/kg-day	1.4E-01	mg/kg-day	1.3E-03
				Nickel	7.1E+00	µg/L	5.5E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.3E-07	mg/kg-day	8.0E-04	mg/kg-day	1.6E-04
				Selenium	1.2E+00	µg/L	4.6E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-07	mg/kg-day	5.0E-03	mg/kg-day	2.1E-05
				Vanadium	5.0E+00	µg/L	1.9E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.5E-07	mg/kg-day	1.3E-04	mg/kg-day	3.4E-03
				Zinc	3.8E+02	µg/L	8.7E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.0E-05	mg/kg-day	3.0E-01	mg/kg-day	6.8E-05
				Other												
				Cyanide	2.7E+00	µg/L	1.0E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.4E-07	mg/kg-day	1.0E-03	mg/kg-day	2.4E-04
			Exp. Route Total								1E-07					2E-02
		Exposure Point Total									3E-06					7E-01
	Exposure Medium Total										3E-06					7E-01

Table 7.2.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	3.7E+00	µg/m^3	2.7E-03	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	4.3E-09	6.2E-02	µg/m^3	NA	mg/m^3	NA
				Benzene	2.8E+00	µg/m^3	2.0E-03	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	1.5E-08	4.6E-02	µg/m^3	3.0E-02	mg/m^3	1.5E-03
				Methyl tert butyl ether	4.7E+00	µg/m^3	3.4E-03	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	8.8E-10	7.9E-02	µg/m^3	3.0E+00	mg/m^3	2.6E-05
				Vinyl Chloride	2.3E-01	µg/m^3	5.0E-04	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	2.2E-09	3.9E-03	µg/m^3	1.0E-01	mg/m^3	3.9E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	7.0E+00	µg/m^3	5.0E-03	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	2.5E-08	1.2E-01	µg/m^3	3.0E-02	mg/m^3	3.9E-03
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	7.5E-01	µg/m^3	5.4E-04	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.8E-08	1.3E-02	µg/m^3	3.0E-03	mg/m^3	4.2E-03
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								7E-08					1E-02
		Exposure Point Total									7E-08					1E-02
	Exposure Medium Total										7E-08					1E-02
Medium Total											4E-06					7E-01
Receptor Total							Total of Receptor Risks Across All Media				4E-06		Total of Receptor Hazards Across All Media			7E-01

Table 7.2.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.2.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	7.2E-06	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	4.1E-08	5.0E-05	mg/kg-day	2.0E-01	mg/kg-day	2.5E-04
				Benzene	9.0E-01	µg/L	5.4E-06	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	3.0E-07	3.8E-05	mg/kg-day	4.0E-03	mg/kg-day	9.5E-03
				Methyl tert butyl ether	1.8E+00	µg/L	1.1E-05	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	2.0E-08	7.6E-05	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	1.2E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	8.3E-07	2.9E-06	mg/kg-day	3.0E-03	mg/kg-day	9.6E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	8.2E-05	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	8.2E-06	5.8E-04	mg/kg-day	3.0E-02	mg/kg-day	1.9E-02
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.4E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	2.0E-07	9.9E-05	mg/kg-day	2.0E-02	mg/kg-day	4.9E-03
				Naphthalene	3.0E-01	µg/L	1.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	1.3E-05	mg/kg-day	2.0E-02	mg/kg-day	6.3E-04
				Metals - Total												
				Aluminum	1.2E+03	µg/L	7.6E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-02	mg/kg-day	1.0E+00	mg/kg-day	5.3E-02
				Arsenic	4.1E+00	µg/L	2.5E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-05	1.7E-04	mg/kg-day	3.0E-04	mg/kg-day	5.8E-01
				Barium	6.3E+01	µg/L	3.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-03	mg/kg-day	2.0E-01	mg/kg-day	1.4E-02
				Cadmium	4.3E-01	µg/L	2.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-05	mg/kg-day	1.0E-03	mg/kg-day	1.8E-02
				Chromium	6.0E+00	µg/L	1.0E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-04	mg/kg-day	3.0E-03	mg/kg-day	8.6E-02
				Cobalt	2.7E+00	µg/L	1.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-04	mg/kg-day	3.0E-04	mg/kg-day	3.9E-01
				Copper	7.5E+00	µg/L	4.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-04	mg/kg-day	4.0E-02	mg/kg-day	8.0E-03
				Iron	1.2E+04	µg/L	7.2E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.1E-01	mg/kg-day	7.0E-01	mg/kg-day	7.2E-01
				Lead	1.8E+00	µg/L	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6E-05	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	1.2E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.3E-02	mg/kg-day	1.4E-01	mg/kg-day	5.9E-01
				Nickel	7.1E+00	µg/L	4.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-04	mg/kg-day	2.0E-02	mg/kg-day	1.5E-02
				Selenium	1.2E+00	µg/L	7.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.0E-05	mg/kg-day	5.0E-03	mg/kg-day	1.0E-02
				Vanadium	5.0E+00	µg/L	3.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-04	mg/kg-day	5.0E-03	mg/kg-day	4.2E-02
				Zinc	3.8E+02	µg/L	2.3E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-02	mg/kg-day	3.0E-01	mg/kg-day	5.3E-02
				Other												
				Cyanide	2.7E+00	µg/L	1.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-04	mg/kg-day	1.0E-03	mg/kg-day	1.1E-01
			Exp. Route Total								5E-05					3E+00

Table 7.2.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	4.2E-07	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	2.4E-09	2.9E-06	mg/kg-day	2.0E-01	mg/kg-day	1.5E-05
				Benzene	9.0E-01	µg/L	6.1E-07	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	3.4E-08	4.3E-06	mg/kg-day	4.0E-03	mg/kg-day	1.1E-03
				Methyl tert butyl ether	1.8E+00	µg/L	1.8E-07	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	3.3E-10	1.3E-06	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	4.4E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	3.2E-08	1.1E-07	mg/kg-day	3.0E-03	mg/kg-day	3.7E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	2.2E-07	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	2.2E-08	1.5E-06	mg/kg-day	3.0E-02	mg/kg-day	5.1E-05
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.6E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-07	1.1E-04	mg/kg-day	2.0E-02	mg/kg-day	5.6E-03
				Naphthalene	3.0E-01	µg/L	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.2E-07	mg/kg-day	2.0E-02	mg/kg-day	4.1E-05
				Metals - Total												
				Aluminum	1.2E+03	µg/L	2.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-04	mg/kg-day	1.0E+00	mg/kg-day	1.9E-04
				Arsenic	4.1E+00	µg/L	9.1E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07	6.4E-07	mg/kg-day	3.0E-04	mg/kg-day	2.1E-03
				Barium	6.3E+01	µg/L	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.9E-06	mg/kg-day	1.4E-02	mg/kg-day	7.1E-04
				Cadmium	4.3E-01	µg/L	9.7E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.8E-08	mg/kg-day	2.5E-05	mg/kg-day	2.7E-03
				Chromium	6.0E+00	µg/L	3.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.5E-07	mg/kg-day	7.5E-05	mg/kg-day	1.3E-02
				Cobalt	2.7E+00	µg/L	2.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-07	mg/kg-day	3.0E-04	mg/kg-day	5.7E-04
				Copper	7.5E+00	µg/L	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-06	mg/kg-day	4.0E-02	mg/kg-day	2.9E-05
				Iron	1.2E+04	µg/L	2.7E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-03	mg/kg-day	7.0E-01	mg/kg-day	2.7E-03
				Lead	1.8E+00	µg/L	4.0E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-08	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	4.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-04	mg/kg-day	1.4E-01	mg/kg-day	2.2E-03
				Nickel	7.1E+00	µg/L	3.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-07	mg/kg-day	8.0E-04	mg/kg-day	2.8E-04
				Selenium	1.2E+00	µg/L	2.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-07	mg/kg-day	5.0E-03	mg/kg-day	3.7E-05
				Vanadium	5.0E+00	µg/L	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.8E-07	mg/kg-day	1.3E-04	mg/kg-day	6.0E-03
				Zinc	3.8E+02	µg/L	5.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-05	mg/kg-day	3.0E-01	mg/kg-day	1.2E-04
				Other												
				Cyanide	2.7E+00	µg/L	6.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-07	mg/kg-day	1.0E-03	mg/kg-day	4.2E-04
			Exp. Route Total								5E-07					4E-02
		Exposure Point Total									5E-05					3E+00
	Exposure Medium Total										5E-05					3E+00

Table 7.2.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.0E+01	µg/m^3	4.5E-02	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	7.2E-08	3.2E-01	µg/m^3	NA	mg/m^3	NA
				Benzene	7.5E+00	µg/m^3	3.4E-02	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	2.6E-07	2.4E-01	µg/m^3	3.0E-02	mg/m^3	7.9E-03
				Methyl tert butyl ether	1.3E+01	µg/m^3	5.7E-02	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	1.5E-08	4.0E-01	µg/m^3	3.0E+00	mg/m^3	1.3E-04
				Vinyl Chloride	6.3E-01	µg/m^3	8.0E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	3.5E-08	2.0E-02	µg/m^3	1.0E-01	mg/m^3	2.0E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.9E+01	µg/m^3	8.5E-02	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	4.3E-07	6.0E-01	µg/m^3	3.0E-02	mg/m^3	2.0E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.0E+00	µg/m^3	9.2E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.1E-07	6.4E-02	µg/m^3	3.0E-03	mg/m^3	2.1E-02
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								1E-06					5E-02
		Exposure Point Total									1E-06					5E-02
	Exposure Medium Total										1E-06					5E-02
Medium Total											5E-05					3E+00
Receptor Total								Total of Receptor Risks Across All Media			5E-05		Total of Receptor Hazards Across All Media			3E+00

Table 7.2.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.3.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	2.1E-06	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	1.2E-08	2.5E-05	mg/kg-day	2.0E-01	mg/kg-day	1.2E-04
				Benzene	9.0E-01	µg/L	1.6E-06	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	8.9E-08	1.9E-05	mg/kg-day	4.0E-03	mg/kg-day	4.7E-03
				Methyl tert butyl ether	1.8E+00	µg/L	3.2E-06	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	5.8E-09	3.8E-05	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	5.1E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	3.7E-07	1.4E-06	mg/kg-day	3.0E-03	mg/kg-day	4.8E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	2.4E-05	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	2.4E-06	2.9E-04	mg/kg-day	3.0E-02	mg/kg-day	9.5E-03
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	4.2E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	5.9E-08	4.9E-05	mg/kg-day	2.0E-02	mg/kg-day	2.4E-03
				Naphthalene	3.0E-01	µg/L	5.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	6.2E-06	mg/kg-day	2.0E-02	mg/kg-day	3.1E-04
				Metals - Total												
				Aluminum	1.2E+03	µg/L	2.2E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-02	mg/kg-day	1.0E+00	mg/kg-day	2.6E-02
				Arsenic	4.1E+00	µg/L	7.4E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05	8.6E-05	mg/kg-day	3.0E-04	mg/kg-day	2.9E-01
				Barium	6.3E+01	µg/L	1.1E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-03	mg/kg-day	2.0E-01	mg/kg-day	6.7E-03
				Cadmium	4.3E-01	µg/L	7.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.2E-06	mg/kg-day	1.0E-03	mg/kg-day	9.2E-03
				Chromium	6.0E+00	µg/L	4.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-04	mg/kg-day	3.0E-03	mg/kg-day	4.3E-02
				Cobalt	2.7E+00	µg/L	4.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-05	mg/kg-day	3.0E-04	mg/kg-day	1.9E-01
				Copper	7.5E+00	µg/L	1.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-04	mg/kg-day	4.0E-02	mg/kg-day	4.0E-03
				Iron	1.2E+04	µg/L	2.1E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-01	mg/kg-day	7.0E-01	mg/kg-day	3.6E-01
				Lead	1.8E+00	µg/L	3.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-05	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	3.5E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.1E-02	mg/kg-day	1.4E-01	mg/kg-day	2.9E-01
				Nickel	7.1E+00	µg/L	1.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-04	mg/kg-day	2.0E-02	mg/kg-day	7.5E-03
				Selenium	1.2E+00	µg/L	2.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-05	mg/kg-day	5.0E-03	mg/kg-day	5.0E-03
				Vanadium	5.0E+00	µg/L	9.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-04	mg/kg-day	5.0E-03	mg/kg-day	2.1E-02
				Zinc	3.8E+02	µg/L	6.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.9E-03	mg/kg-day	3.0E-01	mg/kg-day	2.6E-02
				Other												
				Cyanide	2.7E+00	µg/L	4.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.6E-05	mg/kg-day	1.0E-03	mg/kg-day	5.6E-02
			Exp. Route Total								1E-05					1E+00

Table 7.3.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	3.1E-07	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	1.8E-09	3.6E-06	mg/kg-day	2.0E-01	mg/kg-day	1.8E-05
				Benzene	9.0E-01	µg/L	4.5E-07	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.5E-08	5.3E-06	mg/kg-day	4.0E-03	mg/kg-day	1.3E-03
				Methyl tert butyl ether	1.8E+00	µg/L	1.4E-07	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	2.4E-10	1.6E-06	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	4.9E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	3.5E-08	1.4E-07	mg/kg-day	3.0E-03	mg/kg-day	4.5E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	1.6E-07	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-08	1.9E-06	mg/kg-day	3.0E-02	mg/kg-day	6.3E-05
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.2E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.7E-07	1.4E-04	mg/kg-day	2.0E-02	mg/kg-day	6.9E-03
				Naphthalene	3.0E-01	µg/L	8.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-06	mg/kg-day	2.0E-02	mg/kg-day	5.1E-05
				Metals - Total												
				Aluminum	1.2E+03	µg/L	1.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-04	mg/kg-day	1.0E+00	mg/kg-day	1.8E-04
				Arsenic	4.1E+00	µg/L	5.2E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.8E-08	6.1E-07	mg/kg-day	3.0E-04	mg/kg-day	2.0E-03
				Barium	6.3E+01	µg/L	8.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.4E-06	mg/kg-day	1.4E-02	mg/kg-day	6.7E-04
				Cadmium	4.3E-01	µg/L	5.5E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-08	mg/kg-day	2.5E-05	mg/kg-day	2.6E-03
				Chromium	6.0E+00	µg/L	3.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.0E-07	mg/kg-day	7.5E-05	mg/kg-day	1.2E-02
				Cobalt	2.7E+00	µg/L	1.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-07	mg/kg-day	3.0E-04	mg/kg-day	5.4E-04
				Copper	7.5E+00	µg/L	9.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	4.0E-02	mg/kg-day	2.8E-05
				Iron	1.2E+04	µg/L	1.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-03	mg/kg-day	7.0E-01	mg/kg-day	2.5E-03
				Lead	1.8E+00	µg/L	2.3E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-08	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	2.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-04	mg/kg-day	1.4E-01	mg/kg-day	2.1E-03
				Nickel	7.1E+00	µg/L	1.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-07	mg/kg-day	8.0E-04	mg/kg-day	2.7E-04
				Selenium	1.2E+00	µg/L	1.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-07	mg/kg-day	5.0E-03	mg/kg-day	3.5E-05
				Vanadium	5.0E+00	µg/L	6.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.4E-07	mg/kg-day	1.3E-04	mg/kg-day	5.7E-03
				Zinc	3.8E+02	µg/L	2.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-05	mg/kg-day	3.0E-01	mg/kg-day	1.1E-04
				Other												
				Cyanide	2.7E+00	µg/L	3.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-07	mg/kg-day	1.0E-03	mg/kg-day	4.0E-04
			Exp. Route Total								3E-07					4E-02
		Exposure Point Total									1E-05					1E+00
	Exposure Medium Total										1E-05					1E+00

Table 7.3.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	3.8E+00	µg/m^3	5.6E-03	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	9.0E-09	6.5E-02	µg/m^3	NA	mg/m^3	NA
				Benzene	2.8E+00	µg/m^3	4.2E-03	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	3.3E-08	4.9E-02	µg/m^3	3.0E-02	mg/m^3	1.6E-03
				Methyl tert butyl ether	4.8E+00	µg/m^3	7.1E-03	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	1.8E-09	8.3E-02	µg/m^3	3.0E+00	mg/m^3	2.8E-05
				Vinyl Chloride	2.4E-01	µg/m^3	1.5E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	6.5E-09	4.1E-03	µg/m^3	1.0E-01	mg/m^3	4.1E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	7.2E+00	µg/m^3	1.1E-02	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	5.3E-08	1.2E-01	µg/m^3	3.0E-02	mg/m^3	4.1E-03
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	7.7E-01	µg/m^3	1.1E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.9E-08	1.3E-02	µg/m^3	3.0E-03	mg/m^3	4.4E-03
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								1E-07					1E-02
		Exposure Point Total									1E-07					1E-02
	Exposure Medium Total										1E-07					1E-02
Medium Total											1E-05					1E+00
Receptor Total								Total of Receptor Risks Across All Media			1E-05		Total of Receptor Hazards Across All Media			1E+00

Table 7.3.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.3.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	6.5E-06	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	3.7E-08	7.5E-05	mg/kg-day	2.0E-01	mg/kg-day	3.8E-04
				Benzene	9.0E-01	µg/L	4.9E-06	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.7E-07	5.7E-05	mg/kg-day	4.0E-03	mg/kg-day	1.4E-02
				Methyl tert butyl ether	1.8E+00	µg/L	9.8E-06	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	1.8E-08	1.1E-04	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	1.6E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-06	4.3E-06	mg/kg-day	3.0E-03	mg/kg-day	1.4E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	7.4E-05	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	7.4E-06	8.6E-04	mg/kg-day	3.0E-02	mg/kg-day	2.9E-02
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.3E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	1.8E-07	1.5E-04	mg/kg-day	2.0E-02	mg/kg-day	7.4E-03
				Naphthalene	3.0E-01	µg/L	1.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	1.9E-05	mg/kg-day	2.0E-02	mg/kg-day	9.4E-04
				Metals - Total												
				Aluminum	1.2E+03	µg/L	6.8E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.9E-02	mg/kg-day	1.0E+00	mg/kg-day	7.9E-02
				Arsenic	4.1E+00	µg/L	2.2E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-05	2.6E-04	mg/kg-day	3.0E-04	mg/kg-day	8.7E-01
				Barium	6.3E+01	µg/L	3.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.1E-03	mg/kg-day	2.0E-01	mg/kg-day	2.0E-02
				Cadmium	4.3E-01	µg/L	2.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-05	mg/kg-day	1.0E-03	mg/kg-day	2.8E-02
				Chromium	6.0E+00	µg/L	1.4E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-04	mg/kg-day	3.0E-03	mg/kg-day	1.3E-01
				Cobalt	2.7E+00	µg/L	1.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-04	mg/kg-day	3.0E-04	mg/kg-day	5.8E-01
				Copper	7.5E+00	µg/L	4.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.8E-04	mg/kg-day	4.0E-02	mg/kg-day	1.2E-02
				Iron	1.2E+04	µg/L	6.5E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6E-01	mg/kg-day	7.0E-01	mg/kg-day	1.1E+00
				Lead	1.8E+00	µg/L	9.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	1.1E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-01	mg/kg-day	1.4E-01	mg/kg-day	8.9E-01
				Nickel	7.1E+00	µg/L	3.9E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.6E-04	mg/kg-day	2.0E-02	mg/kg-day	2.3E-02
				Selenium	1.2E+00	µg/L	6.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.5E-05	mg/kg-day	5.0E-03	mg/kg-day	1.5E-02
				Vanadium	5.0E+00	µg/L	2.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-04	mg/kg-day	5.0E-03	mg/kg-day	6.3E-02
				Zinc	3.8E+02	µg/L	2.1E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-02	mg/kg-day	3.0E-01	mg/kg-day	8.0E-02
				Other												
				Cyanide	2.7E+00	µg/L	1.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-04	mg/kg-day	1.0E-03	mg/kg-day	1.7E-01
			Exp. Route Total								4E-05					4E+00

Table 7.3.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	3.9E-07	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	2.2E-09	4.6E-06	mg/kg-day	2.0E-01	mg/kg-day	2.3E-05
				Benzene	9.0E-01	µg/L	5.7E-07	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-08	6.7E-06	mg/kg-day	4.0E-03	mg/kg-day	1.7E-03
				Methyl tert butyl ether	1.8E+00	µg/L	1.7E-07	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	3.1E-10	2.0E-06	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	6.2E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	4.4E-08	1.7E-07	mg/kg-day	3.0E-03	mg/kg-day	5.8E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	2.1E-07	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	2.1E-08	2.4E-06	mg/kg-day	3.0E-02	mg/kg-day	8.0E-05
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.5E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.1E-07	1.7E-04	mg/kg-day	2.0E-02	mg/kg-day	8.7E-03
				Naphthalene	3.0E-01	µg/L	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	2.0E-02	mg/kg-day	6.4E-05
				Metals - Total												
				Aluminum	1.2E+03	µg/L	2.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-04	mg/kg-day	1.0E+00	mg/kg-day	3.0E-04
				Arsenic	4.1E+00	µg/L	8.4E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07	9.8E-07	mg/kg-day	3.0E-04	mg/kg-day	3.3E-03
				Barium	6.3E+01	µg/L	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-05	mg/kg-day	1.4E-02	mg/kg-day	1.1E-03
				Cadmium	4.3E-01	µg/L	8.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-07	mg/kg-day	2.5E-05	mg/kg-day	4.2E-03
				Chromium	6.0E+00	µg/L	5.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-06	mg/kg-day	7.5E-05	mg/kg-day	1.9E-02
				Cobalt	2.7E+00	µg/L	2.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	3.0E-04	mg/kg-day	8.7E-04
				Copper	7.5E+00	µg/L	1.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-06	mg/kg-day	4.0E-02	mg/kg-day	4.5E-05
				Iron	1.2E+04	µg/L	2.4E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-03	mg/kg-day	7.0E-01	mg/kg-day	4.1E-03
				Lead	1.8E+00	µg/L	3.7E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-08	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	4.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.7E-04	mg/kg-day	1.4E-01	mg/kg-day	3.3E-03
				Nickel	7.1E+00	µg/L	2.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-07	mg/kg-day	8.0E-04	mg/kg-day	4.3E-04
				Selenium	1.2E+00	µg/L	2.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-07	mg/kg-day	5.0E-03	mg/kg-day	5.7E-05
				Vanadium	5.0E+00	µg/L	1.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-06	mg/kg-day	1.3E-04	mg/kg-day	9.1E-03
				Zinc	3.8E+02	µg/L	4.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-05	mg/kg-day	3.0E-01	mg/kg-day	1.8E-04
				Other												
				Cyanide	2.7E+00	µg/L	5.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.4E-07	mg/kg-day	1.0E-03	mg/kg-day	6.4E-04
			Exp. Route Total								4E-07					6E-02
		Exposure Point Total									4E-05					4E+00
	Exposure Medium Total										4E-05					4E+00

Table 7.3.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	9.4E+00	µg/m^3	2.3E-02	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	3.7E-08	2.7E-01	µg/m^3	NA	mg/m^3	NA
				Benzene	7.0E+00	µg/m^3	1.7E-02	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	1.3E-07	2.0E-01	µg/m^3	3.0E-02	mg/m^3	6.7E-03
				Methyl tert butyl ether	1.2E+01	µg/m^3	2.9E-02	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	7.6E-09	3.4E-01	µg/m^3	3.0E+00	mg/m^3	1.1E-04
				Vinyl Chloride	5.9E-01	µg/m^3	6.1E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	2.7E-08	1.7E-02	µg/m^3	1.0E-01	mg/m^3	1.7E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.8E+01	µg/m^3	4.4E-02	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	2.2E-07	5.1E-01	µg/m^3	3.0E-02	mg/m^3	1.7E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	1.9E+00	µg/m^3	4.7E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.6E-07	5.5E-02	µg/m^3	3.0E-03	mg/m^3	1.8E-02
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								6E-07					4E-02
		Exposure Point Total									6E-07					4E-02
	Exposure Medium Total										6E-07					4E-02
Medium Total											4E-05					4E+00
Receptor Total								Total of Receptor Risks Across All Media			4E-05		Total of Receptor Hazards Across All Media			4E+00

Table 7.3.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.4.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	5.0E-06	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	2.9E-08	3.5E-05	mg/kg-day	2.0E-01	mg/kg-day	1.8E-04
				Benzene	9.0E-01	µg/L	3.8E-06	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.1E-07	2.7E-05	mg/kg-day	4.0E-03	mg/kg-day	6.7E-03
				Methyl tert butyl ether	1.8E+00	µg/L	7.6E-06	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	1.4E-08	5.3E-05	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	2.9E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	2.1E-07	2.0E-06	mg/kg-day	3.0E-03	mg/kg-day	6.8E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	5.8E-05	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	5.8E-06	4.0E-04	mg/kg-day	3.0E-02	mg/kg-day	1.3E-02
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	9.9E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	1.4E-07	6.9E-05	mg/kg-day	2.0E-02	mg/kg-day	3.5E-03
				Naphthalene	3.0E-01	µg/L	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	8.8E-06	mg/kg-day	2.0E-02	mg/kg-day	4.4E-04
				Metals - Total												
				Aluminum	1.2E+03	µg/L	5.3E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7E-02	mg/kg-day	1.0E+00	mg/kg-day	3.7E-02
				Arsenic	4.1E+00	µg/L	1.8E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-05	1.2E-04	mg/kg-day	3.0E-04	mg/kg-day	4.1E-01
				Barium	6.3E+01	µg/L	2.7E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-03	mg/kg-day	2.0E-01	mg/kg-day	9.5E-03
				Cadmium	4.3E-01	µg/L	1.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-05	mg/kg-day	1.0E-03	mg/kg-day	1.3E-02
				Chromium	6.0E+00	µg/L	2.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-04	mg/kg-day	3.0E-03	mg/kg-day	6.0E-02
				Cobalt	2.7E+00	µg/L	1.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.2E-05	mg/kg-day	3.0E-04	mg/kg-day	2.7E-01
				Copper	7.5E+00	µg/L	3.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-04	mg/kg-day	4.0E-02	mg/kg-day	5.6E-03
				Iron	1.2E+04	µg/L	5.1E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-01	mg/kg-day	7.0E-01	mg/kg-day	5.1E-01
				Lead	1.8E+00	µg/L	7.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-05	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	8.3E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-02	mg/kg-day	1.4E-01	mg/kg-day	4.2E-01
				Nickel	7.1E+00	µg/L	3.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-04	mg/kg-day	2.0E-02	mg/kg-day	1.1E-02
				Selenium	1.2E+00	µg/L	5.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-05	mg/kg-day	5.0E-03	mg/kg-day	7.1E-03
				Vanadium	5.0E+00	µg/L	2.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-04	mg/kg-day	5.0E-03	mg/kg-day	3.0E-02
				Zinc	3.8E+02	µg/L	1.6E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-02	mg/kg-day	3.0E-01	mg/kg-day	3.8E-02
				Other												
				Cyanide	2.7E+00	µg/L	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.0E-05	mg/kg-day	1.0E-03	mg/kg-day	8.0E-02
			Exp. Route Total								3E-05					2E+00

Table 7.4.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	3.8E-07	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	2.2E-09	2.7E-06	mg/kg-day	2.0E-01	mg/kg-day	1.3E-05
				Benzene	9.0E-01	µg/L	5.7E-07	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-08	4.0E-06	mg/kg-day	4.0E-03	mg/kg-day	1.0E-03
				Methyl tert butyl ether	1.8E+00	µg/L	1.7E-07	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	3.0E-10	1.2E-06	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	1.5E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-08	1.1E-07	mg/kg-day	3.0E-03	mg/kg-day	3.5E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	2.0E-07	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-08	1.4E-06	mg/kg-day	3.0E-02	mg/kg-day	4.7E-05
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.5E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.0E-07	1.0E-04	mg/kg-day	2.0E-02	mg/kg-day	5.1E-03
				Naphthalene	3.0E-01	µg/L	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6E-07	mg/kg-day	2.0E-02	mg/kg-day	3.8E-05
				Metals - Total												
				Aluminum	1.2E+03	µg/L	3.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-04	mg/kg-day	1.0E+00	mg/kg-day	2.1E-04
				Arsenic	4.1E+00	µg/L	9.8E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-07	6.8E-07	mg/kg-day	3.0E-04	mg/kg-day	2.3E-03
				Barium	6.3E+01	µg/L	1.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-05	mg/kg-day	1.4E-02	mg/kg-day	7.6E-04
				Cadmium	4.3E-01	µg/L	1.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-08	mg/kg-day	2.5E-05	mg/kg-day	2.9E-03
				Chromium	6.0E+00	µg/L	1.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-06	mg/kg-day	7.5E-05	mg/kg-day	1.3E-02
				Cobalt	2.7E+00	µg/L	2.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-07	mg/kg-day	3.0E-04	mg/kg-day	6.1E-04
				Copper	7.5E+00	µg/L	1.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	4.0E-02	mg/kg-day	3.1E-05
				Iron	1.2E+04	µg/L	2.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-03	mg/kg-day	7.0E-01	mg/kg-day	2.8E-03
				Lead	1.8E+00	µg/L	4.3E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-08	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	4.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-04	mg/kg-day	1.4E-01	mg/kg-day	2.3E-03
				Nickel	7.1E+00	µg/L	3.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-07	mg/kg-day	8.0E-04	mg/kg-day	3.0E-04
				Selenium	1.2E+00	µg/L	2.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-07	mg/kg-day	5.0E-03	mg/kg-day	3.9E-05
				Vanadium	5.0E+00	µg/L	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.3E-07	mg/kg-day	1.3E-04	mg/kg-day	6.4E-03
				Zinc	3.8E+02	µg/L	5.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-05	mg/kg-day	3.0E-01	mg/kg-day	1.3E-04
				Other												
				Cyanide	2.7E+00	µg/L	6.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-07	mg/kg-day	1.0E-03	mg/kg-day	4.5E-04
			Exp. Route Total								4E-07					4E-02
		Exposure Point Total									3E-05					2E+00
	Exposure Medium Total										3E-05					2E+00

Table 7.4.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+01	µg/m^3	5.6E-02	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	8.9E-08	3.9E-01	µg/m^3	NA	mg/m^3	NA
				Benzene	8.7E+00	µg/m^3	4.1E-02	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	3.2E-07	2.9E-01	µg/m^3	3.0E-02	mg/m^3	9.7E-03
				Methyl tert butyl ether	1.5E+01	µg/m^3	7.1E-02	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	1.8E-08	4.9E-01	µg/m^3	3.0E+00	mg/m^3	1.6E-04
				Vinyl Chloride	7.3E-01	µg/m^3	3.5E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	1.5E-08	2.4E-02	µg/m^3	1.0E-01	mg/m^3	2.4E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	2.2E+01	µg/m^3	1.0E-01	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	5.2E-07	7.3E-01	µg/m^3	3.0E-02	mg/m^3	2.4E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.4E+00	µg/m^3	1.1E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.8E-07	7.9E-02	µg/m^3	3.0E-03	mg/m^3	2.6E-02
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								1E-06					6E-02
		Exposure Point Total									1E-06					6E-02
	Exposure Medium Total										1E-06					6E-02
Medium Total											3E-05					2E+00
Receptor Total							Total of Receptor Risks Across All Media				3E-05	Total of Receptor Hazards Across All Media				2E+00

Table 7.4.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.5.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	5.4E-06	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	3.1E-08	3.8E-05	mg/kg-day	2.0E-01	mg/kg-day	1.9E-04
				Benzene	9.0E-01	µg/L	4.1E-06	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-07	2.9E-05	mg/kg-day	4.0E-03	mg/kg-day	7.1E-03
				Methyl tert butyl ether	1.8E+00	µg/L	8.1E-06	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	1.5E-08	5.7E-05	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	8.7E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-07	2.2E-06	mg/kg-day	3.0E-03	mg/kg-day	7.2E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	6.2E-05	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-06	4.3E-04	mg/kg-day	3.0E-02	mg/kg-day	1.4E-02
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.1E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	1.5E-07	7.4E-05	mg/kg-day	2.0E-02	mg/kg-day	3.7E-03
				Naphthalene	3.0E-01	µg/L	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	9.4E-06	mg/kg-day	2.0E-02	mg/kg-day	4.7E-04
				Metals - Total												
				Aluminum	1.2E+03	µg/L	5.7E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-02	mg/kg-day	1.0E+00	mg/kg-day	4.0E-02
				Arsenic	4.1E+00	µg/L	1.9E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-05	1.3E-04	mg/kg-day	3.0E-04	mg/kg-day	4.3E-01
				Barium	6.3E+01	µg/L	2.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-03	mg/kg-day	2.0E-01	mg/kg-day	1.0E-02
				Cadmium	4.3E-01	µg/L	2.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	1.0E-03	mg/kg-day	1.4E-02
				Chromium	6.0E+00	µg/L	7.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-04	mg/kg-day	3.0E-03	mg/kg-day	6.4E-02
				Cobalt	2.7E+00	µg/L	1.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.7E-05	mg/kg-day	3.0E-04	mg/kg-day	2.9E-01
				Copper	7.5E+00	µg/L	3.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-04	mg/kg-day	4.0E-02	mg/kg-day	6.0E-03
				Iron	1.2E+04	µg/L	5.4E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-01	mg/kg-day	7.0E-01	mg/kg-day	5.4E-01
				Lead	1.8E+00	µg/L	8.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-05	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	8.9E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-02	mg/kg-day	1.4E-01	mg/kg-day	4.4E-01
				Nickel	7.1E+00	µg/L	3.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-04	mg/kg-day	2.0E-02	mg/kg-day	1.1E-02
				Selenium	1.2E+00	µg/L	5.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-05	mg/kg-day	5.0E-03	mg/kg-day	7.5E-03
				Vanadium	5.0E+00	µg/L	2.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-04	mg/kg-day	5.0E-03	mg/kg-day	3.2E-02
				Zinc	3.8E+02	µg/L	1.7E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-02	mg/kg-day	3.0E-01	mg/kg-day	4.0E-02
				Other												
				Cyanide	2.7E+00	µg/L	1.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.5E-05	mg/kg-day	1.0E-03	mg/kg-day	8.5E-02
			Exp. Route Total								4E-05					2E+00

Table 7.5.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	5.4E-07	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	3.0E-09	3.7E-06	mg/kg-day	2.0E-01	mg/kg-day	1.9E-05
				Benzene	9.0E-01	µg/L	7.8E-07	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	4.3E-08	5.5E-06	mg/kg-day	4.0E-03	mg/kg-day	1.4E-03
				Methyl tert butyl ether	1.8E+00	µg/L	2.4E-07	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	4.2E-10	1.7E-06	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	5.8E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	4.2E-08	1.5E-07	mg/kg-day	3.0E-03	mg/kg-day	4.9E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	2.8E-07	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-08	2.0E-06	mg/kg-day	3.0E-02	mg/kg-day	6.6E-05
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	2.0E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.9E-07	1.4E-04	mg/kg-day	2.0E-02	mg/kg-day	7.2E-03
				Naphthalene	3.0E-01	µg/L	1.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	5.3E-05
				Metals - Total												
				Aluminum	1.2E+03	µg/L	3.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-04	mg/kg-day	1.0E+00	mg/kg-day	2.7E-04
				Arsenic	4.1E+00	µg/L	1.3E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-07	8.8E-07	mg/kg-day	3.0E-04	mg/kg-day	2.9E-03
				Barium	6.3E+01	µg/L	2.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	1.4E-02	mg/kg-day	9.8E-04
				Cadmium	4.3E-01	µg/L	1.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.4E-08	mg/kg-day	2.5E-05	mg/kg-day	3.8E-03
				Chromium	6.0E+00	µg/L	5.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	7.5E-05	mg/kg-day	1.7E-02
				Cobalt	2.7E+00	µg/L	3.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-07	mg/kg-day	3.0E-04	mg/kg-day	7.9E-04
				Copper	7.5E+00	µg/L	2.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-06	mg/kg-day	4.0E-02	mg/kg-day	4.1E-05
				Iron	1.2E+04	µg/L	3.7E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-03	mg/kg-day	7.0E-01	mg/kg-day	3.7E-03
				Lead	1.8E+00	µg/L	5.5E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-08	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	6.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-04	mg/kg-day	1.4E-01	mg/kg-day	3.0E-03
				Nickel	7.1E+00	µg/L	4.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-07	mg/kg-day	8.0E-04	mg/kg-day	3.9E-04
				Selenium	1.2E+00	µg/L	3.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	5.0E-03	mg/kg-day	5.1E-05
				Vanadium	5.0E+00	µg/L	1.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	1.3E-04	mg/kg-day	8.3E-03
				Zinc	3.8E+02	µg/L	7.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.9E-05	mg/kg-day	3.0E-01	mg/kg-day	1.6E-04
				Other												
				Cyanide	2.7E+00	µg/L	8.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-07	mg/kg-day	1.0E-03	mg/kg-day	5.8E-04
			Exp. Route Total								6E-07					5E-02
		Exposure Point Total									4E-05					2E+00
	Exposure Medium Total										4E-05					2E+00

Table 7.5.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.1E+01	µg/m^3	4.8E-02	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	7.7E-08	3.4E-01	µg/m^3	NA	mg/m^3	NA
				Benzene	8.0E+00	µg/m^3	3.6E-02	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	2.8E-07	2.5E-01	µg/m^3	3.0E-02	mg/m^3	8.4E-03
				Methyl tert butyl ether	1.4E+01	µg/m^3	6.1E-02	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	1.6E-08	4.3E-01	µg/m^3	3.0E+00	mg/m^3	1.4E-04
				Vinyl Chloride	6.7E-01	µg/m^3	8.5E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	3.7E-08	2.1E-02	µg/m^3	1.0E-01	mg/m^3	2.1E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	2.0E+01	µg/m^3	9.1E-02	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	4.5E-07	6.3E-01	µg/m^3	3.0E-02	mg/m^3	2.1E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.2E+00	µg/m^3	9.8E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.3E-07	6.8E-02	µg/m^3	3.0E-03	mg/m^3	2.3E-02
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								1E-06					5E-02
		Exposure Point Total									1E-06					5E-02
	Exposure Medium Total										1E-06					5E-02
Medium Total											4E-05					2E+00
Receptor Total							Total of Receptor Risks Across All Media				4E-05	Total of Receptor Hazards Across All Media				2E+00

Table 7.5.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.6.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Groundwater	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	5.0E-06	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	2.9E-08	5.9E-05	mg/kg-day	2.0E-01	mg/kg-day	2.9E-04
				Benzene	9.0E-01	µg/L	3.8E-06	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.1E-07	4.5E-05	mg/kg-day	4.0E-03	mg/kg-day	1.1E-02
				Methyl tert butyl ether	1.8E+00	µg/L	7.6E-06	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	1.4E-08	8.9E-05	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	1.2E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	8.7E-07	3.4E-06	mg/kg-day	3.0E-03	mg/kg-day	1.1E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	5.8E-05	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	5.8E-06	6.7E-04	mg/kg-day	3.0E-02	mg/kg-day	2.2E-02
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	9.9E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	1.4E-07	1.2E-04	mg/kg-day	2.0E-02	mg/kg-day	5.8E-03
				Naphthalene	3.0E-01	µg/L	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	1.5E-05	mg/kg-day	2.0E-02	mg/kg-day	7.4E-04
				Metals - Total												
				Aluminum	1.2E+03	µg/L	5.3E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-02	mg/kg-day	1.0E+00	mg/kg-day	6.2E-02
				Arsenic	4.1E+00	µg/L	1.7E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-05	2.0E-04	mg/kg-day	3.0E-04	mg/kg-day	6.8E-01
				Barium	6.3E+01	µg/L	2.7E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-03	mg/kg-day	2.0E-01	mg/kg-day	1.6E-02
				Cadmium	4.3E-01	µg/L	1.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-05	mg/kg-day	1.0E-03	mg/kg-day	2.2E-02
				Chromium	6.0E+00	µg/L	1.1E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-04	mg/kg-day	3.0E-03	mg/kg-day	1.0E-01
				Cobalt	2.7E+00	µg/L	1.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-04	mg/kg-day	3.0E-04	mg/kg-day	4.5E-01
				Copper	7.5E+00	µg/L	3.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7E-04	mg/kg-day	4.0E-02	mg/kg-day	9.4E-03
				Iron	1.2E+04	µg/L	5.1E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.9E-01	mg/kg-day	7.0E-01	mg/kg-day	8.5E-01
				Lead	1.8E+00	µg/L	7.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.9E-05	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	8.3E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.7E-02	mg/kg-day	1.4E-01	mg/kg-day	6.9E-01
				Nickel	7.1E+00	µg/L	3.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-04	mg/kg-day	2.0E-02	mg/kg-day	1.8E-02
				Selenium	1.2E+00	µg/L	5.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.9E-05	mg/kg-day	5.0E-03	mg/kg-day	1.2E-02
				Vanadium	5.0E+00	µg/L	2.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-04	mg/kg-day	5.0E-03	mg/kg-day	4.9E-02
				Zinc	3.8E+02	µg/L	1.6E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-02	mg/kg-day	3.0E-01	mg/kg-day	6.2E-02
				Other												
				Cyanide	2.7E+00	µg/L	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-04	mg/kg-day	1.0E-03	mg/kg-day	1.3E-01
			Exp. Route Total								3E-05					3E+00

Table 7.6.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Site-wide Groundwater	Groundwater	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	1.2E+00	µg/L	3.5E-07	mg/kg-day	5.7E-03	$(mg/kg\text{-}day)^{-1}$	2.0E-09	4.0E-06	mg/kg-day	2.0E-01	mg/kg-day	2.0E-05
				Benzene	9.0E-01	µg/L	5.1E-07	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.8E-08	5.9E-06	mg/kg-day	4.0E-03	mg/kg-day	1.5E-03
				Methyl tert butyl ether	1.8E+00	µg/L	1.5E-07	mg/kg-day	1.8E-03	$(mg/kg\text{-}day)^{-1}$	2.7E-10	1.8E-06	mg/kg-day	NA	mg/kg-day	NA
				Vinyl Chloride	6.8E-02	µg/L	5.4E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	3.9E-08	1.5E-07	mg/kg-day	3.0E-03	mg/kg-day	5.1E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+01	µg/L	1.8E-07	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-08	2.1E-06	mg/kg-day	3.0E-02	mg/kg-day	7.1E-05
				bis(2-Ethylhexyl)phthalate	2.3E+00	µg/L	1.3E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-07	1.5E-04	mg/kg-day	2.0E-02	mg/kg-day	7.7E-03
				Naphthalene	3.0E-01	µg/L	9.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	5.7E-05
				Metals - Total												
				Aluminum	1.2E+03	µg/L	2.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-04	mg/kg-day	1.0E+00	mg/kg-day	2.7E-04
				Arsenic	4.1E+00	µg/L	7.7E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-07	9.0E-07	mg/kg-day	3.0E-04	mg/kg-day	3.0E-03
				Barium	6.3E+01	µg/L	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	1.4E-02	mg/kg-day	9.9E-04
				Cadmium	4.3E-01	µg/L	8.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.5E-08	mg/kg-day	2.5E-05	mg/kg-day	3.8E-03
				Chromium	6.0E+00	µg/L	4.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	7.5E-05	mg/kg-day	1.8E-02
				Cobalt	2.7E+00	µg/L	2.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-07	mg/kg-day	3.0E-04	mg/kg-day	8.0E-04
				Copper	7.5E+00	µg/L	1.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-06	mg/kg-day	4.0E-02	mg/kg-day	4.1E-05
				Iron	1.2E+04	µg/L	2.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-03	mg/kg-day	7.0E-01	mg/kg-day	3.7E-03
				Lead	1.8E+00	µg/L	3.4E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-08	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.9E+03	µg/L	3.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-04	mg/kg-day	1.4E-01	mg/kg-day	3.1E-03
				Nickel	7.1E+00	µg/L	2.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-07	mg/kg-day	8.0E-04	mg/kg-day	3.9E-04
				Selenium	1.2E+00	µg/L	2.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	5.0E-03	mg/kg-day	5.2E-05
				Vanadium	5.0E+00	µg/L	9.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	1.3E-04	mg/kg-day	8.4E-03
				Zinc	3.8E+02	µg/L	4.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.0E-05	mg/kg-day	3.0E-01	mg/kg-day	1.7E-04
				Other												
				Cyanide	2.7E+00	µg/L	5.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.9E-07	mg/kg-day	1.0E-03	mg/kg-day	5.9E-04
			Exp. Route Total								4E-07					5E-02
		Exposure Point Total									3E-05					3E+00
	Exposure Medium Total										3E-05					3E+00

Table 7.6.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Site-wide Groundwater	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,1-Dichloroethane	9.9E+00	µg/m^3	2.5E-02	µg/m^3	1.6E-06	(µg/m^3)$^{-1}$	4.0E-08	2.9E-01	µg/m^3	NA	mg/m^3	NA
				Benzene	7.4E+00	µg/m^3	1.9E-02	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	1.4E-07	2.2E-01	µg/m^3	3.0E-02	mg/m^3	7.2E-03
				Methyl tert butyl ether	1.3E+01	µg/m^3	3.2E-02	µg/m^3	2.6E-07	(µg/m^3)$^{-1}$	8.2E-09	3.7E-01	µg/m^3	3.0E+00	mg/m^3	1.2E-04
				Vinyl Chloride	6.2E-01	µg/m^3	6.5E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	2.9E-08	1.8E-02	µg/m^3	1.0E-01	mg/m^3	1.8E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.9E+01	µg/m^3	4.7E-02	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	2.3E-07	5.5E-01	µg/m^3	3.0E-02	mg/m^3	1.8E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.0E+00	µg/m^3	5.0E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.7E-07	5.9E-02	µg/m^3	3.0E-03	mg/m^3	2.0E-02
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Copper	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Nickel	NA	µg/m^3	NA	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	9.0E-05	mg/m^3	NA
				Selenium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	2.0E-02	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Zinc	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								6E-07					5E-02
		Exposure Point Total									6E-07					5E-02
	Exposure Medium Total										6E-07					5E-02
Medium Total											3E-05					3E+00
Receptor Total							Total of Receptor Risks Across All Media				3E-05	Total of Receptor Hazards Across All Media				3E+00

Table 7.6.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.7.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	NA	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-02	mg/kg-day	NA
				Benzene	2.4E+01	µg/L	NA	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-03	mg/kg-day	NA
				Chlorobenzene	8.2E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Vinyl Chloride	1.6E-01	µg/L	NA	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	NA	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-02	mg/kg-day	NA
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	NA	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Naphthalene	2.9E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Metals - Total												
				Aluminum	6.3E+01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	NA
				Arsenic	5.4E-01	µg/L	NA	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
				Barium	3.6E+02	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	NA
				Cadmium	3.5E-01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-03	mg/kg-day	NA
				Chromium	1.3E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
				Cobalt	5.6E-01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
				Iron	8.1E+04	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	NA
				Lead	1.4E+01	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-01	mg/kg-day	NA
				Vanadium	5.9E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA
				Other												
				Cyanide	3.2E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-03	mg/kg-day	NA
			Exp. Route Total								0E+00					0E+00

Table 7.7.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	NA	mg/kg-day	5.4E-03	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-02	mg/kg-day	NA
				Benzene	2.4E+01	µg/L	NA	mg/kg-day	5.5E-02	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-03	mg/kg-day	NA
				Chlorobenzene	8.2E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Vinyl Chloride	1.6E-01	µg/L	NA	mg/kg-day	7.2E-01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-03	mg/kg-day	NA
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	NA	mg/kg-day	1.0E-01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-02	mg/kg-day	NA
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	NA	mg/kg-day	1.4E-02	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Naphthalene	2.9E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	2.0E-02	mg/kg-day	NA
				Metals - Total												
				Aluminum	6.3E+01	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	NA
				Arsenic	5.4E-01	µg/L	NA	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
				Barium	3.6E+02	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	NA
				Cadmium	3.5E-01	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	2.5E-05	mg/kg-day	NA
				Chromium	1.3E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	NA
				Cobalt	5.6E-01	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	NA
				Iron	8.1E+04	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	NA
				Lead	1.4E+01	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.4E-01	mg/kg-day	NA
				Vanadium	5.9E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA
				Other												
				Cyanide	3.2E+00	µg/L	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E-03	mg/kg-day	NA
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					0E+00
	Exposure Medium Total										0E+00					0E+00

Table 7.7.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	1.3E+01	µg/m^3	NA	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	8.0E-01	mg/m^3	NA
				Benzene	8.0E+01	µg/m^3	NA	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	3.0E-02	mg/m^3	NA
				Chlorobenzene	2.6E+01	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-02	mg/m^3	NA
				Vinyl Chloride	5.9E-01	µg/m^3	NA	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-01	mg/m^3	NA
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	5.6E+01	µg/m^3	NA	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	3.0E-02	mg/m^3	NA
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	8.1E+00	µg/m^3	NA	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	3.0E-03	mg/m^3	NA
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								0E+00					0E+00
		Exposure Point Total									0E+00					0E+00
	Exposure Medium Total										0E+00					0E+00
Medium Total											0E+00					0E+00
Receptor Total									Total of Receptor Risks Across All Media		0E+00			Total of Receptor Hazards Across All Media		0E+00

Table 7.7.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Footnotes:
(1) The exposure duration (ED) for the hypothetical future adult resident under a central tendency (CT) scenario is set to 0 years (see Table 4.1.CT); therefore, risks and hazards are not calculated for this receptor.

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.7.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	6.0E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	3.2E-07	1.2E-04	mg/kg-day	7.0E-02	mg/kg-day	1.7E-03
				Benzene	2.4E+01	µg/L	3.3E-04	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-05	6.5E-04	mg/kg-day	4.0E-03	mg/kg-day	1.6E-01
				Chlorobenzene	8.2E+00	µg/L	1.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-04	mg/kg-day	2.0E-02	mg/kg-day	1.1E-02
				Vinyl Chloride	1.6E-01	µg/L	2.2E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-06	4.3E-06	mg/kg-day	3.0E-03	mg/kg-day	1.4E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	1.4E-03	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-04	2.7E-03	mg/kg-day	3.0E-02	mg/kg-day	9.0E-02
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	2.1E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	2.9E-07	4.1E-05	mg/kg-day	2.0E-02	mg/kg-day	2.0E-03
				Naphthalene	2.9E+00	µg/L	4.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	8.0E-05	mg/kg-day	2.0E-02	mg/kg-day	4.0E-03
				Metals - Total												
				Aluminum	6.3E+01	µg/L	8.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-03	mg/kg-day	1.0E+00	mg/kg-day	1.7E-03
				Arsenic	5.4E-01	µg/L	7.6E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	4.9E-02
				Barium	3.6E+02	µg/L	5.0E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.8E-03	mg/kg-day	2.0E-01	mg/kg-day	4.9E-02
				Cadmium	3.5E-01	µg/L	4.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.6E-06	mg/kg-day	1.0E-03	mg/kg-day	9.6E-03
				Chromium	1.3E+00	µg/L	1.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-05	mg/kg-day	3.0E-03	mg/kg-day	1.2E-02
				Cobalt	5.6E-01	µg/L	7.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	5.1E-02
				Iron	8.1E+04	µg/L	1.1E+00	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E+00	mg/kg-day	7.0E-01	mg/kg-day	3.2E+00
				Lead	1.4E+01	µg/L	2.0E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	2.3E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4E-02	mg/kg-day	1.4E-01	mg/kg-day	3.1E-01
				Vanadium	5.9E+00	µg/L	8.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-04	mg/kg-day	5.0E-03	mg/kg-day	3.2E-02
				Other												
				Cyanide	3.2E+00	µg/L	4.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.8E-05	mg/kg-day	1.0E-03	mg/kg-day	8.8E-02
			Exp. Route Total								2E-04					4E+00

Table 7.7.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	4.7E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	2.5E-07	9.1E-05	mg/kg-day	7.0E-02	mg/kg-day	1.3E-03
				Benzene	2.4E+01	µg/L	5.9E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-06	1.1E-04	mg/kg-day	4.0E-03	mg/kg-day	2.9E-02
				Chlorobenzene	8.2E+00	µg/L	4.9E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.5E-05	mg/kg-day	2.0E-02	mg/kg-day	4.8E-03
				Vinyl Chloride	1.6E-01	µg/L	1.4E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	9.9E-08	2.7E-07	mg/kg-day	3.0E-03	mg/kg-day	9.0E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	5.8E-06	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	5.8E-07	1.1E-05	mg/kg-day	3.0E-02	mg/kg-day	3.8E-04
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	3.8E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	5.3E-07	7.3E-05	mg/kg-day	2.0E-02	mg/kg-day	3.7E-03
				Naphthalene	2.9E+00	µg/L	4.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.3E-06	mg/kg-day	2.0E-02	mg/kg-day	4.1E-04
				Metals - Total												
				Aluminum	6.3E+01	µg/L	5.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-05	mg/kg-day	1.0E+00	mg/kg-day	1.1E-05
				Arsenic	5.4E-01	µg/L	5.0E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.5E-08	9.7E-08	mg/kg-day	3.0E-04	mg/kg-day	3.2E-04
				Barium	3.6E+02	µg/L	3.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.4E-05	mg/kg-day	1.4E-02	mg/kg-day	4.6E-03
				Cadmium	3.5E-01	µg/L	3.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-08	mg/kg-day	2.5E-05	mg/kg-day	2.5E-03
				Chromium	1.3E+00	µg/L	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-07	mg/kg-day	7.5E-05	mg/kg-day	3.0E-03
				Cobalt	5.6E-01	µg/L	2.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-08	mg/kg-day	3.0E-04	mg/kg-day	1.3E-04
				Iron	8.1E+04	µg/L	7.5E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-02	mg/kg-day	7.0E-01	mg/kg-day	2.1E-02
				Lead	1.4E+01	µg/L	1.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-07	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	1.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-04	mg/kg-day	1.4E-01	mg/kg-day	2.1E-03
				Vanadium	5.9E+00	µg/L	5.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	1.3E-04	mg/kg-day	8.1E-03
				Other												
				Cyanide	3.2E+00	µg/L	3.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-07	mg/kg-day	1.0E-03	mg/kg-day	5.8E-04
			Exp. Route Total								5E-06					8E-02
		Exposure Point Total									2E-04					4E+00
	Exposure Medium Total										2E-04					4E+00

Table 7.7.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	3.8E+01	µg/m^3	7.3E-01	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	8.0E-06	1.4E+00	µg/m^3	8.0E-01	mg/m^3	1.8E-03
				Benzene	2.4E+02	µg/m^3	4.6E+00	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	3.6E-05	8.9E+00	µg/m^3	3.0E-02	mg/m^3	3.0E-01
				Chlorobenzene	7.9E+01	µg/m^3	1.5E+00	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.9E+00	µg/m^3	5.0E-02	mg/m^3	5.8E-02
				Vinyl Chloride	1.8E+00	µg/m^3	3.4E-02	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	1.5E-07	6.5E-02	µg/m^3	1.0E-01	mg/m^3	6.5E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.7E+02	µg/m^3	3.2E+00	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	1.6E-05	6.2E+00	µg/m^3	3.0E-02	mg/m^3	2.1E-01
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.5E+01	µg/m^3	4.6E-01	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.6E-05	9.0E-01	µg/m^3	3.0E-03	mg/m^3	3.0E-01
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								8E-05					9E-01
		Exposure Point Total									8E-05					9E-01
	Exposure Medium Total										8E-05					9E-01
Medium Total											3E-04					5E+00
Receptor Total							Total of Receptor Risks Across All Media				3E-04	Total of Receptor Hazards Across All Media				5E+00

Table 7.7.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.8.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.9E-06	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	1.0E-08	4.4E-05	mg/kg-day	7.0E-02	mg/kg-day	6.2E-04
				Benzene	2.4E+01	µg/L	1.0E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	5.7E-07	2.4E-04	mg/kg-day	4.0E-03	mg/kg-day	6.1E-02
				Chlorobenzene	8.2E+00	µg/L	3.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.4E-05	mg/kg-day	2.0E-02	mg/kg-day	4.2E-03
				Vinyl Chloride	1.6E-01	µg/L	2.1E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-07	1.6E-06	mg/kg-day	3.0E-03	mg/kg-day	5.4E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	4.3E-05	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	4.3E-06	1.0E-03	mg/kg-day	3.0E-02	mg/kg-day	3.3E-02
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	6.5E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	9.2E-09	1.5E-05	mg/kg-day	2.0E-02	mg/kg-day	7.6E-04
				Naphthalene	2.9E+00	µg/L	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	3.0E-05	mg/kg-day	2.0E-02	mg/kg-day	1.5E-03
				Metals - Total												
				Aluminum	6.3E+01	µg/L	2.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-04	mg/kg-day	1.0E+00	mg/kg-day	6.5E-04
				Arsenic	5.4E-01	µg/L	2.4E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.6E-07	5.5E-06	mg/kg-day	3.0E-04	mg/kg-day	1.8E-02
				Barium	3.6E+02	µg/L	1.6E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-03	mg/kg-day	2.0E-01	mg/kg-day	1.8E-02
				Cadmium	3.5E-01	µg/L	1.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-06	mg/kg-day	1.0E-03	mg/kg-day	3.6E-03
				Chromium	1.3E+00	µg/L	1.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-05	mg/kg-day	3.0E-03	mg/kg-day	4.3E-03
				Cobalt	5.6E-01	µg/L	2.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-06	mg/kg-day	3.0E-04	mg/kg-day	1.9E-02
				Iron	8.1E+04	µg/L	3.6E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.3E-01	mg/kg-day	7.0E-01	mg/kg-day	1.2E+00
				Lead	1.4E+01	µg/L	6.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	7.0E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-02	mg/kg-day	1.4E-01	mg/kg-day	1.2E-01
				Vanadium	5.9E+00	µg/L	2.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.0E-05	mg/kg-day	5.0E-03	mg/kg-day	1.2E-02
				Other												
				Cyanide	3.2E+00	µg/L	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-05	mg/kg-day	1.0E-03	mg/kg-day	3.3E-02
			Exp. Route Total								5E-06					2E+00

Table 7.8.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	2.9E-06	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	1.6E-08	6.8E-05	mg/kg-day	7.0E-02	mg/kg-day	9.7E-04
				Benzene	2.4E+01	µg/L	3.7E-06	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.0E-07	8.6E-05	mg/kg-day	4.0E-03	mg/kg-day	2.1E-02
				Chlorobenzene	8.2E+00	µg/L	3.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.1E-05	mg/kg-day	2.0E-02	mg/kg-day	3.6E-03
				Vinyl Chloride	1.6E-01	µg/L	2.5E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-08	1.9E-07	mg/kg-day	3.0E-03	mg/kg-day	6.5E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	3.6E-07	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	3.6E-08	8.5E-06	mg/kg-day	3.0E-02	mg/kg-day	2.8E-04
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	2.3E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	3.3E-08	5.5E-05	mg/kg-day	2.0E-02	mg/kg-day	2.7E-03
				Naphthalene	2.9E+00	µg/L	2.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-06	mg/kg-day	2.0E-02	mg/kg-day	3.1E-04
				Metals - Total												
				Aluminum	6.3E+01	µg/L	2.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-06	mg/kg-day	1.0E+00	mg/kg-day	5.7E-06
				Arsenic	5.4E-01	µg/L	2.1E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-09	4.9E-08	mg/kg-day	3.0E-04	mg/kg-day	1.6E-04
				Barium	3.6E+02	µg/L	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-05	mg/kg-day	1.4E-02	mg/kg-day	2.3E-03
				Cadmium	3.5E-01	µg/L	1.4E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-08	mg/kg-day	2.5E-05	mg/kg-day	1.3E-03
				Chromium	1.3E+00	µg/L	1.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-07	mg/kg-day	7.5E-05	mg/kg-day	1.5E-03
				Cobalt	5.6E-01	µg/L	8.6E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-08	mg/kg-day	3.0E-04	mg/kg-day	6.7E-05
				Iron	8.1E+04	µg/L	3.1E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-03	mg/kg-day	7.0E-01	mg/kg-day	1.0E-02
				Lead	1.4E+01	µg/L	5.5E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-07	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	6.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-04	mg/kg-day	1.4E-01	mg/kg-day	1.0E-03
				Vanadium	5.9E+00	µg/L	2.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-07	mg/kg-day	1.3E-04	mg/kg-day	4.1E-03
				Other												
				Cyanide	3.2E+00	µg/L	1.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-07	mg/kg-day	1.0E-03	mg/kg-day	2.9E-04
			Exp. Route Total								3E-07					5E-02
		Exposure Point Total									6E-06					2E+00
	Exposure Medium Total										6E-06					2E+00

Table 7.8.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	1.2E+01	µg/m^3	8.4E-03	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	9.2E-08	1.9E-01	µg/m^3	8.0E-01	mg/m^3	2.4E-04
				Benzene	7.3E+01	µg/m^3	5.2E-02	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	4.1E-07	1.2E+00	µg/m^3	3.0E-02	mg/m^3	4.1E-02
				Chlorobenzene	2.4E+01	µg/m^3	1.7E-02	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.0E-01	µg/m^3	5.0E-02	mg/m^3	8.0E-03
				Vinyl Chloride	5.4E-01	µg/m^3	1.2E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	5.1E-09	9.0E-03	µg/m^3	1.0E-01	mg/m^3	9.0E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	5.1E+01	µg/m^3	3.6E-02	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	1.8E-07	8.5E-01	µg/m^3	3.0E-02	mg/m^3	2.8E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	7.4E+00	µg/m^3	5.3E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.8E-07	1.2E-01	µg/m^3	3.0E-03	mg/m^3	4.2E-02
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								9E-07					1E-01
		Exposure Point Total									9E-07					1E-01
	Exposure Medium Total										9E-07					1E-01
Medium Total											7E-06					2E+00
Receptor Total								Total of Receptor Risks Across All Media			7E-06			Total of Receptor Hazards Across All Media		2E+00

Table 7.8.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.8.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	2.6E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	1.4E-07	1.8E-04	mg/kg-day	7.0E-02	mg/kg-day	2.6E-03
				Benzene	2.4E+01	µg/L	1.4E-04	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	7.9E-06	1.0E-03	mg/kg-day	4.0E-03	mg/kg-day	2.5E-01
				Chlorobenzene	8.2E+00	µg/L	5.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-04	mg/kg-day	2.0E-02	mg/kg-day	1.8E-02
				Vinyl Chloride	1.6E-01	µg/L	2.7E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-06	6.7E-06	mg/kg-day	3.0E-03	mg/kg-day	2.2E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	6.0E-04	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	6.0E-05	4.2E-03	mg/kg-day	3.0E-02	mg/kg-day	1.4E-01
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	9.1E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	1.3E-07	6.4E-05	mg/kg-day	2.0E-02	mg/kg-day	3.2E-03
				Naphthalene	2.9E+00	µg/L	1.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	1.2E-04	mg/kg-day	2.0E-02	mg/kg-day	6.2E-03
				Metals - Total												
				Aluminum	6.3E+01	µg/L	3.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-03	mg/kg-day	1.0E+00	mg/kg-day	2.7E-03
				Arsenic	5.4E-01	µg/L	3.3E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.9E-06	2.3E-05	mg/kg-day	3.0E-04	mg/kg-day	7.7E-02
				Barium	3.6E+02	µg/L	2.2E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-02	mg/kg-day	2.0E-01	mg/kg-day	7.6E-02
				Cadmium	3.5E-01	µg/L	2.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-05	mg/kg-day	1.0E-03	mg/kg-day	1.5E-02
				Chromium	1.3E+00	µg/L	2.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-05	mg/kg-day	3.0E-03	mg/kg-day	1.8E-02
				Cobalt	5.6E-01	µg/L	3.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-05	mg/kg-day	3.0E-04	mg/kg-day	7.9E-02
				Iron	8.1E+04	µg/L	5.0E-01	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E+00	mg/kg-day	7.0E-01	mg/kg-day	5.0E+00
				Lead	1.4E+01	µg/L	8.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.0E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	9.8E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.8E-02	mg/kg-day	1.4E-01	mg/kg-day	4.9E-01
				Vanadium	5.9E+00	µg/L	3.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-04	mg/kg-day	5.0E-03	mg/kg-day	5.0E-02
				Other												
				Cyanide	3.2E+00	µg/L	2.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-04	mg/kg-day	1.0E-03	mg/kg-day	1.4E-01
			Exp. Route Total								7E-05					6E+00

Table 7.8.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.3E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	6.9E-08	9.0E-05	mg/kg-day	7.0E-02	mg/kg-day	1.3E-03
				Benzene	2.4E+01	µg/L	1.6E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	8.9E-07	1.1E-04	mg/kg-day	4.0E-03	mg/kg-day	2.8E-02
				Chlorobenzene	8.2E+00	µg/L	1.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.4E-05	mg/kg-day	2.0E-02	mg/kg-day	4.7E-03
				Vinyl Chloride	1.6E-01	µg/L	1.0E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	7.4E-08	2.6E-07	mg/kg-day	3.0E-03	mg/kg-day	8.5E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	1.6E-06	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-07	1.1E-05	mg/kg-day	3.0E-02	mg/kg-day	3.7E-04
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	1.0E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.4E-07	7.2E-05	mg/kg-day	2.0E-02	mg/kg-day	3.6E-03
				Naphthalene	2.9E+00	µg/L	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.2E-06	mg/kg-day	2.0E-02	mg/kg-day	4.1E-04
				Metals - Total												
				Aluminum	6.3E+01	µg/L	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.9E-06	mg/kg-day	1.0E+00	mg/kg-day	9.9E-06
				Arsenic	5.4E-01	µg/L	1.2E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-08	8.4E-08	mg/kg-day	3.0E-04	mg/kg-day	2.8E-04
				Barium	3.6E+02	µg/L	7.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.6E-05	mg/kg-day	1.4E-02	mg/kg-day	4.0E-03
				Cadmium	3.5E-01	µg/L	7.8E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.5E-08	mg/kg-day	2.5E-05	mg/kg-day	2.2E-03
				Chromium	1.3E+00	µg/L	7.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-07	mg/kg-day	7.5E-05	mg/kg-day	2.6E-03
				Cobalt	5.6E-01	µg/L	5.0E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-08	mg/kg-day	3.0E-04	mg/kg-day	1.2E-04
				Iron	8.1E+04	µg/L	1.8E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-02	mg/kg-day	7.0E-01	mg/kg-day	1.8E-02
				Lead	1.4E+01	µg/L	3.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-07	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	3.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-04	mg/kg-day	1.4E-01	mg/kg-day	1.8E-03
				Vanadium	5.9E+00	µg/L	1.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.2E-07	mg/kg-day	1.3E-04	mg/kg-day	7.1E-03
				Other												
				Cyanide	3.2E+00	µg/L	7.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.0E-07	mg/kg-day	1.0E-03	mg/kg-day	5.0E-04
			Exp. Route Total								1E-06					8E-02
		Exposure Point Total									8E-05					6E+00
	Exposure Medium Total										8E-05					6E+00

Table 7.8.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	3.2E+01	µg/m^3	1.4E-01	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.6E-06	9.9E-01	µg/m^3	8.0E-01	mg/m^3	1.2E-03
				Benzene	2.0E+02	µg/m^3	8.9E-01	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	7.0E-06	6.2E+00	µg/m^3	3.0E-02	mg/m^3	2.1E-01
				Chlorobenzene	6.5E+01	µg/m^3	2.9E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E+00	µg/m^3	5.0E-02	mg/m^3	4.1E-02
				Vinyl Chloride	1.5E+00	µg/m^3	1.8E-02	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	8.1E-08	4.6E-02	µg/m^3	1.0E-01	mg/m^3	4.6E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+02	µg/m^3	6.2E-01	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	3.1E-06	4.3E+00	µg/m^3	3.0E-02	mg/m^3	1.4E-01
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.0E+01	µg/m^3	9.1E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.1E-06	6.4E-01	µg/m^3	3.0E-03	mg/m^3	2.1E-01
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								1E-05					6E-01
		Exposure Point Total									1E-05					6E-01
	Exposure Medium Total										1E-05					6E-01
Medium Total											9E-05					7E+00
Receptor Total							Total of Receptor Risks Across All Media				9E-05	Total of Receptor Hazards Across All Media				7E+00

Table 7.8.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.9.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	7.7E-06	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	4.2E-08	9.0E-05	mg/kg-day	7.0E-02	mg/kg-day	1.3E-03
				Benzene	2.4E+01	µg/L	4.3E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	2.4E-06	5.0E-04	mg/kg-day	4.0E-03	mg/kg-day	1.2E-01
				Chlorobenzene	8.2E+00	µg/L	1.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-04	mg/kg-day	2.0E-02	mg/kg-day	8.7E-03
				Vinyl Chloride	1.6E-01	µg/L	1.2E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	8.5E-07	3.3E-06	mg/kg-day	3.0E-03	mg/kg-day	1.1E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	1.8E-04	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-05	2.1E-03	mg/kg-day	3.0E-02	mg/kg-day	6.9E-02
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	2.7E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	3.8E-08	3.2E-05	mg/kg-day	2.0E-02	mg/kg-day	1.6E-03
				Naphthalene	2.9E+00	µg/L	5.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	6.2E-05	mg/kg-day	2.0E-02	mg/kg-day	3.1E-03
				Metals - Total												
				Aluminum	6.3E+01	µg/L	1.1E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-03	mg/kg-day	1.0E+00	mg/kg-day	1.3E-03
				Arsenic	5.4E-01	µg/L	9.8E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	3.8E-02
				Barium	3.6E+02	µg/L	6.4E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.5E-03	mg/kg-day	2.0E-01	mg/kg-day	3.8E-02
				Cadmium	3.5E-01	µg/L	6.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.4E-06	mg/kg-day	1.0E-03	mg/kg-day	7.4E-03
				Chromium	1.3E+00	µg/L	9.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-05	mg/kg-day	3.0E-03	mg/kg-day	8.9E-03
				Cobalt	5.6E-01	µg/L	1.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-05	mg/kg-day	3.0E-04	mg/kg-day	3.9E-02
				Iron	8.1E+04	µg/L	1.5E-01	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E+00	mg/kg-day	7.0E-01	mg/kg-day	2.5E+00
				Lead	1.4E+01	µg/L	2.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	2.9E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-02	mg/kg-day	1.4E-01	mg/kg-day	2.4E-01
				Vanadium	5.9E+00	µg/L	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-04	mg/kg-day	5.0E-03	mg/kg-day	2.5E-02
				Other												
				Cyanide	3.2E+00	µg/L	5.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.8E-05	mg/kg-day	1.0E-03	mg/kg-day	6.8E-02
			Exp. Route Total								2E-05					3E+00

Table 7.9.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	9.4E-06	mg/kg-day	5.4E-03	$(mg/kg-day)^{-1}$	5.1E-08	1.1E-04	mg/kg-day	7.0E-02	mg/kg-day	1.6E-03
				Benzene	2.4E+01	µg/L	1.2E-05	mg/kg-day	5.5E-02	$(mg/kg-day)^{-1}$	6.6E-07	1.4E-04	mg/kg-day	4.0E-03	mg/kg-day	3.5E-02
				Chlorobenzene	8.2E+00	µg/L	9.9E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-04	mg/kg-day	2.0E-02	mg/kg-day	5.8E-03
				Vinyl Chloride	1.6E-01	µg/L	1.1E-07	mg/kg-day	7.2E-01	$(mg/kg-day)^{-1}$	8.1E-08	3.1E-07	mg/kg-day	3.0E-03	mg/kg-day	1.0E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	1.2E-06	mg/kg-day	1.0E-01	$(mg/kg-day)^{-1}$	1.2E-07	1.4E-05	mg/kg-day	3.0E-02	mg/kg-day	4.6E-04
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	7.6E-06	mg/kg-day	1.4E-02	$(mg/kg-day)^{-1}$	1.1E-07	8.9E-05	mg/kg-day	2.0E-02	mg/kg-day	4.4E-03
				Naphthalene	2.9E+00	µg/L	8.6E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.0E-05	mg/kg-day	2.0E-02	mg/kg-day	5.0E-04
				Metals - Total												
				Aluminum	6.3E+01	µg/L	8.0E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	9.4E-06	mg/kg-day	1.0E+00	mg/kg-day	9.4E-06
				Arsenic	5.4E-01	µg/L	6.9E-09	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.0E-08	8.0E-08	mg/kg-day	3.0E-04	mg/kg-day	2.7E-04
				Barium	3.6E+02	µg/L	4.5E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.3E-05	mg/kg-day	1.4E-02	mg/kg-day	3.8E-03
				Cadmium	3.5E-01	µg/L	4.5E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.2E-08	mg/kg-day	2.5E-05	mg/kg-day	2.1E-03
				Chromium	1.3E+00	µg/L	6.7E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.9E-07	mg/kg-day	7.5E-05	mg/kg-day	2.5E-03
				Cobalt	5.6E-01	µg/L	2.8E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.3E-08	mg/kg-day	3.0E-04	mg/kg-day	1.1E-04
				Iron	8.1E+04	µg/L	1.0E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-02	mg/kg-day	7.0E-01	mg/kg-day	1.7E-02
				Lead	1.4E+01	µg/L	1.8E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.1E-07	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	2.0E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.4E-04	mg/kg-day	1.4E-01	mg/kg-day	1.7E-03
				Vanadium	5.9E+00	µg/L	7.5E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.7E-07	mg/kg-day	1.3E-04	mg/kg-day	6.7E-03
				Other												
				Cyanide	3.2E+00	µg/L	4.1E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.8E-07	mg/kg-day	1.0E-03	mg/kg-day	4.8E-04
			Exp. Route Total								1E-06					8E-02
		Exposure Point Total									2E-05					3E+00
	Exposure Medium Total										2E-05					3E+00

Table 7.9.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	1.2E+01	µg/m^3	1.8E-02	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.9E-07	2.1E-01	µg/m^3	8.0E-01	mg/m^3	2.6E-04
				Benzene	7.5E+01	µg/m^3	1.1E-01	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	8.6E-07	1.3E+00	µg/m^3	3.0E-02	mg/m^3	4.3E-02
				Chlorobenzene	2.5E+01	µg/m^3	3.6E-02	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.2E-01	µg/m^3	5.0E-02	mg/m^3	8.5E-03
				Vinyl Chloride	5.5E-01	µg/m^3	3.4E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	1.5E-08	9.5E-03	µg/m^3	1.0E-01	mg/m^3	9.5E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	5.2E+01	µg/m^3	7.7E-02	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	3.8E-07	8.9E-01	µg/m^3	3.0E-02	mg/m^3	3.0E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	7.6E+00	µg/m^3	1.1E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.8E-07	1.3E-01	µg/m^3	3.0E-03	mg/m^3	4.4E-02
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								2E-06					1E-01
		Exposure Point Total									2E-06					1E-01
	Exposure Medium Total										2E-06					1E-01
Medium Total											3E-05					3E+00
Receptor Total				Total of Receptor Risks Across All Media							3E-05	Total of Receptor Hazards Across All Media				3E+00

Table 7.9.CT
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.9.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	2.3E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	1.3E-07	2.7E-04	mg/kg-day	7.0E-02	mg/kg-day	3.9E-03
				Benzene	2.4E+01	µg/L	1.3E-04	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	7.1E-06	1.5E-03	mg/kg-day	4.0E-03	mg/kg-day	3.8E-01
				Chlorobenzene	8.2E+00	µg/L	4.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-04	mg/kg-day	2.0E-02	mg/kg-day	2.6E-02
				Vinyl Chloride	1.6E-01	µg/L	3.6E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	2.6E-06	1.0E-05	mg/kg-day	3.0E-03	mg/kg-day	3.3E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	5.4E-04	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	5.4E-05	6.3E-03	mg/kg-day	3.0E-02	mg/kg-day	2.1E-01
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	8.2E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	1.1E-07	9.6E-05	mg/kg-day	2.0E-02	mg/kg-day	4.8E-03
				Naphthalene	2.9E+00	µg/L	1.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	1.9E-04	mg/kg-day	2.0E-02	mg/kg-day	9.3E-03
				Metals - Total												
				Aluminum	6.3E+01	µg/L	3.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-03	mg/kg-day	1.0E+00	mg/kg-day	4.0E-03
				Arsenic	5.4E-01	µg/L	3.0E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-06	3.5E-05	mg/kg-day	3.0E-04	mg/kg-day	1.2E-01
				Barium	3.6E+02	µg/L	2.0E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-02	mg/kg-day	2.0E-01	mg/kg-day	1.1E-01
				Cadmium	3.5E-01	µg/L	1.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-05	mg/kg-day	1.0E-03	mg/kg-day	2.2E-02
				Chromium	1.3E+00	µg/L	2.9E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.1E-05	mg/kg-day	3.0E-03	mg/kg-day	2.7E-02
				Cobalt	5.6E-01	µg/L	3.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-05	mg/kg-day	3.0E-04	mg/kg-day	1.2E-01
				Iron	8.1E+04	µg/L	4.5E-01	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E+00	mg/kg-day	7.0E-01	mg/kg-day	7.4E+00
				Lead	1.4E+01	µg/L	7.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.0E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	8.8E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-01	mg/kg-day	1.4E-01	mg/kg-day	7.3E-01
				Vanadium	5.9E+00	µg/L	3.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-04	mg/kg-day	5.0E-03	mg/kg-day	7.5E-02
				Other												
				Cyanide	3.2E+00	µg/L	1.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-04	mg/kg-day	1.0E-03	mg/kg-day	2.1E-01
			Exp. Route Total								7E-05					9E+00

Table 7.9.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.2E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	6.5E-08	1.4E-04	mg/kg-day	7.0E-02	mg/kg-day	2.0E-03
				Benzene	2.4E+01	µg/L	1.5E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	8.3E-07	1.8E-04	mg/kg-day	4.0E-03	mg/kg-day	4.4E-02
				Chlorobenzene	8.2E+00	µg/L	1.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-04	mg/kg-day	2.0E-02	mg/kg-day	7.4E-03
				Vinyl Chloride	1.6E-01	µg/L	1.4E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1.0E-07	4.0E-07	mg/kg-day	3.0E-03	mg/kg-day	1.3E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	1.5E-06	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-07	1.7E-05	mg/kg-day	3.0E-02	mg/kg-day	5.8E-04
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	9.6E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.4E-07	1.1E-04	mg/kg-day	2.0E-02	mg/kg-day	5.6E-03
				Naphthalene	2.9E+00	µg/L	1.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-05	mg/kg-day	2.0E-02	mg/kg-day	6.4E-04
				Metals - Total												
				Aluminum	6.3E+01	µg/L	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-05	mg/kg-day	1.0E+00	mg/kg-day	1.5E-05
				Arsenic	5.4E-01	µg/L	1.1E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08	1.3E-07	mg/kg-day	3.0E-04	mg/kg-day	4.3E-04
				Barium	3.6E+02	µg/L	7.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.5E-05	mg/kg-day	1.4E-02	mg/kg-day	6.1E-03
				Cadmium	3.5E-01	µg/L	7.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.4E-08	mg/kg-day	2.5E-05	mg/kg-day	3.4E-03
				Chromium	1.3E+00	µg/L	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-07	mg/kg-day	7.5E-05	mg/kg-day	4.0E-03
				Cobalt	5.6E-01	µg/L	4.6E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-08	mg/kg-day	3.0E-04	mg/kg-day	1.8E-04
				Iron	8.1E+04	µg/L	1.7E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-02	mg/kg-day	7.0E-01	mg/kg-day	2.8E-02
				Lead	1.4E+01	µg/L	2.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-07	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	3.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-04	mg/kg-day	1.4E-01	mg/kg-day	2.8E-03
				Vanadium	5.9E+00	µg/L	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-06	mg/kg-day	1.3E-04	mg/kg-day	1.1E-02
				Other												
				Cyanide	3.2E+00	µg/L	6.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.7E-07	mg/kg-day	1.0E-03	mg/kg-day	7.7E-04
			Exp. Route Total								1E-06					1E-01
		Exposure Point Total									7E-05					1E+01
	Exposure Medium Total										7E-05					1E+01

Table 7.9.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	2.9E+01	µg/m^3	7.3E-02	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	8.0E-07	8.5E-01	µg/m^3	8.0E-01	mg/m^3	1.1E-03
				Benzene	1.9E+02	µg/m^3	4.6E-01	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	3.6E-06	5.3E+00	µg/m^3	3.0E-02	mg/m^3	1.8E-01
				Chlorobenzene	6.1E+01	µg/m^3	1.5E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.7E+00	µg/m^3	5.0E-02	mg/m^3	3.5E-02
				Vinyl Chloride	1.4E+00	µg/m^3	1.4E-02	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	6.2E-08	3.9E-02	µg/m^3	1.0E-01	mg/m^3	3.9E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.3E+02	µg/m^3	3.2E-01	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	1.6E-06	3.7E+00	µg/m^3	3.0E-02	mg/m^3	1.2E-01
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	1.9E+01	µg/m^3	4.6E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.6E-06	5.4E-01	µg/m^3	3.0E-03	mg/m^3	1.8E-01
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								8E-06					5E-01
		Exposure Point Total									8E-06					5E-01
	Exposure Medium Total										8E-06					5E-01
Medium Total											8E-05					1E+01
Receptor Total				Total of Receptor Risks Across All Media							8E-05	Total of Receptor Hazards Across All Media				1E+01

Table 7.9.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$µg/m^3$ = micrograms per cubic meter
$(µg/m^3)^{-1}$ = per microgram per cubic meter

Table 7.10.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.8E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	9.8E-08	1.3E-04	mg/kg-day	7.0E-02	mg/kg-day	1.8E-03
				Benzene	2.4E+01	µg/L	1.0E-04	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	5.6E-06	7.1E-04	mg/kg-day	4.0E-03	mg/kg-day	1.8E-01
				Chlorobenzene	8.2E+00	µg/L	3.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-04	mg/kg-day	2.0E-02	mg/kg-day	1.2E-02
				Vinyl Chloride	1.6E-01	µg/L	6.7E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	4.8E-07	4.7E-06	mg/kg-day	3.0E-03	mg/kg-day	1.6E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	4.2E-04	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	4.2E-05	2.9E-03	mg/kg-day	3.0E-02	mg/kg-day	9.8E-02
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	6.4E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	9.0E-08	4.5E-05	mg/kg-day	2.0E-02	mg/kg-day	2.2E-03
				Naphthalene	2.9E+00	µg/L	1.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	8.8E-05	mg/kg-day	2.0E-02	mg/kg-day	4.4E-03
				Metals - Total												
				Aluminum	6.3E+01	µg/L	2.7E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-03	mg/kg-day	1.0E+00	mg/kg-day	1.9E-03
				Arsenic	5.4E-01	µg/L	2.3E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-06	1.6E-05	mg/kg-day	3.0E-04	mg/kg-day	5.4E-02
				Barium	3.6E+02	µg/L	1.5E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-02	mg/kg-day	2.0E-01	mg/kg-day	5.3E-02
				Cadmium	3.5E-01	µg/L	1.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-05	mg/kg-day	1.0E-03	mg/kg-day	1.1E-02
				Chromium	1.3E+00	µg/L	5.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-05	mg/kg-day	3.0E-03	mg/kg-day	1.3E-02
				Cobalt	5.6E-01	µg/L	2.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-05	mg/kg-day	3.0E-04	mg/kg-day	5.6E-02
				Iron	8.1E+04	µg/L	3.5E-01	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E+00	mg/kg-day	7.0E-01	mg/kg-day	3.5E+00
				Lead	1.4E+01	µg/L	6.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	6.9E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.8E-02	mg/kg-day	1.4E-01	mg/kg-day	3.4E-01
				Vanadium	5.9E+00	µg/L	2.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-04	mg/kg-day	5.0E-03	mg/kg-day	3.5E-02
				Other												
				Cyanide	3.2E+00	µg/L	1.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.6E-05	mg/kg-day	1.0E-03	mg/kg-day	9.6E-02
			Exp. Route Total								5E-05					4E+00

Table 7.10.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.1E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	6.1E-08	8.0E-05	mg/kg-day	7.0E-02	mg/kg-day	1.1E-03
				Benzene	2.4E+01	µg/L	1.4E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	7.9E-07	1.0E-04	mg/kg-day	4.0E-03	mg/kg-day	2.5E-02
				Chlorobenzene	8.2E+00	µg/L	1.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.4E-05	mg/kg-day	2.0E-02	mg/kg-day	4.2E-03
				Vinyl Chloride	1.6E-01	µg/L	3.4E-08	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	2.4E-08	2.4E-07	mg/kg-day	3.0E-03	mg/kg-day	7.8E-05
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	1.4E-06	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-07	9.9E-06	mg/kg-day	3.0E-02	mg/kg-day	3.3E-04
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	9.1E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.3E-07	6.4E-05	mg/kg-day	2.0E-02	mg/kg-day	3.2E-03
				Naphthalene	2.9E+00	µg/L	1.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-06	mg/kg-day	2.0E-02	mg/kg-day	3.6E-04
				Metals - Total												
				Aluminum	6.3E+01	µg/L	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-05	mg/kg-day	1.0E+00	mg/kg-day	1.0E-05
				Arsenic	5.4E-01	µg/L	1.2E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-08	8.5E-08	mg/kg-day	3.0E-04	mg/kg-day	2.8E-04
				Barium	3.6E+02	µg/L	8.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.6E-05	mg/kg-day	1.4E-02	mg/kg-day	4.0E-03
				Cadmium	3.5E-01	µg/L	7.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.5E-08	mg/kg-day	2.5E-05	mg/kg-day	2.2E-03
				Chromium	1.3E+00	µg/L	2.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-07	mg/kg-day	7.5E-05	mg/kg-day	2.7E-03
				Cobalt	5.6E-01	µg/L	5.0E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-08	mg/kg-day	3.0E-04	mg/kg-day	1.2E-04
				Iron	8.1E+04	µg/L	1.8E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-02	mg/kg-day	7.0E-01	mg/kg-day	1.8E-02
				Lead	1.4E+01	µg/L	3.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-07	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	3.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-04	mg/kg-day	1.4E-01	mg/kg-day	1.8E-03
				Vanadium	5.9E+00	µg/L	1.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.3E-07	mg/kg-day	1.3E-04	mg/kg-day	7.1E-03
				Other												
				Cyanide	3.2E+00	µg/L	7.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.1E-07	mg/kg-day	1.0E-03	mg/kg-day	5.1E-04
			Exp. Route Total								1E-06					7E-02
		Exposure Point Total									5E-05					5E+00
	Exposure Medium Total										5E-05					5E+00

Table 7.10.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	3.7E+01	µg/m^3	1.5E-01	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.6E-06	1.0E+00	µg/m^3	8.0E-01	mg/m^3	1.3E-03
				Benzene	2.3E+02	µg/m^3	9.3E-01	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	7.3E-06	6.5E+00	µg/m^3	3.0E-02	mg/m^3	2.2E-01
				Chlorobenzene	7.6E+01	µg/m^3	3.1E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E+00	µg/m^3	5.0E-02	mg/m^3	4.3E-02
				Vinyl Chloride	1.7E+00	µg/m^3	6.9E-03	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	3.0E-08	4.8E-02	µg/m^3	1.0E-01	mg/m^3	4.8E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.6E+02	µg/m^3	6.5E-01	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	3.2E-06	4.5E+00	µg/m^3	3.0E-02	mg/m^3	1.5E-01
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.3E+01	µg/m^3	9.5E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.2E-06	6.7E-01	µg/m^3	3.0E-03	mg/m^3	2.2E-01
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								2E-05					6E-01
		Exposure Point Total									2E-05					6E-01
	Exposure Medium Total										2E-05					6E-01
Medium Total											7E-05					5E+00
Receptor Total							Total of Receptor Risks Across All Media				7E-05	Total of Receptor Hazards Across All Media				5E+00

Table 7.10.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Adult - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.11.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.9E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	1.0E-07	1.4E-04	mg/kg-day	7.0E-02	mg/kg-day	1.9E-03
				Benzene	2.4E+01	µg/L	1.1E-04	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	5.9E-06	7.5E-04	mg/kg-day	4.0E-03	mg/kg-day	1.9E-01
				Chlorobenzene	8.2E+00	µg/L	3.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-04	mg/kg-day	2.0E-02	mg/kg-day	1.3E-02
				Vinyl Chloride	1.6E-01	µg/L	2.0E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-06	5.0E-06	mg/kg-day	3.0E-03	mg/kg-day	1.7E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	4.5E-04	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	4.5E-05	3.1E-03	mg/kg-day	3.0E-02	mg/kg-day	1.0E-01
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	6.8E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	9.5E-08	4.8E-05	mg/kg-day	2.0E-02	mg/kg-day	2.4E-03
				Naphthalene	2.9E+00	µg/L	1.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	9.3E-05	mg/kg-day	2.0E-02	mg/kg-day	4.7E-03
				Metals - Total												
				Aluminum	6.3E+01	µg/L	2.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-03	mg/kg-day	1.0E+00	mg/kg-day	2.0E-03
				Arsenic	5.4E-01	µg/L	2.5E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-06	1.7E-05	mg/kg-day	3.0E-04	mg/kg-day	5.7E-02
				Barium	3.6E+02	µg/L	1.6E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-02	mg/kg-day	2.0E-01	mg/kg-day	5.7E-02
				Cadmium	3.5E-01	µg/L	1.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-05	mg/kg-day	1.0E-03	mg/kg-day	1.1E-02
				Chromium	1.3E+00	µg/L	1.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-05	mg/kg-day	3.0E-03	mg/kg-day	1.3E-02
				Cobalt	5.6E-01	µg/L	2.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	5.9E-02
				Iron	8.1E+04	µg/L	3.7E-01	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E+00	mg/kg-day	7.0E-01	mg/kg-day	3.7E+00
				Lead	1.4E+01	µg/L	6.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	7.3E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.1E-02	mg/kg-day	1.4E-01	mg/kg-day	3.7E-01
				Vanadium	5.9E+00	µg/L	2.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-04	mg/kg-day	5.0E-03	mg/kg-day	3.7E-02
				Other												
				Cyanide	3.2E+00	µg/L	1.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-04	mg/kg-day	1.0E-03	mg/kg-day	1.0E-01
			Exp. Route Total								6E-05					5E+00

Table 7.11.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.5E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	8.2E-08	1.1E-04	mg/kg-day	7.0E-02	mg/kg-day	1.5E-03
				Benzene	2.4E+01	µg/L	1.9E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	1.1E-06	1.3E-04	mg/kg-day	4.0E-03	mg/kg-day	3.4E-02
				Chlorobenzene	8.2E+00	µg/L	1.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-04	mg/kg-day	2.0E-02	mg/kg-day	5.6E-03
				Vinyl Chloride	1.6E-01	µg/L	1.2E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	8.7E-08	3.0E-07	mg/kg-day	3.0E-03	mg/kg-day	1.0E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	1.9E-06	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-07	1.3E-05	mg/kg-day	3.0E-02	mg/kg-day	4.4E-04
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	1.2E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.7E-07	8.5E-05	mg/kg-day	2.0E-02	mg/kg-day	4.3E-03
				Naphthalene	2.9E+00	µg/L	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.7E-06	mg/kg-day	2.0E-02	mg/kg-day	4.8E-04
				Metals - Total												
				Aluminum	6.3E+01	µg/L	1.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-05	mg/kg-day	1.0E+00	mg/kg-day	1.2E-05
				Arsenic	5.4E-01	µg/L	1.4E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-08	1.0E-07	mg/kg-day	3.0E-04	mg/kg-day	3.3E-04
				Barium	3.6E+02	µg/L	9.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.6E-05	mg/kg-day	1.4E-02	mg/kg-day	4.7E-03
				Cadmium	3.5E-01	µg/L	9.3E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-08	mg/kg-day	2.5E-05	mg/kg-day	2.6E-03
				Chromium	1.3E+00	µg/L	9.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-07	mg/kg-day	7.5E-05	mg/kg-day	3.1E-03
				Cobalt	5.6E-01	µg/L	5.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.1E-08	mg/kg-day	3.0E-04	mg/kg-day	1.4E-04
				Iron	8.1E+04	µg/L	2.2E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-02	mg/kg-day	7.0E-01	mg/kg-day	2.2E-02
				Lead	1.4E+01	µg/L	3.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	4.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-04	mg/kg-day	1.4E-01	mg/kg-day	2.1E-03
				Vanadium	5.9E+00	µg/L	1.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	1.3E-04	mg/kg-day	8.4E-03
				Other												
				Cyanide	3.2E+00	µg/L	8.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.9E-07	mg/kg-day	1.0E-03	mg/kg-day	5.9E-04
			Exp. Route Total								2E-06					9E-02
		Exposure Point Total									6E-05					5E+00
	Exposure Medium Total										6E-05					5E+00

Table 7.11.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	3.4E+01	µg/m^3	1.2E-01	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.3E-06	8.2E-01	µg/m^3	8.0E-01	mg/m^3	1.0E-03
				Benzene	2.1E+02	µg/m^3	7.3E-01	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	5.7E-06	5.1E+00	µg/m^3	3.0E-02	mg/m^3	1.7E-01
				Chlorobenzene	6.9E+01	µg/m^3	2.4E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.7E+00	µg/m^3	5.0E-02	mg/m^3	3.4E-02
				Vinyl Chloride	1.6E+00	µg/m^3	1.5E-02	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	6.6E-08	3.8E-02	µg/m^3	1.0E-01	mg/m^3	3.8E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.5E+02	µg/m^3	5.1E-01	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	2.5E-06	3.6E+00	µg/m^3	3.0E-02	mg/m^3	1.2E-01
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.2E+01	µg/m^3	7.5E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	2.5E-06	5.2E-01	µg/m^3	3.0E-03	mg/m^3	1.7E-01
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								1E-05					5E-01
		Exposure Point Total									1E-05					5E-01
	Exposure Medium Total										1E-05					5E-01
Medium Total											7E-05					5E+00
Receptor Total							Total of Receptor Risks Across All Media				7E-05	Total of Receptor Hazards Across All Media				5E+00

Table 7.11.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Youth - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 7.12.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child- Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Mine Water	Tap Water	Ingestion	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.8E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	9.8E-08	2.1E-04	mg/kg-day	7.0E-02	mg/kg-day	3.0E-03
				Benzene	2.4E+01	µg/L	1.0E-04	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	5.6E-06	1.2E-03	mg/kg-day	4.0E-03	mg/kg-day	2.9E-01
				Chlorobenzene	8.2E+00	µg/L	3.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.1E-04	mg/kg-day	2.0E-02	mg/kg-day	2.1E-02
				Vinyl Chloride	1.6E-01	µg/L	2.8E-06	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-06	7.8E-06	mg/kg-day	3.0E-03	mg/kg-day	2.6E-03
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	4.2E-04	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	4.2E-05	4.9E-03	mg/kg-day	3.0E-02	mg/kg-day	1.6E-01
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	6.4E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-3}$	8.9E-08	7.4E-05	mg/kg-day	2.0E-02	mg/kg-day	3.7E-03
				Naphthalene	2.9E+00	µg/L	1.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-4}$	NA	1.5E-04	mg/kg-day	2.0E-02	mg/kg-day	7.3E-03
				Metals - Total												
				Aluminum	6.3E+01	µg/L	2.7E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-03	mg/kg-day	1.0E+00	mg/kg-day	3.2E-03
				Arsenic	5.4E-01	µg/L	2.3E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-06	2.7E-05	mg/kg-day	3.0E-04	mg/kg-day	9.0E-02
				Barium	3.6E+02	µg/L	1.5E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-02	mg/kg-day	2.0E-01	mg/kg-day	8.9E-02
				Cadmium	3.5E-01	µg/L	1.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-05	mg/kg-day	1.0E-03	mg/kg-day	1.8E-02
				Chromium	1.3E+00	µg/L	2.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-05	mg/kg-day	3.0E-03	mg/kg-day	2.1E-02
				Cobalt	5.6E-01	µg/L	2.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-05	mg/kg-day	3.0E-04	mg/kg-day	9.3E-02
				Iron	8.1E+04	µg/L	3.5E-01	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.1E+00	mg/kg-day	7.0E-01	mg/kg-day	5.8E+00
				Lead	1.4E+01	µg/L	6.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.0E-04	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	6.9E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.0E-02	mg/kg-day	1.4E-01	mg/kg-day	5.7E-01
				Vanadium	5.9E+00	µg/L	2.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-04	mg/kg-day	5.0E-03	mg/kg-day	5.9E-02
				Other												
				Cyanide	3.2E+00	µg/L	1.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-04	mg/kg-day	1.0E-03	mg/kg-day	1.6E-01
			Exp. Route Total								5E-05					7E+00

Table 7.12.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child- Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Mine Water	Tap Water	Dermal	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	4.3E+00	µg/L	1.0E-05	mg/kg-day	5.4E-03	$(mg/kg\text{-}day)^{-1}$	5.5E-08	1.2E-04	mg/kg-day	7.0E-02	mg/kg-day	1.7E-03
				Benzene	2.4E+01	µg/L	1.3E-05	mg/kg-day	5.5E-02	$(mg/kg\text{-}day)^{-1}$	7.1E-07	1.5E-04	mg/kg-day	4.0E-03	mg/kg-day	3.7E-02
				Chlorobenzene	8.2E+00	µg/L	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-04	mg/kg-day	2.0E-02	mg/kg-day	6.2E-03
				Vinyl Chloride	1.6E-01	µg/L	1.2E-07	mg/kg-day	7.2E-01	$(mg/kg\text{-}day)^{-1}$	8.7E-08	3.4E-07	mg/kg-day	3.0E-03	mg/kg-day	1.1E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	9.8E+01	µg/L	1.3E-06	mg/kg-day	1.0E-01	$(mg/kg\text{-}day)^{-1}$	1.3E-07	1.5E-05	mg/kg-day	3.0E-02	mg/kg-day	4.9E-04
				bis(2-Ethylhexyl)phthalate	1.5E+00	µg/L	8.2E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.1E-07	9.6E-05	mg/kg-day	2.0E-02	mg/kg-day	4.8E-03
				Naphthalene	2.9E+00	µg/L	9.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-05	mg/kg-day	2.0E-02	mg/kg-day	5.4E-04
				Metals - Total												
				Aluminum	6.3E+01	µg/L	1.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-05	mg/kg-day	1.0E+00	mg/kg-day	1.3E-05
				Arsenic	5.4E-01	µg/L	9.4E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08	1.1E-07	mg/kg-day	3.0E-04	mg/kg-day	3.7E-04
				Barium	3.6E+02	µg/L	6.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.2E-05	mg/kg-day	1.4E-02	mg/kg-day	5.2E-03
				Cadmium	3.5E-01	µg/L	6.1E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.1E-08	mg/kg-day	2.5E-05	mg/kg-day	2.9E-03
				Chromium	1.3E+00	µg/L	9.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	7.5E-05	mg/kg-day	3.4E-03
				Cobalt	5.6E-01	µg/L	3.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-08	mg/kg-day	3.0E-04	mg/kg-day	1.5E-04
				Iron	8.1E+04	µg/L	1.4E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-02	mg/kg-day	7.0E-01	mg/kg-day	2.4E-02
				Lead	1.4E+01	µg/L	2.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-07	mg/kg-day	NA	mg/kg-day	NA
				Manganese	1.6E+03	µg/L	2.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-04	mg/kg-day	1.4E-01	mg/kg-day	2.3E-03
				Vanadium	5.9E+00	µg/L	1.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-06	mg/kg-day	1.3E-04	mg/kg-day	9.2E-03
				Other												
				Cyanide	3.2E+00	µg/L	5.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-07	mg/kg-day	1.0E-03	mg/kg-day	6.5E-04
			Exp. Route Total								1E-06					1E-01
		Exposure Point Total									5E-05					7E+00
	Exposure Medium Total										5E-05					7E+00

Table 7.12.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child- Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of Potential Concern	EPC Value	EPC Units	Cancer Risk Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Risk	Non-Cancer Hazard Calculations: Intake/Exposure Concentration Value	Intake/Exposure Concentration Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
PMP Air Shaft Mine Water	Air	Shower Air	Inhalation	**Volatile Organic Compounds (VOCs)**												
				1,4-Dichlorobenzene	3.1E+01	µg/m^3	5.7E-02	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	6.3E-07	6.7E-01	µg/m^3	8.0E-01	mg/m^3	8.4E-04
				Benzene	1.9E+02	µg/m^3	3.6E-01	µg/m^3	7.8E-06	(µg/m^3)$^{-1}$	2.8E-06	4.2E+00	µg/m^3	3.0E-02	mg/m^3	1.4E-01
				Chlorobenzene	6.4E+01	µg/m^3	1.2E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E+00	µg/m^3	5.0E-02	mg/m^3	2.8E-02
				Vinyl Chloride	1.4E+00	µg/m^3	1.1E-02	µg/m^3	4.4E-06	(µg/m^3)$^{-1}$	4.9E-08	3.1E-02	µg/m^3	1.0E-01	mg/m^3	3.1E-04
				Semivolatile Organic Compounds (SVOCs)												
				1,4-Dioxane	1.4E+02	µg/m^3	2.5E-01	µg/m^3	5.0E-06	(µg/m^3)$^{-1}$	1.2E-06	2.9E+00	µg/m^3	3.0E-02	mg/m^3	9.7E-02
				bis(2-Ethylhexyl)phthalate	NA	µg/m^3	NA	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Naphthalene	2.0E+01	µg/m^3	3.7E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.2E-06	4.3E-01	µg/m^3	3.0E-03	mg/m^3	1.4E-01
				Metals - Total												
				Aluminum	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-03	mg/m^3	NA
				Arsenic	NA	µg/m^3	NA	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.5E-05	mg/m^3	NA
				Barium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-04	mg/m^3	NA
				Cadmium	NA	µg/m^3	NA	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-05	mg/m^3	NA
				Chromium	NA	µg/m^3	NA	µg/m^3	1.2E-02	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Cobalt	NA	µg/m^3	NA	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	6.0E-06	mg/m^3	NA
				Iron	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Lead	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
				Manganese	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	5.0E-05	mg/m^3	NA
				Vanadium	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	1.0E-04	mg/m^3	NA
				Other												
				Cyanide	NA	µg/m^3	NA	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	NA	µg/m^3	NA	mg/m^3	NA
			Exp. Route Total								6E-06					4E-01
		Exposure Point Total									6E-06					4E-01
	Exposure Medium Total										6E-06					4E-01
Medium Total											6E-05					8E+00
Receptor Total				Total of Receptor Risks Across All Media							6E-05	Total of Receptor Hazards Across All Media				8E+00

Table 7.12.RME
Calculation of Chemical Cancer Risks and Non-Cancer Hazards - Hypothetical Future Resident - Young Child- Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Point	Route	Chemical of	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
				Potential Concern	Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	

Acronyms and Abbreviations:
BHHRA = Baseline Human Health Risk Assessment
CSF = cancer slope factor
EPC = exposure point concentration
mg/kg/day = milligrams per kilogram per day
$(mg/kg/day)^{-1}$ = per milligram per kilogram per day
mg/m^3 = milligrams per cubic meter
NA = not available or not applicable
RfC = reference concentration
RfD = reference dose
µg/L = micrograms per liter
$\mu g/m^3$ = micrograms per cubic meter
$(\mu g/m^3)^{-1}$ = per microgram per cubic meter

Table 9.1.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	NA	--	NA	NA	Kidney	NA	--	NA	NA
			Benzene	NA	--	NA	NA	Immune System	NA	--	NA	NA
			Methyl tert butyl ether	NA	--	NA	NA	NA	NA	--	NA	NA
			Vinyl Chloride	NA	--	NA	NA	Hepatic	NA	--	NA	NA
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	NA	--	NA	NA	Hepatic, Urinary	NA	--	NA	NA
			bis(2-Ethylhexyl)phthalate	NA	--	NA	NA	Hepatic	NA	--	NA	NA
			Naphthalene	NA	--	NA	NA	Body Weight	NA	--	NA	NA
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Nervous System	NA	--	NA	NA
			Arsenic	NA	--	NA	NA	Cardiovascular, Dermal	NA	--	NA	NA
			Barium	NA	--	NA	NA	Urinary	NA	--	NA	NA
			Cadmium	NA	--	NA	NA	Kidney	NA	--	NA	NA
			Chromium	NA	--	NA	NA	NR	NA	--	NA	NA
			Cobalt	NA	--	NA	NA	Thyroid	NA	--	NA	NA
			Copper	NA	--	NA	NA	NR	NA	--	NA	NA
			Iron	NA	--	NA	NA	GI	NA	--	NA	NA
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	NA	--	NA	NA
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	NA	--	NA	NA
			Selenium	NA	--	NA	NA	Nervous System, Hematologic, Dermal	NA	--	NA	NA
			Vanadium	NA	--	NA	NA	Dermal	NA	--	NA	NA
			Zinc	NA	--	NA	NA	Immune System, Hematological	NA	--	NA	NA
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	NA	--	NA	NA
			Chemical Total	0.E+00	--	0.E+00	0.E+00		0.E+00	--	0.E+00	0.E+00
		Exposure Point Total					0.E+00					0.E+00
	Exposure Medium Total						0.E+00					0.E+00

Table 9.1.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	NA	--	NA	NA	--	NA	--	NA
			Benzene	--	NA	--	NA	Immune System	--	NA	--	NA
			Methyl tert butyl ether	--	NA	--	NA	Hepatic, Urinary	--	NA	--	NA
			Vinyl Chloride	--	NA	--	NA	Hepatic	--	NA	--	NA
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	NA	--	NA	Nervous System, Respiratory	--	NA	--	NA
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	NA	--	NA	Nervous System, Respiratory	--	NA	--	NA
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	velopmental, Nervous System, Cardiovascu	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	0.E+00	--	0.E+00		--	0.E+00	--	0.E+00
		Exposure Point Total					0.E+00					0.E+00
	Exposure Medium Total						0.E+00					0.E+00
Medium Total							0.E+00					0.E+00
Receptor Total						Receptor Risk Total	0.E+00				Receptor HI Total	0.E+00

Footnotes:
(1) The exposure duration (ED) for the hypothetical future adult resident under a central tendency (CT) scenario is set to 0 years (see Table 4.1.CT); therefore, risks and hazards are not calculated for this receptor.

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	NA
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	NA
Total GI HI Across All Media =	NA
Total Immune System HI Across All Media =	NA
Total Kidney (Urinary) HI Across All Media =	NA
Total Liver HI Across All Media =	NA
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	NA
Total "Not Reported" HI Across All Media =	NA
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	NA
Total Skin (Hair, Nails, Skin) HI Across All Media =	NA
Total Thyroid HI Across All Media =	NA
Total Whole Body (Body Weight, Mortality) HI Across All Media =	NA

Table 9.1.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	9.E-08	--	9.E-09	1.E-07	Kidney	2.E-04	--	1.E-05	2.E-04
			Benzene	7.E-07	--	1.E-07	8.E-07	Immune System	6.E-03	--	1.E-03	7.E-03
			Methyl tert butyl ether	5.E-08	--	1.E-09	5.E-08	NA	NA	--	NA	NA
			Vinyl Chloride	7.E-07	--	4.E-08	7.E-07	Hepatic	6.E-04	--	4.E-05	7.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	2.E-05	--	8.E-08	2.E-05	Hepatic, Urinary	1.E-02	--	5.E-05	1.E-02
			bis(2-Ethylhexyl)phthalate	5.E-07	--	8.E-07	1.E-06	Hepatic	3.E-03	--	6.E-03	9.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	4.E-04	--	4.E-05	4.E-04
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Nervous System	3.E-02	--	2.E-04	3.E-02
			Arsenic	9.E-05	--	6.E-07	9.E-05	Cardiovascular, Dermal	4.E-01	--	2.E-03	4.E-01
			Barium	NA	--	NA	NA	Urinary	9.E-03	--	8.E-04	9.E-03
			Cadmium	NA	--	NA	NA	Kidney	1.E-02	--	3.E-03	2.E-02
			Chromium	NA	--	NA	NA	NR	6.E-02	--	1.E-02	7.E-02
			Cobalt	NA	--	NA	NA	Thyroid	2.E-01	--	7.E-04	2.E-01
			Copper	NA	--	NA	NA	NR	5.E-03	--	3.E-05	5.E-03
			Iron	NA	--	NA	NA	GI	5.E-01	--	3.E-03	5.E-01
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	4.E-01	--	3.E-03	4.E-01
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	1.E-02	--	3.E-04	1.E-02
			Selenium	NA	--	NA	NA	Nervous System, Hematologic, Dermal	6.E-03	--	4.E-05	7.E-03
			Vanadium	NA	--	NA	NA	Dermal	3.E-02	--	7.E-03	3.E-02
			Zinc	NA	--	NA	NA	Immune System, Hematological	3.E-02	--	1.E-04	3.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	7.E-02	--	5.E-04	7.E-02
			Chemical Total	1.E-04	--	2.E-06	1.E-04		2.E+00	--	4.E-02	2.E+00
		Exposure Point Total					1.E-04					2.E+00
	Exposure Medium Total						1.E-04					2.E+00

Table 9.1.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	4.E-07	--	4.E-07	NA	--	NA	--	NA
			Benzene	--	1.E-06	--	1.E-06	Immune System	--	1.E-02	--	1.E-02
			Methyl tert butyl ether	--	8.E-08	--	8.E-08	Hepatic, Urinary	--	2.E-04	--	2.E-04
			Vinyl Chloride	--	6.E-08	--	6.E-08	Hepatic	--	3.E-04	--	3.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	2.E-06	--	2.E-06	Nervous System, Respiratory	--	3.E-02	--	3.E-02
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	2.E-06	--	2.E-06	Nervous System, Respiratory	--	3.E-02	--	3.E-02
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Nervous System, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	6.E-06	--	6.E-06		--	7.E-02	--	7.E-02
		Exposure Point Total					6.E-06					7.E-02
	Exposure Medium Total						6.E-06					7.E-02
Medium Total							1.E-04					2.E+00
Receptor Total					Receptor Risk Total		1.E-04		Receptor HI Total			2.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.4
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.1
Total GI HI Across All Media =	0.5
Total Immune System HI Across All Media =	0.05
Total Kidney (Urinary) HI Across All Media =	0.04
Total Liver HI Across All Media =	0.02
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.5
Total "Not Reported" HI Across All Media =	0.07
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.06
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.4
Total Thyroid HI Across All Media =	0.2
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.01

Table 9.2.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	3.E-09	--	5.E-10	3.E-09	Kidney	6.E-05	--	1.E-05	7.E-05
			Benzene	2.E-08	--	8.E-09	3.E-08	Immune System	2.E-03	--	8.E-04	3.E-03
			Methyl tert butyl ether	1.E-09	--	8.E-11	1.E-09	NA	NA	--	NA	NA
			Vinyl Chloride	6.E-08	--	8.E-09	7.E-08	Hepatic	2.E-04	--	3.E-05	3.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	6.E-07	--	5.E-09	6.E-07	Hepatic, Urinary	5.E-03	--	4.E-05	5.E-03
			bis(2-Ethylhexyl)phthalate	1.E-08	--	5.E-08	7.E-08	Hepatic	1.E-03	--	4.E-03	5.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	2.E-04	--	3.E-05	2.E-04
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Nervous System	1.E-02	--	1.E-04	1.E-02
			Arsenic	3.E-06	--	2.E-08	3.E-06	Cardiovascular, Dermal	1.E-01	--	1.E-03	1.E-01
			Barium	NA	--	NA	NA	Urinary	3.E-03	--	4.E-04	4.E-03
			Cadmium	NA	--	NA	NA	Kidney	4.E-03	--	2.E-03	6.E-03
			Chromium	NA	--	NA	NA	NR	2.E-02	--	7.E-03	3.E-02
			Cobalt	NA	--	NA	NA	Thyroid	9.E-02	--	3.E-04	9.E-02
			Copper	NA	--	NA	NA	NR	2.E-03	--	2.E-05	2.E-03
			Iron	NA	--	NA	NA	GI	2.E-01	--	2.E-03	2.E-01
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	1.E-01	--	1.E-03	1.E-01
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	4.E-03	--	2.E-04	4.E-03
			Selenium	NA	--	NA	NA	Nervous System, Hematologic, Dermal	2.E-03	--	2.E-05	2.E-03
			Vanadium	NA	--	NA	NA	Dermal	1.E-02	--	3.E-03	1.E-02
			Zinc	NA	--	NA	NA	Immune System, Hematological	1.E-02	--	7.E-05	1.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	3.E-02	--	2.E-04	3.E-02
			Chemical Total	3.E-06	--	1.E-07	3.E-06		7.E-01	--	2.E-02	7.E-01
		Exposure Point Total					3.E-06					7.E-01
	Exposure Medium Total						3.E-06					7.E-01

Table 9.2.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	4.E-09	--	4.E-09	NA	--	NA	--	NA
			Benzene	--	2.E-08	--	2.E-08	Immune System	--	2.E-03	--	2.E-03
			Methyl tert butyl ether	--	9.E-10	--	9.E-10	Hepatic, Urinary	--	3.E-05	--	3.E-05
			Vinyl Chloride	--	2.E-09	--	2.E-09	Hepatic	--	4.E-05	--	4.E-05
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	3.E-08	--	3.E-08	Nervous System, Respiratory	--	4.E-03	--	4.E-03
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	2.E-08	--	2.E-08	Nervous System, Respiratory	--	4.E-03	--	4.E-03
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Nervous System, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	7.E-08	--	7.E-08		--	1.E-02	--	1.E-02
		Exposure Point Total					7.E-08					1.E-02
	Exposure Medium Total						7.E-08					1.E-02
Medium Total							4.E-06					7.E-01
Receptor Total					Receptor Risk Total		4.E-06			Receptor HI Total		7.E-01

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.2
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.04
Total GI HI Across All Media =	0.2
Total Immune System HI Across All Media =	0.02
Total Kidney (Urinary) HI Across All Media =	0.01
Total Liver HI Across All Media =	0.01
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.2
Total "Not Reported" HI Across All Media =	0.03
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.008
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.2
Total Thyroid HI Across All Media =	0.09
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.004

Table 9.2.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	4.E-08	--	2.E-09	4.E-08	Kidney	3.E-04	--	1.E-05	3.E-04
			Benzene	3.E-07	--	3.E-08	3.E-07	Immune System	1.E-02	--	1.E-03	1.E-02
			Methyl tert butyl ether	2.E-08	--	3.E-10	2.E-08	NA	NA	--	NA	NA
			Vinyl Chloride	8.E-07	--	3.E-08	9.E-07	Hepatic	1.E-03	--	4.E-05	1.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	8.E-06	--	2.E-08	8.E-06	Hepatic, Urinary	2.E-02	--	5.E-05	2.E-02
			bis(2-Ethylhexyl)phthalate	2.E-07	--	2.E-07	4.E-07	Hepatic	5.E-03	--	6.E-03	1.E-02
			Naphthalene	NA	--	NA	NA	Body Weight	6.E-04	--	4.E-05	7.E-04
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Nervous System	5.E-02	--	2.E-04	5.E-02
			Arsenic	4.E-05	--	1.E-07	4.E-05	Cardiovascular, Dermal	6.E-01	--	2.E-03	6.E-01
			Barium	NA	--	NA	NA	Urinary	1.E-02	--	7.E-04	1.E-02
			Cadmium	NA	--	NA	NA	Kidney	2.E-02	--	3.E-03	2.E-02
			Chromium	NA	--	NA	NA	NR	9.E-02	--	1.E-02	1.E-01
			Cobalt	NA	--	NA	NA	Thyroid	4.E-01	--	6.E-04	4.E-01
			Copper	NA	--	NA	NA	NR	8.E-03	--	3.E-05	8.E-03
			Iron	NA	--	NA	NA	GI	7.E-01	--	3.E-03	7.E-01
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	6.E-01	--	2.E-03	6.E-01
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	2.E-02	--	3.E-04	2.E-02
			Selenium	NA	--	NA	NA	Nervous System, Hematologic, Dermal	1.E-02	--	4.E-05	1.E-02
			Vanadium	NA	--	NA	NA	Dermal	4.E-02	--	6.E-03	5.E-02
			Zinc	NA	--	NA	NA	Immune System, Hematological	5.E-02	--	1.E-04	5.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	1.E-01	--	4.E-04	1.E-01
			Chemical Total	5.E-05	--	5.E-07	5.E-05		3.E+00	--	4.E-02	3.E+00
		Exposure Point Total					5.E-05					3.E+00
	Exposure Medium Total						5.E-05					3.E+00

Table 9.2.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	7.E-08	--	7.E-08	NA	--	NA	--	NA
			Benzene	--	3.E-07	--	3.E-07	Immune System	--	8.E-03	--	8.E-03
			Methyl tert butyl ether	--	1.E-08	--	1.E-08	Hepatic, Urinary	--	1.E-04	--	1.E-04
			Vinyl Chloride	--	4.E-08	--	4.E-08	Hepatic	--	2.E-04	--	2.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	4.E-07	--	4.E-07	Nervous System, Respiratory	--	2.E-02	--	2.E-02
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	3.E-07	--	3.E-07	Nervous System, Respiratory	--	2.E-02	--	2.E-02
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Nervous System, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	1.E-06	--	1.E-06		--	5.E-02	--	5.E-02
		Exposure Point Total					1.E-06					5.E-02
	Exposure Medium Total						1.E-06					5.E-02
Medium Total							5.E-05					3.E+00
Receptor Total					Receptor Risk Total		5.E-05		Receptor HI Total			3.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.6
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.2
Total GI HI Across All Media =	0.7
Total Immune System HI Across All Media =	0.07
Total Kidney (Urinary) HI Across All Media =	0.06
Total Liver HI Across All Media =	0.03
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.7
Total "Not Reported" HI Across All Media =	0.1
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.04
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.6
Total Thyroid HI Across All Media =	0.4
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.02

Table 9.3.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	1.E-08	--	2.E-09	1.E-08	Kidney	1.E-04	--	2.E-05	1.E-04
			Benzene	9.E-08	--	2.E-08	1.E-07	Immune System	5.E-03	--	1.E-03	6.E-03
			Methyl tert butyl ether	6.E-09	--	2.E-10	6.E-09	NA	NA	--	NA	NA
			Vinyl Chloride	4.E-07	--	3.E-08	4.E-07	Hepatic	5.E-04	--	5.E-05	5.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	2.E-06	--	2.E-08	2.E-06	Hepatic, Urinary	1.E-02	--	6.E-05	1.E-02
			bis(2-Ethylhexyl)phthalate	6.E-08	--	2.E-07	2.E-07	Hepatic	2.E-03	--	7.E-03	9.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	3.E-04	--	5.E-05	4.E-04
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Nervous System	3.E-02	--	2.E-04	3.E-02
			Arsenic	1.E-05	--	8.E-08	1.E-05	Cardiovascular, Dermal	3.E-01	--	2.E-03	3.E-01
			Barium	NA	--	NA	NA	Urinary	7.E-03	--	7.E-04	7.E-03
			Cadmium	NA	--	NA	NA	Kidney	9.E-03	--	3.E-03	1.E-02
			Chromium	NA	--	NA	NA	NR	4.E-02	--	1.E-02	5.E-02
			Cobalt	NA	--	NA	NA	Thyroid	2.E-01	--	5.E-04	2.E-01
			Copper	NA	--	NA	NA	NR	4.E-03	--	3.E-05	4.E-03
			Iron	NA	--	NA	NA	GI	4.E-01	--	3.E-03	4.E-01
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	3.E-01	--	2.E-03	3.E-01
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	8.E-03	--	3.E-04	8.E-03
			Selenium	NA	--	NA	NA	Nervous System, Hematologic, Dermal	5.E-03	--	4.E-05	5.E-03
			Vanadium	NA	--	NA	NA	Dermal	2.E-02	--	6.E-03	3.E-02
			Zinc	NA	--	NA	NA	Immune System, Hematological	3.E-02	--	1.E-04	3.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	6.E-02	--	4.E-04	6.E-02
			Chemical Total	1.E-05	--	3.E-07	1.E-05		1.E+00	--	4.E-02	1.E+00
		Exposure Point Total					1.E-05					1.E+00
	Exposure Medium Total						1.E-05					1.E+00

Table 9.3.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	9.E-09	--	9.E-09	NA	--	NA	--	NA
			Benzene	--	3.E-08	--	3.E-08	Immune System	--	2.E-03	--	2.E-03
			Methyl tert butyl ether	--	2.E-09	--	2.E-09	Hepatic, Urinary	--	3.E-05	--	3.E-05
			Vinyl Chloride	--	6.E-09	--	6.E-09	Hepatic	--	4.E-05	--	4.E-05
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	5.E-08	--	5.E-08	Nervous System, Respiratory	--	4.E-03	--	4.E-03
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	4.E-08	--	4.E-08	Nervous System, Respiratory	--	4.E-03	--	4.E-03
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Nervous System, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	1.E-07	--	1.E-07		--	1.E-02	--	1.E-02
		Exposure Point Total					1.E-07					1.E-02
	Exposure Medium Total						1.E-07					1.E-02
Medium Total							1.E-05					1.E+00
Receptor Total					Receptor Risk Total		1.E-05			Receptor HI Total		1.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.3
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.08
Total GI HI Across All Media =	0.4
Total Immune System HI Across All Media =	0.03
Total Kidney (Urinary) HI Across All Media =	0.03
Total Liver HI Across All Media =	0.02
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.3
Total "Not Reported" HI Across All Media =	0.06
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.009
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.3
Total Thyroid HI Across All Media =	0.2
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.008

Table 9.3.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	4.E-08	--	2.E-09	4.E-08	Kidney	4.E-04	--	2.E-05	4.E-04
			Benzene	3.E-07	--	3.E-08	3.E-07	Immune System	1.E-02	--	2.E-03	2.E-02
			Methyl tert butyl ether	2.E-08	--	3.E-10	2.E-08	NA	NA	--	NA	NA
			Vinyl Chloride	1.E-06	--	4.E-08	1.E-06	Hepatic	1.E-03	--	6.E-05	2.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	7.E-06	--	2.E-08	7.E-06	Hepatic, Urinary	3.E-02	--	8.E-05	3.E-02
			bis(2-Ethylhexyl)phthalate	2.E-07	--	2.E-07	4.E-07	Hepatic	7.E-03	--	9.E-03	2.E-02
			Naphthalene	NA	--	NA	NA	Body Weight	9.E-04	--	6.E-05	1.E-03
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Nervous System	8.E-02	--	3.E-04	8.E-02
			Arsenic	3.E-05	--	1.E-07	3.E-05	Cardiovascular, Dermal	9.E-01	--	3.E-03	9.E-01
			Barium	NA	--	NA	NA	Urinary	2.E-02	--	1.E-03	2.E-02
			Cadmium	NA	--	NA	NA	Kidney	3.E-02	--	4.E-03	3.E-02
			Chromium	NA	--	NA	NA	NR	1.E-01	--	2.E-02	1.E-01
			Cobalt	NA	--	NA	NA	Thyroid	6.E-01	--	9.E-04	6.E-01
			Copper	NA	--	NA	NA	NR	1.E-02	--	4.E-05	1.E-02
			Iron	NA	--	NA	NA	GI	1.E+00	--	4.E-03	1.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	9.E-01	--	3.E-03	9.E-01
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	2.E-02	--	4.E-04	2.E-02
			Selenium	NA	--	NA	NA	Nervous System, Hematologic, Dermal	2.E-02	--	6.E-05	2.E-02
			Vanadium	NA	--	NA	NA	Dermal	6.E-02	--	9.E-03	7.E-02
			Zinc	NA	--	NA	NA	Immune System, Hematological	8.E-02	--	2.E-04	8.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	2.E-01	--	6.E-04	2.E-01
			Chemical Total	4.E-05	--	4.E-07	4.E-05		4.E+00	--	6.E-02	4.E+00
		Exposure Point Total					4.E-05					4.E+00
	Exposure Medium Total						4.E-05					4.E+00

Table 9.3.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	4.E-08	--	4.E-08	NA	--	NA	--	NA
			Benzene	--	1.E-07	--	1.E-07	Immune System	--	7.E-03	--	7.E-03
			Methyl tert butyl ether	--	8.E-09	--	8.E-09	Hepatic, Urinary	--	1.E-04	--	1.E-04
			Vinyl Chloride	--	3.E-08	--	3.E-08	Hepatic	--	2.E-04	--	2.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	2.E-07	--	2.E-07	Nervous System, Respiratory	--	2.E-02	--	2.E-02
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	2.E-07	--	2.E-07	Nervous System, Respiratory	--	2.E-02	--	2.E-02
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Nervous System, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	6.E-07	--	6.E-07		--	4.E-02	--	4.E-02
		Exposure Point Total					6.E-07					4.E-02
	Exposure Medium Total						6.E-07					4.E-02
Medium Total							4.E-05					4.E+00
Receptor Total					Receptor Risk Total		4.E-05			Receptor HI Total		4.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	1
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.3
Total GI HI Across All Media =	1
Total Immune System HI Across All Media =	0.1
Total Kidney (Urinary) HI Across All Media =	0.08
Total Liver HI Across All Media =	0.05
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	1
Total "Not Reported" HI Across All Media =	0.2
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.04
Total Skin (Hair, Nails, Skin) HI Across All Media =	1
Total Thyroid HI Across All Media =	0.6
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.02

Table 9.4.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	3.E-08	--	2.E-09	3.E-08	Kidney	2.E-04	--	1.E-05	2.E-04
			Benzene	2.E-07	--	3.E-08	2.E-07	Immune System	7.E-03	--	1.E-03	8.E-03
			Methyl tert butyl ether	1.E-08	--	3.E-10	1.E-08	NA	NA	--	NA	NA
			Vinyl Chloride	2.E-07	--	1.E-08	2.E-07	Hepatic	7.E-04	--	4.E-05	7.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	6.E-06	--	2.E-08	6.E-06	Hepatic, Urinary	1.E-02	--	5.E-05	1.E-02
			bis(2-Ethylhexyl)phthalate	1.E-07	--	2.E-07	3.E-07	Hepatic	3.E-03	--	5.E-03	9.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	4.E-04	--	4.E-05	5.E-04
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	4.E-02	--	2.E-04	4.E-02
			Arsenic	3.E-05	--	1.E-07	3.E-05	Cardiovascular, Dermal	4.E-01	--	2.E-03	4.E-01
			Barium	NA	--	NA	NA	Urinary	9.E-03	--	8.E-04	1.E-02
			Cadmium	NA	--	NA	NA	Kidney	1.E-02	--	3.E-03	2.E-02
			Chromium	NA	--	NA	NA	NR	6.E-02	--	1.E-02	7.E-02
			Cobalt	NA	--	NA	NA	Thyroid	3.E-01	--	6.E-04	3.E-01
			Copper	NA	--	NA	NA	NR	6.E-03	--	3.E-05	6.E-03
			Iron	NA	--	NA	NA	GI	5.E-01	--	3.E-03	5.E-01
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	4.E-01	--	2.E-03	4.E-01
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	1.E-02	--	3.E-04	1.E-02
			Selenium	NA	--	NA	NA	Nervous, Hematologic, Dermal	7.E-03	--	4.E-05	7.E-03
			Vanadium	NA	--	NA	NA	Dermal	3.E-02	--	6.E-03	4.E-02
			Zinc	NA	--	NA	NA	Immune System, Hematological	4.E-02	--	1.E-04	4.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	8.E-02	--	4.E-04	8.E-02
			Chemical Total	3.E-05	--	4.E-07	3.E-05		2.E+00	--	4.E-02	2.E+00
		Exposure Point Total					3.E-05					2.E+00
	Exposure Medium Total						3.E-05					2.E+00

Table 9.4.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	9.E-08	--	9.E-08	NA	--	NA	--	NA
			Benzene	--	3.E-07	--	3.E-07	Immune System	--	1.E-02	--	1.E-02
			Methyl tert butyl ether	--	2.E-08	--	2.E-08	Hepatic, Urinary	--	2.E-04	--	2.E-04
			Vinyl Chloride	--	2.E-08	--	2.E-08	Hepatic	--	2.E-04	--	2.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	5.E-07	--	5.E-07	Nervous, Respiratory	--	2.E-02	--	2.E-02
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	4.E-07	--	4.E-07	Nervous, Respiratory	--	3.E-02	--	3.E-02
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	1.E-06	--	1.E-06		--	6.E-02	--	6.E-02
		Exposure Point Total					1.E-06					6.E-02
	Exposure Medium Total						1.E-06					6.E-02
Medium Total							3.E-05					2.E+00
Receptor Total					Receptor Risk Total		3.E-05			Receptor HI Total		2.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.5
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.1
Total GI HI Across All Media =	0.5
Total Immune System HI Across All Media =	0.06
Total Kidney (Urinary) HI Across All Media =	0.04
Total Liver HI Across All Media =	0.02
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.5
Total "Not Reported" HI Across All Media =	0.08
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.05
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.5
Total Thyroid HI Across All Media =	0.3
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.01

Table 9.5.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	3.E-08	--	3.E-09	3.E-08	Kidney	2.E-04	--	2.E-05	2.E-04
			Benzene	2.E-07	--	4.E-08	3.E-07	Immune System	7.E-03	--	1.E-03	9.E-03
			Methyl tert butyl ether	1.E-08	--	4.E-10	2.E-08	NA	NA	--	NA	NA
			Vinyl Chloride	6.E-07	--	4.E-08	7.E-07	Hepatic	7.E-04	--	5.E-05	8.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	6.E-06	--	3.E-08	6.E-06	Hepatic, Urinary	1.E-02	--	7.E-05	1.E-02
			bis(2-Ethylhexyl)phthalate	1.E-07	--	3.E-07	4.E-07	Hepatic	4.E-03	--	7.E-03	1.E-02
			Naphthalene	NA	--	NA	NA	Body Weight	5.E-04	--	5.E-05	5.E-04
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	4.E-02	--	3.E-04	4.E-02
			Arsenic	3.E-05	--	2.E-07	3.E-05	Cardiovascular, Dermal	4.E-01	--	3.E-03	4.E-01
			Barium	NA	--	NA	NA	Urinary	1.E-02	--	1.E-03	1.E-02
			Cadmium	NA	--	NA	NA	Kidney	1.E-02	--	4.E-03	2.E-02
			Chromium	NA	--	NA	NA	NR	6.E-02	--	2.E-02	8.E-02
			Cobalt	NA	--	NA	NA	Thyroid	3.E-01	--	8.E-04	3.E-01
			Copper	NA	--	NA	NA	NR	6.E-03	--	4.E-05	6.E-03
			Iron	NA	--	NA	NA	GI	5.E-01	--	4.E-03	5.E-01
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	4.E-01	--	3.E-03	4.E-01
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	1.E-02	--	4.E-04	1.E-02
			Selenium	NA	--	NA	NA	Nervous, Hematologic, Dermal	8.E-03	--	5.E-05	8.E-03
			Vanadium	NA	--	NA	NA	Dermal	3.E-02	--	8.E-03	4.E-02
			Zinc	NA	--	NA	NA	Immune System, Hematological	4.E-02	--	2.E-04	4.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	9.E-02	--	6.E-04	9.E-02
			Chemical Total	4.E-05	--	6.E-07	4.E-05		2.E+00	--	5.E-02	2.E+00
		Exposure Point Total					4.E-05					2.E+00
	Exposure Medium Total						4.E-05					2.E+00

Table 9.5.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	8.E-08	--	8.E-08	NA	--	NA	--	NA
			Benzene	--	3.E-07	--	3.E-07	Immune System	--	8.E-03	--	8.E-03
			Methyl tert butyl ether	--	2.E-08	--	2.E-08	Hepatic, Urinary	--	1.E-04	--	1.E-04
			Vinyl Chloride	--	4.E-08	--	4.E-08	Hepatic	--	2.E-04	--	2.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	5.E-07	--	5.E-07	Nervous, Respiratory	--	2.E-02	--	2.E-02
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	3.E-07	--	3.E-07	Nervous, Respiratory	--	2.E-02	--	2.E-02
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	1.E-06	--	1.E-06		--	5.E-02	--	5.E-02
		Exposure Point Total					1.E-06					5.E-02
	Exposure Medium Total						1.E-06					5.E-02
Medium Total							4.E-05					2.E+00
Receptor Total					Receptor Risk Total		4.E-05		Receptor HI Total			2.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.5
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.1
Total GI HI Across All Media =	0.5
Total Immune System HI Across All Media =	0.06
Total Kidney (Urinary) HI Across All Media =	0.04
Total Liver HI Across All Media =	0.03
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.5
Total "Not Reported" HI Across All Media =	0.09
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.04
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.5
Total Thyroid HI Across All Media =	0.3
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.01

Table 9.6.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Groundwater	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	3.E-08	--	2.E-09	3.E-08	Kidney	3.E-04	--	2.E-05	3.E-04
			Benzene	2.E-07	--	3.E-08	2.E-07	Immune System	1.E-02	--	1.E-03	1.E-02
			Methyl tert butyl ether	1.E-08	--	3.E-10	1.E-08	NA	NA	--	NA	NA
			Vinyl Chloride	9.E-07	--	4.E-08	9.E-07	Hepatic	1.E-03	--	5.E-05	1.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	6.E-06	--	2.E-08	6.E-06	Hepatic, Urinary	2.E-02	--	7.E-05	2.E-02
			bis(2-Ethylhexyl)phthalate	1.E-07	--	2.E-07	3.E-07	Hepatic	6.E-03	--	8.E-03	1.E-02
			Naphthalene	NA	--	NA	NA	Body Weight	7.E-04	--	6.E-05	8.E-04
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	6.E-02	--	3.E-04	6.E-02
			Arsenic	3.E-05	--	1.E-07	3.E-05	Cardiovascular, Dermal	7.E-01	--	3.E-03	7.E-01
			Barium	NA	--	NA	NA	Urinary	2.E-02	--	1.E-03	2.E-02
			Cadmium	NA	--	NA	NA	Kidney	2.E-02	--	4.E-03	3.E-02
			Chromium	NA	--	NA	NA	NR	1.E-01	--	2.E-02	1.E-01
			Cobalt	NA	--	NA	NA	Thyroid	5.E-01	--	8.E-04	5.E-01
			Copper	NA	--	NA	NA	NR	9.E-03	--	4.E-05	9.E-03
			Iron	NA	--	NA	NA	GI	8.E-01	--	4.E-03	9.E-01
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	7.E-01	--	3.E-03	7.E-01
			Nickel	NA	--	NA	NA	Body Weight, Organ Weight	2.E-02	--	4.E-04	2.E-02
			Selenium	NA	--	NA	NA	Nervous, Hematologic, Dermal	1.E-02	--	5.E-05	1.E-02
			Vanadium	NA	--	NA	NA	Dermal	5.E-02	--	8.E-03	6.E-02
			Zinc	NA	--	NA	NA	Immune System, Hematological	6.E-02	--	2.E-04	6.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	1.E-01	--	6.E-04	1.E-01
			Chemical Total	3.E-05	--	4.E-07	3.E-05		3.E+00	--	5.E-02	3.E+00
		Exposure Point Total					3.E-05					3.E+00
	Exposure Medium Total						3.E-05					3.E+00

Table 9.6.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Site-wide Groundwater	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,1-Dichloroethane	--	4.E-08	--	4.E-08	NA	--	NA	--	NA
			Benzene	--	1.E-07	--	1.E-07	Immune System	--	7.E-03	--	7.E-03
			Methyl tert butyl ether	--	8.E-09	--	8.E-09	Hepatic, Urinary	--	1.E-04	--	1.E-04
			Vinyl Chloride	--	3.E-08	--	3.E-08	Hepatic	--	2.E-04	--	2.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	2.E-07	--	2.E-07	Nervous, Respiratory	--	2.E-02	--	2.E-02
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	2.E-07	--	2.E-07	Nervous, Respiratory	--	2.E-02	--	2.E-02
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Copper	--	NA	--	NA	NA	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Nickel	--	NA	--	NA	Respiratory	--	NA	--	NA
			Selenium	--	NA	--	NA	Hepatic, Cardiovascular, Nervous System	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Zinc	--	NA	--	NA	NA	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	6.E-07	--	6.E-07		--	5.E-02	--	5.E-02
		Exposure Point Total					6.E-07					5.E-02
	Exposure Medium Total						6.E-07					5.E-02
Medium Total							3.E-05					3.E+00
Receptor Total					Receptor Risk Total		3.E-05		Receptor HI Total			3.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.8
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.2
Total GI HI Across All Media =	0.9
Total Immune System HI Across All Media =	0.08
Total Kidney (Urinary) HI Across All Media =	0.07
Total Liver HI Across All Media =	0.04
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.8
Total "Not Reported" HI Across All Media =	0.1
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.04
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.8
Total Thyroid HI Across All Media =	0.5
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.02

Table 9.7.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	NA	--	NA	NA	Hepatic	NA	--	NA	NA
			Benzene	NA	--	NA	NA	Immune System	NA	--	NA	NA
			Chlorobenzene	NA	--	NA	NA	Hepatic	NA	--	NA	NA
			Vinyl Chloride	NA	--	NA	NA	Hepatic	NA	--	NA	NA
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	NA	--	NA	NA	Hepatic, Urinary	NA	--	NA	NA
			bis(2-Ethylhexyl)phthalate	NA	--	NA	NA	Hepatic	NA	--	NA	NA
			Naphthalene	NA	--	NA	NA	Body Weight	NA	--	NA	NA
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	NA	--	NA	NA
			Arsenic	NA	--	NA	NA	Cardiovascular, Dermal	NA	--	NA	NA
			Barium	NA	--	NA	NA	Urinary	NA	--	NA	NA
			Cadmium	NA	--	NA	NA	Kidney	NA	--	NA	NA
			Chromium	NA	--	NA	NA	NR	NA	--	NA	NA
			Cobalt	NA	--	NA	NA	Thyroid	NA	--	NA	NA
			Iron	NA	--	NA	NA	GI	NA	--	NA	NA
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	NA	--	NA	NA
			Vanadium	NA	--	NA	NA	Dermal	NA	--	NA	NA
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	NA	--	NA	NA
			Chemical Total	0.E+00	--	0.E+00	0.E+00		0.E+00	--	0.E+00	0.E+00
		Exposure Point Total					0.E+00					0.E+00
	Exposure Medium Total						0.E+00					0.E+00

Table 9.7.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	NA	--	NA	Hepatic	--	NA	--	NA
			Benzene	--	NA	--	NA	Immune System	--	NA	--	NA
			Chlorobenzene	--	NA	--	NA	Hepatic	--	NA	--	NA
			Vinyl Chloride	--	NA	--	NA	Hepatic	--	NA	--	NA
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	NA	--	NA	Nervous, Respiratory	--	NA	--	NA
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	NA	--	NA	Nervous, Respiratory	--	NA	--	NA
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	0.E+00	--	0.E+00		--	0.E+00	--	0.E+00
		Exposure Point Total					0.E+00					0.E+00
	Exposure Medium Total						0.E+00					0.E+00
Medium Total							0.E+00					0.E+00
Receptor Total						Receptor Risk Total	0.E+00				Receptor HI Total	0.E+00

Footnotes:
(1) The exposure duration (ED) for the hypothetical future adult resident under a central tendency (CT) scenario is set to 0 years (see Table 4.1.CT); therefore, risks and hazards are not calculated for this receptor.

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	NA
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	NA
Total GI HI Across All Media =	NA
Total Immune System HI Across All Media =	NA
Total Kidney (Urinary) HI Across All Media =	NA
Total Liver HI Across All Media =	NA
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	NA
Total "Not Reported" HI Across All Media =	NA
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	NA
Total Skin (Hair, Nails, Skin) HI Across All Media =	NA
Total Thyroid HI Across All Media =	NA
Total Whole Body (Body Weight, Mortality) HI Across All Media =	NA

Table 9.7.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	3.E-07	--	3.E-07	6.E-07	Hepatic	2.E-03	--	1.E-03	3.E-03
			Benzene	2.E-05	--	3.E-06	2.E-05	Immune System	2.E-01	--	3.E-02	2.E-01
			Chlorobenzene	NA	--	NA	NA	Hepatic	1.E-02	--	5.E-03	2.E-02
			Vinyl Chloride	2.E-06	--	1.E-07	2.E-06	Hepatic	1.E-03	--	9.E-05	2.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	1.E-04	--	6.E-07	1.E-04	Hepatic, Urinary	9.E-02	--	4.E-04	9.E-02
			bis(2-Ethylhexyl)phthalate	3.E-07	--	5.E-07	8.E-07	Hepatic	2.E-03	--	4.E-03	6.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	4.E-03	--	4.E-04	4.E-03
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	2.E-03	--	1.E-05	2.E-03
			Arsenic	1.E-05	--	8.E-08	1.E-05	Cardiovascular, Dermal	5.E-02	--	3.E-04	5.E-02
			Barium	NA	--	NA	NA	Urinary	5.E-02	--	5.E-03	5.E-02
			Cadmium	NA	--	NA	NA	Kidney	1.E-02	--	3.E-03	1.E-02
			Chromium	NA	--	NA	NA	NR	1.E-02	--	3.E-03	1.E-02
			Cobalt	NA	--	NA	NA	Thyroid	5.E-02	--	1.E-04	5.E-02
			Iron	NA	--	NA	NA	GI	3.E+00	--	2.E-02	3.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	3.E-01	--	2.E-03	3.E-01
			Vanadium	NA	--	NA	NA	Dermal	3.E-02	--	8.E-03	4.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	9.E-02	--	6.E-04	9.E-02
			Chemical Total	2.E-04	--	5.E-06	2.E-04		4.E+00	--	8.E-02	4.E+00
		Exposure Point Total					2.E-04					4.E+00
	Exposure Medium Total						2.E-04					4.E+00

Table 9.7.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	8.E-06	--	8.E-06	Hepatic	--	2.E-03	--	2.E-03
			Benzene	--	4.E-05	--	4.E-05	Immune System	--	3.E-01	--	3.E-01
			Chlorobenzene	--	NA	--	NA	Hepatic	--	6.E-02	--	6.E-02
			Vinyl Chloride	--	1.E-07	--	1.E-07	Hepatic	--	7.E-04	--	7.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	2.E-05	--	2.E-05	Nervous, Respiratory	--	2.E-01	--	2.E-01
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	2.E-05	--	2.E-05	Nervous, Respiratory	--	3.E-01	--	3.E-01
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	8.E-05	--	8.E-05		--	9.E-01	--	9.E-01
		Exposure Point Total					8.E-05					9.E-01
	Exposure Medium Total						8.E-05					9.E-01
Medium Total							3.E-04					5.E+00
Receptor Total					Receptor Risk Total		3.E-04		Receptor HI Total			5.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.05
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.09
Total GI HI Across All Media =	3
Total Immune System HI Across All Media =	0.5
Total Kidney (Urinary) HI Across All Media =	0.2
Total Liver HI Across All Media =	0.2
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.8
Total "Not Reported" HI Across All Media =	0.01
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.5
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.09
Total Thyroid HI Across All Media =	0.05
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.004

Table 9.8.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	1.E-08	--	2.E-08	3.E-08	Hepatic	6.E-04	--	1.E-03	2.E-03
			Benzene	6.E-07	--	2.E-07	8.E-07	Immune System	6.E-02	--	2.E-02	8.E-02
			Chlorobenzene	NA	--	NA	NA	Hepatic	4.E-03	--	4.E-03	8.E-03
			Vinyl Chloride	1.E-07	--	2.E-08	2.E-07	Hepatic	5.E-04	--	6.E-05	6.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	4.E-06	--	4.E-08	4.E-06	Hepatic, Urinary	3.E-02	--	3.E-04	3.E-02
			bis(2-Ethylhexyl)phthalate	9.E-09	--	3.E-08	4.E-08	Hepatic	8.E-04	--	3.E-03	3.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	1.E-03	--	3.E-04	2.E-03
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	6.E-04	--	6.E-06	7.E-04
			Arsenic	4.E-07	--	3.E-09	4.E-07	Cardiovascular, Dermal	2.E-02	--	2.E-04	2.E-02
			Barium	NA	--	NA	NA	Urinary	2.E-02	--	2.E-03	2.E-02
			Cadmium	NA	--	NA	NA	Kidney	4.E-03	--	1.E-03	5.E-03
			Chromium	NA	--	NA	NA	NR	4.E-03	--	2.E-03	6.E-03
			Cobalt	NA	--	NA	NA	Thyroid	2.E-02	--	7.E-05	2.E-02
			Iron	NA	--	NA	NA	GI	1.E+00	--	1.E-02	1.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	1.E-01	--	1.E-03	1.E-01
			Vanadium	NA	--	NA	NA	Dermal	1.E-02	--	4.E-03	2.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	3.E-02	--	3.E-04	3.E-02
			Chemical Total	5.E-06	--	3.E-07	6.E-06		2.E+00	--	5.E-02	2.E+00
		Exposure Point Total					6.E-06					2.E+00
	Exposure Medium Total						6.E-06					2.E+00

Table 9.8.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	9.E-08	--	9.E-08	Hepatic	--	2.E-04	--	2.E-04
			Benzene	--	4.E-07	--	4.E-07	Immune System	--	4.E-02	--	4.E-02
			Chlorobenzene	--	NA	--	NA	Hepatic	--	8.E-03	--	8.E-03
			Vinyl Chloride	--	5.E-09	--	5.E-09	Hepatic	--	9.E-05	--	9.E-05
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	2.E-07	--	2.E-07	Nervous, Respiratory	--	3.E-02	--	3.E-02
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	2.E-07	--	2.E-07	Nervous, Respiratory	--	4.E-02	--	4.E-02
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	9.E-07	--	9.E-07		--	1.E-01	--	1.E-01
		Exposure Point Total					9.E-07					1.E-01
	Exposure Medium Total						9.E-07					1.E-01
Medium Total							7.E-06					2.E+00
Receptor Total					Receptor Risk Total		7.E-06			Receptor HI Total		2.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.02
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.03
Total GI HI Across All Media =	1
Total Immune System HI Across All Media =	0.12
Total Kidney (Urinary) HI Across All Media =	0.06
Total Liver HI Across All Media =	0.06
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.2
Total "Not Reported" HI Across All Media =	0.006
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.07
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.03
Total Thyroid HI Across All Media =	0.02
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.002

Table 9.8.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	1.E-07	--	7.E-08	2.E-07	Hepatic	3.E-03	--	1.E-03	4.E-03
			Benzene	8.E-06	--	9.E-07	9.E-06	Immune System	3.E-01	--	3.E-02	3.E-01
			Chlorobenzene	NA	--	NA	NA	Hepatic	2.E-02	--	5.E-03	2.E-02
			Vinyl Chloride	2.E-06	--	7.E-08	2.E-06	Hepatic	2.E-03	--	9.E-05	2.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	6.E-05	--	2.E-07	6.E-05	Hepatic, Urinary	1.E-01	--	4.E-04	1.E-01
			bis(2-Ethylhexyl)phthalate	1.E-07	--	1.E-07	3.E-07	Hepatic	3.E-03	--	4.E-03	7.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	6.E-03	--	4.E-04	7.E-03
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	3.E-03	--	1.E-05	3.E-03
			Arsenic	5.E-06	--	2.E-08	5.E-06	Cardiovascular, Dermal	8.E-02	--	3.E-04	8.E-02
			Barium	NA	--	NA	NA	Urinary	8.E-02	--	4.E-03	8.E-02
			Cadmium	NA	--	NA	NA	Kidney	1.E-02	--	2.E-03	2.E-02
			Chromium	NA	--	NA	NA	NR	2.E-02	--	3.E-03	2.E-02
			Cobalt	NA	--	NA	NA	Thyroid	8.E-02	--	1.E-04	8.E-02
			Iron	NA	--	NA	NA	GI	5.E+00	--	2.E-02	5.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	5.E-01	--	2.E-03	5.E-01
			Vanadium	NA	--	NA	NA	Dermal	5.E-02	--	7.E-03	6.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	1.E-01	--	5.E-04	1.E-01
			Chemical Total	7.E-05	--	1.E-06	8.E-05		6.E+00	--	8.E-02	6.E+00
		Exposure Point Total					8.E-05					6.E+00
	Exposure Medium Total						8.E-05					6.E+00

Table 9.8.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	2.E-06	--	2.E-06	Hepatic	--	1.E-03	--	1.E-03
			Benzene	--	7.E-06	--	7.E-06	Immune System	--	2.E-01	--	2.E-01
			Chlorobenzene	--	NA	--	NA	Hepatic	--	4.E-02	--	4.E-02
			Vinyl Chloride	--	8.E-08	--	8.E-08	Hepatic	--	5.E-04	--	5.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	3.E-06	--	3.E-06	Nervous, Respiratory	--	1.E-01	--	1.E-01
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	3.E-06	--	3.E-06	Nervous, Respiratory	--	2.E-01	--	2.E-01
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	1.E-05	--	1.E-05		--	6.E-01	--	6.E-01
		Exposure Point Total					1.E-05					6.E-01
	Exposure Medium Total						1.E-05					6.E-01
Medium Total							9.E-05					7.E+00
Receptor Total					Receptor Risk Total		9.E-05		Receptor HI Total			7.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.08
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.1
Total GI HI Across All Media =	5
Total Immune System HI Across All Media =	0.5
Total Kidney (Urinary) HI Across All Media =	0.2
Total Liver HI Across All Media =	0.2
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.8
Total "Not Reported" HI Across All Media =	0.02
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.4
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.1
Total Thyroid HI Across All Media =	0.08
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.007

Table 9.9.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	4.E-08	--	5.E-08	9.E-08	Hepatic	1.E-03	--	2.E-03	3.E-03
			Benzene	2.E-06	--	7.E-07	3.E-06	Immune System	1.E-01	--	3.E-02	2.E-01
			Chlorobenzene	NA	--	NA	NA	Hepatic	9.E-03	--	6.E-03	1.E-02
			Vinyl Chloride	9.E-07	--	8.E-08	9.E-07	Hepatic	1.E-03	--	1.E-04	1.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	2.E-05	--	1.E-07	2.E-05	Hepatic, Urinary	7.E-02	--	5.E-04	7.E-02
			bis(2-Ethylhexyl)phthalate	4.E-08	--	1.E-07	1.E-07	Hepatic	2.E-03	--	4.E-03	6.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	3.E-03	--	5.E-04	4.E-03
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	1.E-03	--	9.E-06	1.E-03
			Arsenic	1.E-06	--	1.E-08	1.E-06	Cardiovascular, Dermal	4.E-02	--	3.E-04	4.E-02
			Barium	NA	--	NA	NA	Urinary	4.E-02	--	4.E-03	4.E-02
			Cadmium	NA	--	NA	NA	Kidney	7.E-03	--	2.E-03	9.E-03
			Chromium	NA	--	NA	NA	NR	9.E-03	--	3.E-03	1.E-02
			Cobalt	NA	--	NA	NA	Thyroid	4.E-02	--	1.E-04	4.E-02
			Iron	NA	--	NA	NA	GI	2.E+00	--	2.E-02	2.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	2.E-01	--	2.E-03	2.E-01
			Vanadium	NA	--	NA	NA	Dermal	2.E-02	--	7.E-03	3.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	7.E-02	--	5.E-04	7.E-02
			Chemical Total	2.E-05	--	1.E-06	2.E-05		3.E+00	--	8.E-02	3.E+00
		Exposure Point Total					2.E-05					3.E+00
	Exposure Medium Total						2.E-05					3.E+00

Table 9.9.CT
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	2.E-07	--	2.E-07	Hepatic	--	3.E-04	--	3.E-04
			Benzene	--	9.E-07	--	9.E-07	Immune System	--	4.E-02	--	4.E-02
			Chlorobenzene	--	NA	--	NA	Hepatic	--	8.E-03	--	8.E-03
			Vinyl Chloride	--	1.E-08	--	1.E-08	Hepatic	--	9.E-05	--	9.E-05
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	4.E-07	--	4.E-07	Nervous, Respiratory	--	3.E-02	--	3.E-02
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	4.E-07	--	4.E-07	Nervous, Respiratory	--	4.E-02	--	4.E-02
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	2.E-06	--	2.E-06		--	1.E-01	--	1.E-01
		Exposure Point Total					2.E-06					1.E-01
	Exposure Medium Total						2.E-06					1.E-01
Medium Total							3.E-05					3.E+00
Receptor Total					Receptor Risk Total		3.E-05			Receptor HI Total		3.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.04
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.07
Total GI HI Across All Media =	2
Total Immune System HI Across All Media =	0.2
Total Kidney (Urinary) HI Across All Media =	0.1
Total Liver HI Across All Media =	0.1
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.3
Total "Not Reported" HI Across All Media =	0.01
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.07
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.07
Total Thyroid HI Across All Media =	0.04
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.004

Table 9.9.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	1.E-07	--	6.E-08	2.E-07	Hepatic	4.E-03	--	2.E-03	6.E-03
			Benzene	7.E-06	--	8.E-07	8.E-06	Immune System	4.E-01	--	4.E-02	4.E-01
			Chlorobenzene	NA	--	NA	NA	Hepatic	3.E-02	--	7.E-03	3.E-02
			Vinyl Chloride	3.E-06	--	1.E-07	3.E-06	Hepatic	3.E-03	--	1.E-04	3.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	5.E-05	--	1.E-07	5.E-05	Hepatic, Urinary	2.E-01	--	6.E-04	2.E-01
			bis(2-Ethylhexyl)phthalate	1.E-07	--	1.E-07	2.E-07	Hepatic	5.E-03	--	6.E-03	1.E-02
			Naphthalene	NA	--	NA	NA	Body Weight	9.E-03	--	6.E-04	1.E-02
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	4.E-03	--	2.E-05	4.E-03
			Arsenic	4.E-06	--	2.E-08	4.E-06	Cardiovascular, Dermal	1.E-01	--	4.E-04	1.E-01
			Barium	NA	--	NA	NA	Urinary	1.E-01	--	6.E-03	1.E-01
			Cadmium	NA	--	NA	NA	Kidney	2.E-02	--	3.E-03	3.E-02
			Chromium	NA	--	NA	NA	NR	3.E-02	--	4.E-03	3.E-02
			Cobalt	NA	--	NA	NA	Thyroid	1.E-01	--	2.E-04	1.E-01
			Iron	NA	--	NA	NA	GI	7.E+00	--	3.E-02	7.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	7.E-01	--	3.E-03	7.E-01
			Vanadium	NA	--	NA	NA	Dermal	8.E-02	--	1.E-02	9.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	2.E-01	--	8.E-04	2.E-01
			Chemical Total	7.E-05	--	1.E-06	7.E-05		9.E+00	--	1.E-01	1.E+01
		Exposure Point Total					7.E-05					1.E+01
	Exposure Medium Total						7.E-05					1.E+01

Table 9.9.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	8.E-07	--	8.E-07	Hepatic	--	1.E-03	--	1.E-03
			Benzene	--	4.E-06	--	4.E-06	Immune System	--	2.E-01	--	2.E-01
			Chlorobenzene	--	NA	--	NA	Hepatic	--	3.E-02	--	3.E-02
			Vinyl Chloride	--	6.E-08	--	6.E-08	Hepatic	--	4.E-04	--	4.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	2.E-06	--	2.E-06	Nervous, Respiratory	--	1.E-01	--	1.E-01
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	2.E-06	--	2.E-06	Nervous, Respiratory	--	2.E-01	--	2.E-01
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	velopmental, Neurobiological, Cardiovascu	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	8.E-06	--	8.E-06		--	5.E-01	--	5.E-01
		Exposure Point Total					8.E-06					5.E-01
	Exposure Medium Total						8.E-06					5.E-01
Medium Total							8.E-05					1.E+01
Receptor Total					Receptor Risk Total		8.E-05	Receptor HI Total				1.E+01

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.1
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.2
Total GI HI Across All Media =	7
Total Immune System HI Across All Media =	0.6
Total Kidney (Urinary) HI Across All Media =	0.4
Total Liver HI Across All Media =	0.3
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	1
Total "Not Reported" HI Across All Media =	0.03
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.3
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.2
Total Thyroid HI Across All Media =	0.1
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.01

Table 9.10.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	1.E-07	--	6.E-08	2.E-07	Hepatic	2.E-03	--	1.E-03	3.E-03
			Benzene	6.E-06	--	8.E-07	6.E-06	Immune System	2.E-01	--	3.E-02	2.E-01
			Chlorobenzene	NA	--	NA	NA	Hepatic	1.E-02	--	4.E-03	2.E-02
			Vinyl Chloride	5.E-07	--	2.E-08	5.E-07	Hepatic	2.E-03	--	8.E-05	2.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	4.E-05	--	1.E-07	4.E-05	Hepatic, Urinary	1.E-01	--	3.E-04	1.E-01
			bis(2-Ethylhexyl)phthalate	9.E-08	--	1.E-07	2.E-07	Hepatic	2.E-03	--	3.E-03	5.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	4.E-03	--	4.E-04	5.E-03
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	2.E-03	--	1.E-05	2.E-03
			Arsenic	3.E-06	--	2.E-08	3.E-06	Cardiovascular, Dermal	5.E-02	--	3.E-04	5.E-02
			Barium	NA	--	NA	NA	Urinary	5.E-02	--	4.E-03	6.E-02
			Cadmium	NA	--	NA	NA	Kidney	1.E-02	--	2.E-03	1.E-02
			Chromium	NA	--	NA	NA	NR	1.E-02	--	3.E-03	2.E-02
			Cobalt	NA	--	NA	NA	Thyroid	6.E-02	--	1.E-04	6.E-02
			Iron	NA	--	NA	NA	GI	3.E+00	--	2.E-02	4.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	3.E-01	--	2.E-03	3.E-01
			Vanadium	NA	--	NA	NA	Dermal	4.E-02	--	7.E-03	4.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	1.E-01	--	5.E-04	1.E-01
			Chemical Total	5.E-05	--	1.E-06	5.E-05		4.E+00	--	7.E-02	5.E+00
		Exposure Point Total					5.E-05					5.E+00
	Exposure Medium Total						5.E-05					5.E+00

Table 9.10.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Adult - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	2.E-06	--	2.E-06	Hepatic	--	1.E-03	--	1.E-03
			Benzene	--	7.E-06	--	7.E-06	Immune System	--	2.E-01	--	2.E-01
			Chlorobenzene	--	NA	--	NA	Hepatic	--	4.E-02	--	4.E-02
			Vinyl Chloride	--	3.E-08	--	3.E-08	Hepatic	--	5.E-04	--	5.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	3.E-06	--	3.E-06	Nervous, Respiratory	--	2.E-01	--	2.E-01
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	3.E-06	--	3.E-06	Nervous, Respiratory	--	2.E-01	--	2.E-01
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	2.E-05	--	2.E-05		--	6.E-01	--	6.E-01
		Exposure Point Total					2.E-05					6.E-01
	Exposure Medium Total						2.E-05					6.E-01
Medium Total							7.E-05					5.E+00
Receptor Total					Receptor Risk Total		7.E-05		Receptor HI Total			5.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.05
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.1
Total GI HI Across All Media =	4
Total Immune System HI Across All Media =	0.4
Total Kidney (Urinary) HI Across All Media =	0.2
Total Liver HI Across All Media =	0.2
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.7
Total "Not Reported" HI Across All Media =	0.02
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.4
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.1
Total Thyroid HI Across All Media =	0.06
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.005

Table 9.11.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	1.E-07	--	8.E-08	2.E-07	Hepatic	2.E-03	--	2.E-03	3.E-03
			Benzene	6.E-06	--	1.E-06	7.E-06	Immune System	2.E-01	--	3.E-02	2.E-01
			Chlorobenzene	NA	--	NA	NA	Hepatic	1.E-02	--	6.E-03	2.E-02
			Vinyl Chloride	1.E-06	--	9.E-08	2.E-06	Hepatic	2.E-03	--	1.E-04	2.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	4.E-05	--	2.E-07	4.E-05	Hepatic, Urinary	1.E-01	--	4.E-04	1.E-01
			bis(2-Ethylhexyl)phthalate	1.E-07	--	2.E-07	3.E-07	Hepatic	2.E-03	--	4.E-03	7.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	5.E-03	--	5.E-04	5.E-03
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	2.E-03	--	1.E-05	2.E-03
			Arsenic	4.E-06	--	2.E-08	4.E-06	Cardiovascular, Dermal	6.E-02	--	3.E-04	6.E-02
			Barium	NA	--	NA	NA	Urinary	6.E-02	--	5.E-03	6.E-02
			Cadmium	NA	--	NA	NA	Kidney	1.E-02	--	3.E-03	1.E-02
			Chromium	NA	--	NA	NA	NR	1.E-02	--	3.E-03	2.E-02
			Cobalt	NA	--	NA	NA	Thyroid	6.E-02	--	1.E-04	6.E-02
			Iron	NA	--	NA	NA	GI	4.E+00	--	2.E-02	4.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	4.E-01	--	2.E-03	4.E-01
			Vanadium	NA	--	NA	NA	Dermal	4.E-02	--	8.E-03	5.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	1.E-01	--	6.E-04	1.E-01
			Chemical Total	6.E-05	--	2.E-06	6.E-05		5.E+00	--	9.E-02	5.E+00
		Exposure Point Total					6.E-05					5.E+00
	Exposure Medium Total						6.E-05					5.E+00

Table 9.11.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Youth - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	1.E-06	--	1.E-06	Hepatic	--	1.E-03	--	1.E-03
			Benzene	--	6.E-06	--	6.E-06	Immune System	--	2.E-01	--	2.E-01
			Chlorobenzene	--	NA	--	NA	Hepatic	--	3.E-02	--	3.E-02
			Vinyl Chloride	--	7.E-08	--	7.E-08	Hepatic	--	4.E-04	--	4.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	3.E-06	--	3.E-06	Nervous, Respiratory	--	1.E-01	--	1.E-01
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	3.E-06	--	3.E-06	Nervous, Respiratory	--	2.E-01	--	2.E-01
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	1.E-05	--	1.E-05		--	5.E-01	--	5.E-01
		Exposure Point Total					1.E-05					5.E-01
	Exposure Medium Total						1.E-05					5.E-01
Medium Total							7.E-05					5.E+00
Receptor Total					Receptor Risk Total		7.E-05		Receptor HI Total			5.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.06
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.1
Total GI HI Across All Media =	4
Total Immune System HI Across All Media =	0.4
Total Kidney (Urinary) HI Across All Media =	0.2
Total Liver HI Across All Media =	0.2
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.7
Total "Not Reported" HI Across All Media =	0.02
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.3
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.1
Total Thyroid HI Across All Media =	0.06
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.005

Table 9.12.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Mine Water	Tap Water	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	1.E-07	--	5.E-08	2.E-07	Hepatic	3.E-03	--	2.E-03	5.E-03
			Benzene	6.E-06	--	7.E-07	6.E-06	Immune System	3.E-01	--	4.E-02	3.E-01
			Chlorobenzene	NA	--	NA	NA	Hepatic	2.E-02	--	6.E-03	3.E-02
			Vinyl Chloride	2.E-06	--	9.E-08	2.E-06	Hepatic	3.E-03	--	1.E-04	3.E-03
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	4.E-05	--	1.E-07	4.E-05	Hepatic, Urinary	2.E-01	--	5.E-04	2.E-01
			bis(2-Ethylhexyl)phthalate	9.E-08	--	1.E-07	2.E-07	Hepatic	4.E-03	--	5.E-03	9.E-03
			Naphthalene	NA	--	NA	NA	Body Weight	7.E-03	--	5.E-04	8.E-03
			Metals - Total									
			Aluminum	NA	--	NA	NA	Developmental, Neurobiological	3.E-03	--	1.E-05	3.E-03
			Arsenic	3.E-06	--	1.E-08	3.E-06	Cardiovascular, Dermal	9.E-02	--	4.E-04	9.E-02
			Barium	NA	--	NA	NA	Urinary	9.E-02	--	5.E-03	9.E-02
			Cadmium	NA	--	NA	NA	Kidney	2.E-02	--	3.E-03	2.E-02
			Chromium	NA	--	NA	NA	NR	2.E-02	--	3.E-03	2.E-02
			Cobalt	NA	--	NA	NA	Thyroid	9.E-02	--	2.E-04	9.E-02
			Iron	NA	--	NA	NA	GI	6.E+00	--	2.E-02	6.E+00
			Lead	NA	--	NA	NA	NA	NA	--	NA	NA
			Manganese	NA	--	NA	NA	CNS	6.E-01	--	2.E-03	6.E-01
			Vanadium	NA	--	NA	NA	Dermal	6.E-02	--	9.E-03	7.E-02
			Other									
			Cyanide	NA	--	NA	NA	Reproductive	2.E-01	--	7.E-04	2.E-01
			Chemical Total	5.E-05	--	1.E-06	5.E-05		7.E+00	--	1.E-01	7.E+00
		Exposure Point Total					5.E-05					7.E+00
	Exposure Medium Total						5.E-05					7.E+00

Table 9.12.RME
Summary of Receptor Risks and Hazards for COPCs - Hypothetical Future Resident - Young Child - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
PMP Air Shaft Mine Water	Air	Shower Air	**Volatile Organic Compounds (VOCs)**									
			1,4-Dichlorobenzene	--	6.E-07	--	6.E-07	Hepatic	--	8.E-04	--	8.E-04
			Benzene	--	3.E-06	--	3.E-06	Immune System	--	1.E-01	--	1.E-01
			Chlorobenzene	--	NA	--	NA	Hepatic	--	3.E-02	--	3.E-02
			Vinyl Chloride	--	5.E-08	--	5.E-08	Hepatic	--	3.E-04	--	3.E-04
			Semivolatile Organic Compounds (SVOCs)									
			1,4-Dioxane	--	1.E-06	--	1.E-06	Nervous, Respiratory	--	1.E-01	--	1.E-01
			bis(2-Ethylhexyl)phthalate	--	NA	--	NA	NA	--	NA	--	NA
			Naphthalene	--	1.E-06	--	1.E-06	Nervous, Respiratory	--	1.E-01	--	1.E-01
			Metals - Total									
			Aluminum	--	NA	--	NA	Neurological	--	NA	--	NA
			Arsenic	--	NA	--	NA	Developmental, Neurobiological, Cardiovascular	--	NA	--	NA
			Barium	--	NA	--	NA	Fetus	--	NA	--	NA
			Cadmium	--	NA	--	NA	Kidney	--	NA	--	NA
			Chromium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Cobalt	--	NA	--	NA	Lung	--	NA	--	NA
			Iron	--	NA	--	NA	NA	--	NA	--	NA
			Lead	--	NA	--	NA	NA	--	NA	--	NA
			Manganese	--	NA	--	NA	CNS	--	NA	--	NA
			Vanadium	--	NA	--	NA	Respiratory	--	NA	--	NA
			Other									
			Cyanide	--	NA	--	NA	NA	--	NA	--	NA
			Chemical Total	--	6.E-06	--	6.E-06		--	4.E-01	--	4.E-01
		Exposure Point Total					6.E-06					4.E-01
	Exposure Medium Total						6.E-06					4.E-01
Medium Total							6.E-05					8.E+00
Receptor Total					Receptor Risk Total		6.E-05		Receptor HI Total			8.E+00

Acronyms and Abbreviations:
-- = not an exposure route for this media
BHHRA = Baseline Human Health Risk Assessment
CNS = central nervous system
COPC = constituent of potential concern
GI = gastrointestinal tract
NA = not available or not applicable
NR = none reported

Total Circulatory System (Blood, Heart, Vascular) HI Across All Media =	0.09
Total Reproductive/Developmental (Reproductive, Developmental, Fetus) HI Across All Media =	0.2
Total GI HI Across All Media =	6
Total Immune System HI Across All Media =	0.5
Total Kidney (Urinary) HI Across All Media =	0.3
Total Liver HI Across All Media =	0.2
Total Nervous System (CNS, Neurobehavioral, Neurological) HI Across All Media =	0.8
Total "Not Reported" HI Across All Media =	0.02
Total Respiratory System (Lung, Nasal, Respiratory System) HI Across All Media =	0.2
Total Skin (Hair, Nails, Skin) HI Across All Media =	0.2
Total Thyroid HI Across All Media =	0.09
Total Whole Body (Body Weight, Mortality) HI Across All Media =	0.008

Table 11.1.CT
Summary of Estimated Potential Human Health Risks and Hazards
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RECEPTOR Exposure Medium - Scenario	Total Excess Lifetime Cancer Risk	Total Non-Cancer Hazard Index (1)	
Hypothetical Aggregate Future Resident Exposed to Site-wide Groundwater			
Young Child (1-6 years)	1E-05	1	
Youth (7-16 years)	4E-06	0.7	
Adult	NA	NA	
TOTAL SITE-WIDE GROUNDWATER RISKS:	2E-05	--	
Hypothetical Aggregate Future Resident Exposed to Mine Water			
Young Child (1-6 years)	3E-05	3	(2)
Youth (7-16 years)	7E-06	2	(2)
Adult	NA	NA	
TOTAL MINE WATER RISKS:	3E-05	--	

Footnotes:

(1) In accordance with standard risk assessment practice, estimated potential hazard indices (HIs) are not summed across age groups to estimate "lifetime" HIs.

(2) Endpoint-specific HIs for the receptor do not exceed a target HI of 1 for any endpoint evaluated (circulatory system; reproductive/developmental; GI; immune system; kidney; liver; musculoskeletal; nervous system; "not reported"; respiratory system; skin; thyroid; and whole body).

Acronyms and Abbreviations:

-- = not appropriate to sum non-cancer risks for different receptors

BHHRA = Baseline Human Health Risk Assessment

GI = gastrointestinal

NA = not available or not applicable

Table 11.1.RME
Summary of Estimated Potential Human Health Risks and Hazards
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RECEPTOR Exposure Medium - Scenario	Total Excess Lifetime Cancer Risk	Total Non-Cancer Hazard Index (1)	
Hypothetical Aggregate Future Resident Exposed to Site-wide Groundwater			
Young Child (1-6 years)	4E-05	4	(2)
Youth (7-16 years)	5E-05	3	(2)
Adult	1E-04	2	(2)
TOTAL SITE-WIDE GROUNDWATER RISKS:	2E-04	--	
Hypothetical Aggregate Future Resident Exposed to Site-wide Groundwater Using USEPA Standard Default Exposure			
Young Child (1-6 years)	3E-05	3	(2)
Youth (7-16 years)	4E-05	2	(2)
Adult	3E-05	2	(2)
TOTAL SITE-WIDE GROUNDWATER RISKS:	1E-04	--	
Hypothetical Aggregate Future Resident Exposed to Mine Water			
Young Child (1-6 years)	8E-05	10	(3)
Youth (7-16 years)	9E-05	7	(3)
Adult	3E-04	5	(3)
TOTAL MINE WATER RISKS:	4E-04	--	
Hypothetical Aggregate Future Resident Exposed to Mine Water Using USEPA Standard Default Exposure			
Young Child (1-6 years)	6E-05	8	(3)
Youth (7-16 years)	7E-05	5	(3)
Adult	7E-05	5	(3)
TOTAL MINE WATER RISKS:	2E-04	--	

Footnotes:
(1) In accordance with standard risk assessment practice, estimated potential hazard indices (HIs) are not summed across age groups to estimate "lifetime" HIs.
(2) Endpoint-specific HIs for the receptor do not exceed a target HI of 1 for any endpoint evaluated (circulatory system; reproductive/developmental; GI; immune system; kidney; liver; nervous system; musculoskeletal; respiratory system; skin; thyroid; and whole body).
(3) Endpoint-specific HIs for the receptor do not exceed a target HI of 1 for the following endpoints evaluated: circulatory system; reproductive/developmental; immune system; kidney; liver; nervous system; respiratory system; skin; thyroid; and whole body. The endpoint-specific HI for GI does exceed the target HI due to iron.

Acronyms and Abbreviations:

-- = not appropriate to sum non-cancer risks for different receptors
BHHRA = Baseline Human Health Risk Assessment

Table 12.1.CT
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	0.330
2-3	0.330
3-4	0.330
4-5	0.330
5-6	0.330
6-7	0.330

Drinking Water Concentration: 1.790 µg Pb/l

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

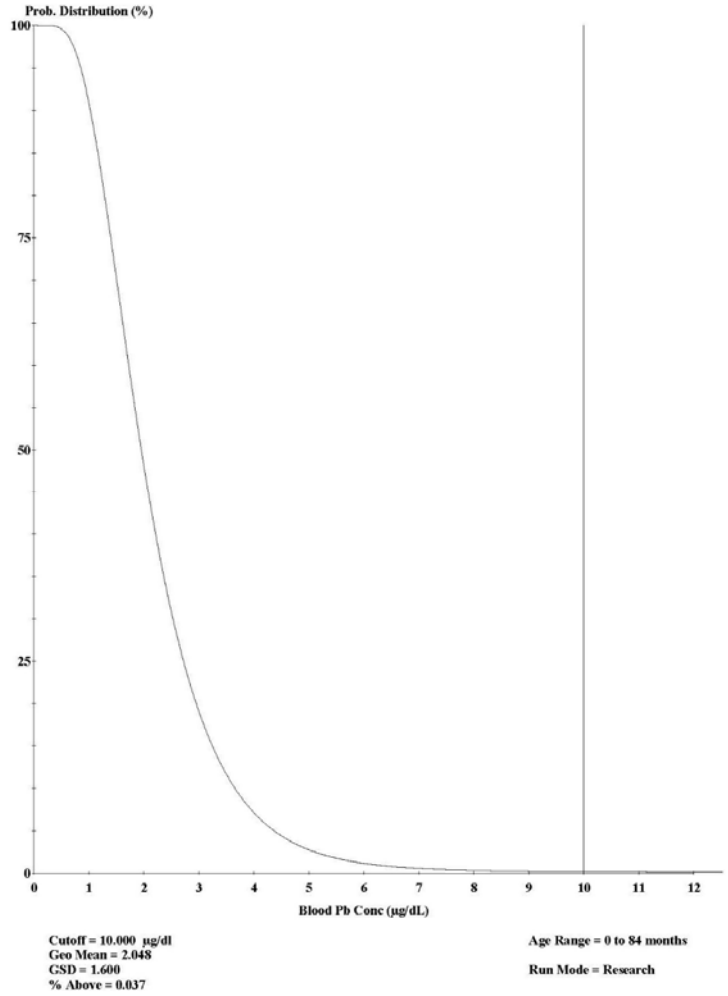
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.916	0	0.276	6.529	7.755	2.7
2-3	0.062	1.004	0	0.279	6.589	7.934	3.0
3-4	0.067	0.97	0	0.281	6.645	7.962	2.8
4-5	0.067	0.942	0	0.285	5.002	6.296	2.3
5-6	0.093	0.997	0	0.287	4.528	5.905	1.9
6-7	0.093	1.082	0	0.288	4.29	5.753	1.7

Table 12.1.CT
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
CT = central tendency
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table 12.1.RME
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	1.000
2-3	1.000
3-4	1.000
4-5	1.000
5-6	1.000
6-7	1.000

Drinking Water Concentration: 1.790 µg Pb/l

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

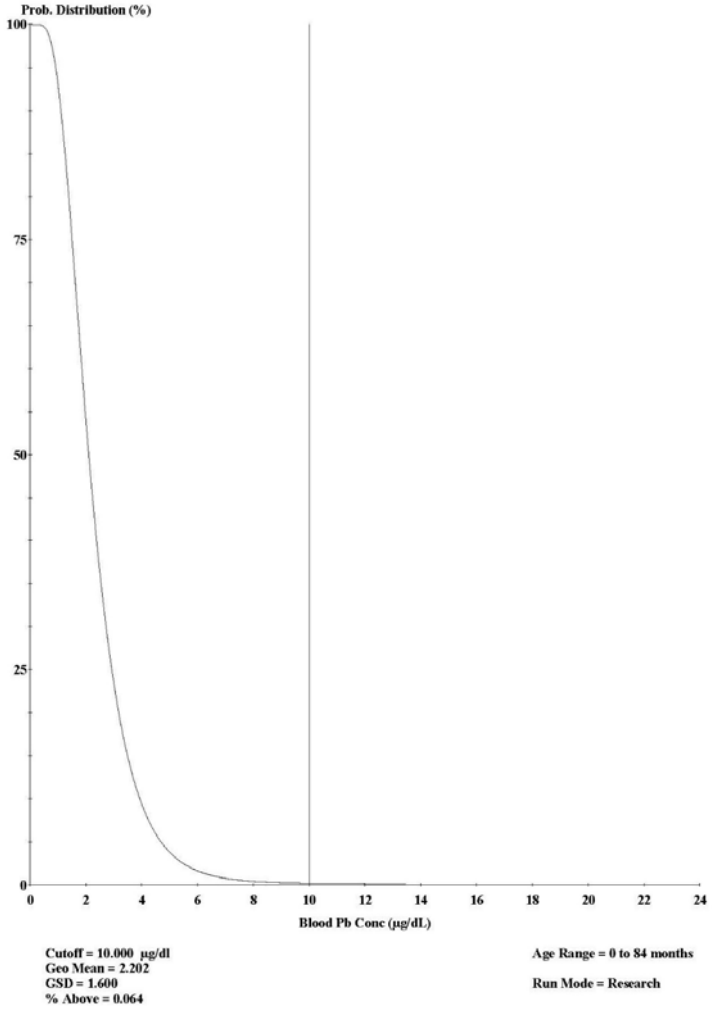
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.912	0	0.833	6.498	8.277	2.9
2-3	0.062	1.000	0	0.841	6.562	8.465	3.2
3-4	0.067	0.967	0	0.848	6.622	8.503	3.0
4-5	0.067	0.939	0	0.862	4.986	6.855	2.5
5-6	0.093	0.994	0	0.868	4.516	6.471	2.1
6-7	0.093	1.08	0	0.871	4.279	6.322	1.8

Table 12.1.RME
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table 12.2.CT
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	0.330
2-3	0.330
3-4	0.330
4-5	0.330
5-6	0.330
6-7	0.330

Drinking Water Concentration: 14.100 µg Pb

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

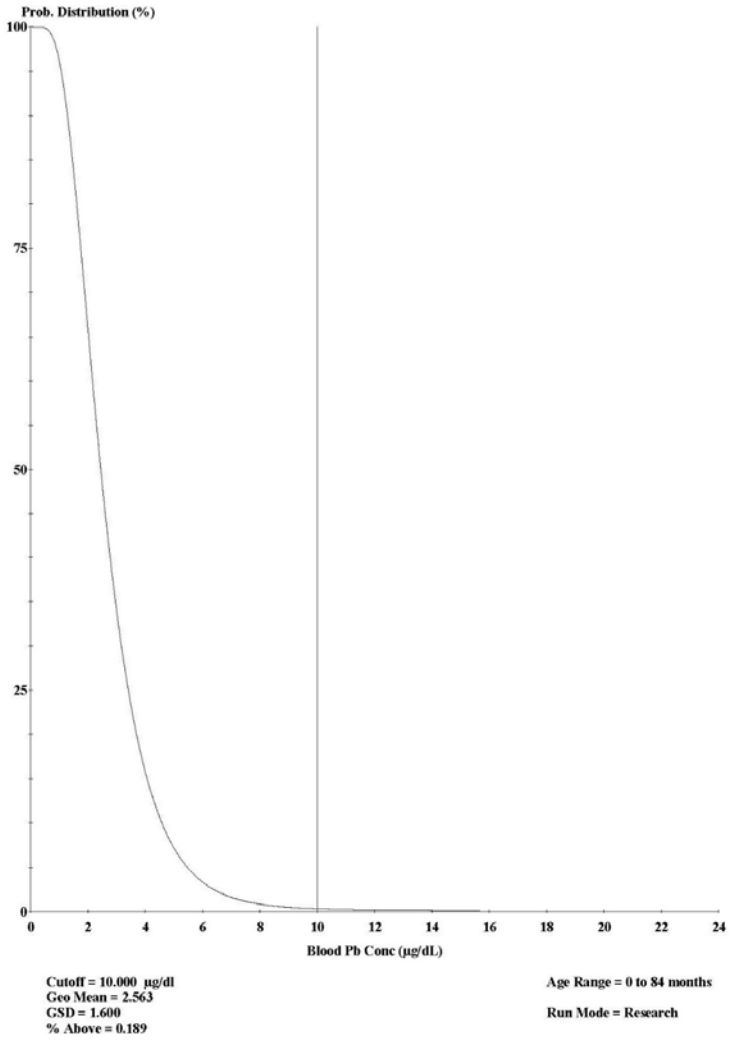
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.902	0	2.14	6.428	9.504	3.3
2-3	0.062	0.991	0	2.165	6.5	9.718	3.6
3-4	0.067	0.959	0	2.187	6.567	9.78	3.4
4-5	0.067	0.933	0	2.225	4.95	8.175	2.9
5-6	0.093	0.987	0	2.241	4.486	7.808	2.5
6-7	0.093	1.073	0	2.249	4.253	7.669	2.2

Table 12.2.CT
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
CT = central tendency
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table 12.2.RME
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	1.000
2-3	1.000
3-4	1.000
4-5	1.000
5-6	1.000
6-7	1.000

Drinking Water Concentration: 14.100 µg Pb

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

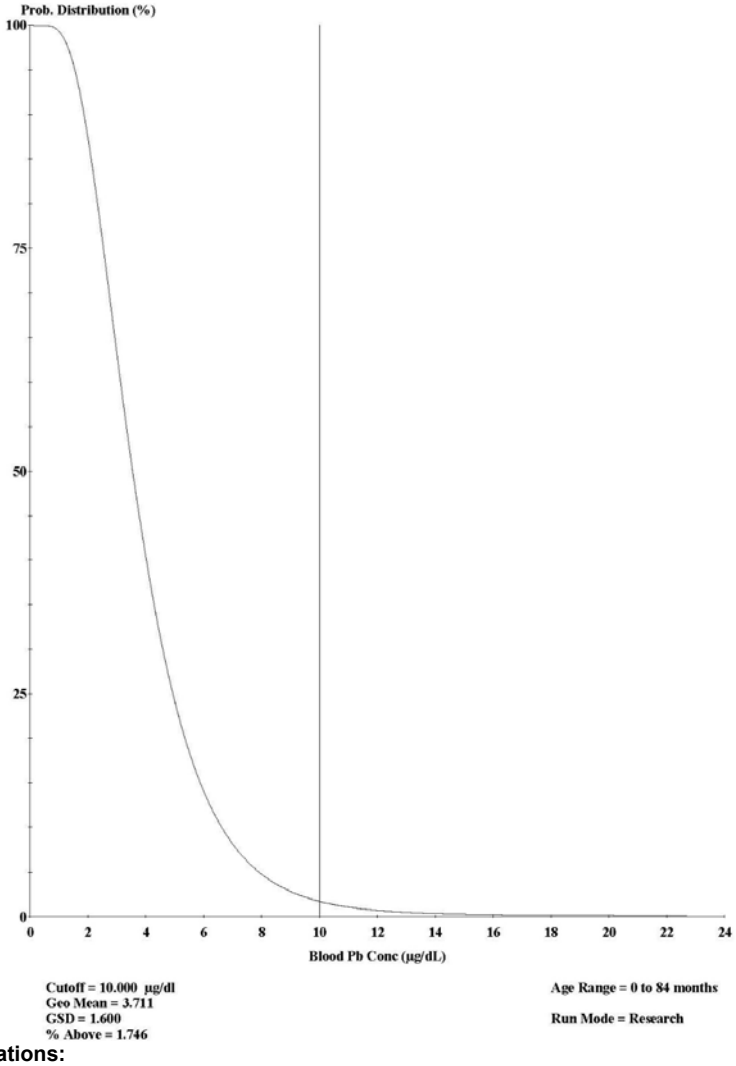
Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.871	0	6.264	6.207	13.376	4.7
2-3	0.062	0.961	0	6.364	6.306	13.693	5.1
3-4	0.067	0.934	0	6.454	6.396	13.851	4.8
4-5	0.067	0.911	0	6.587	4.835	12.4	4.3
5-6	0.093	0.967	0	6.649	4.393	12.102	3.8
6-7	0.093	1.052	0	6.685	4.171	12.001	3.4

Table 12.2.RME
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:

Probability Distribution



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

FIGURE

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
C:\Users\alsanchez\Desktop\RINGWOOD - SAMPLING LOCATION MAP - 20171117\NJ604B01.dwg LAYOUT: 1 SAVED: 11/21/2017 9:20 AM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 11/21/2017 9:37 AM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ----
FMCRD1-X-BDR-04 Cornerstone Logo_cmyk(high res.).jpeg.jpg
FMCRD1-X-EXST-ARCADIS
XrBDR-FPD

N

Peters Mine Pit Area
SR-13
SR-3 (SR-3 SEEP 1 & 2 AND POND)
Borough Recycling Center
Cannon Mine Shaft
SR-15
Cannon Mine Pit Area
SR-6
SR-5
SR-11
SR-1
SR-12
SR-8
SR-9
SR-2
Peters Mine Air Shaft
SR-4
SR-10
SR-7
O'Connor Disposal Area
Diamond Seep
Borough of Ringwood Landfill Area
SR-14
SR-16
Borough Hall
Wanaque Reservoir Approximately 800'
Sally's Pond

SW/SD-8 PAB-00
SW/SD-11
SW-11B
RW-5
OB-19
RW-7
OB-21
SC-1
OB-20A
OB-20B
RW14S
RW-14D
RW-11
RW-5A
OB-31
PZ-C
PZ-D
OB-27
RW-6A
RW-6
OB-32
SW/SD-PAB-01
RW-3
RW-4A
RW-4
OB-15A
OB-15B
OB-33
RW-3S
RW-13D
RW-13
OB-30B
OB-30C
OB-30A
SR-3 SEEP
RW-3D
RW-3DD
RW-3DS
RW15S
RW-15D
SR-3 POND
SW / SD-12
PAB-01A
OB-26
SW/SD-NOB-01
OB-24
OB-25
SR-3 SEEP 1
RW16
OB-11R
SR-3 SEEP 2
OB-14A
OB-14B
SW/SD-15
SW/SD-PAB-02
OB-23
OB-16
OB-28
OB-22
OB-17
OB-18
OB-9
SW/SD-PAB-03
SW/SD-9
SW/SD-PMB-02
OB-7
SW-PMB-01A
OB-6
MRB-00
RW-1
OB-1
SW/SD-1
SW/SD-7 PMB-02
SW-PMB-02A
OB-2
RW-9A
RW-2
OB-4
SW/SD-MRB-01
SC-2
RW-9
RW-8A
RW-8
OB-3
OB-12
RW-10
RW-10A
OB-13
OB-5
SW-3/SD-3
SW/SD-17
SW/SD-MRB-02
SW/SD-2
SW/SD-16
SW/SD-MRB-03
SW/SD-4
SW-RC-03
SW-PAD-03A
SW/SD-NOB-02
SW/SD-10
SW/SD-PAB-04
OB-29
OB-10
RW-12
SW-RM-01
SW-RC-01
SW-SP-00
SW-SP-01
SW-RC-02

Park Brook
North Brook
Unnamed Tributary
Ringwood Creek
Peters Mine Brook
Mine Brook
Ringwood Creek
Hope Mountain Road
AVENUE
MANCHESTER KING
ROAD
SLOATSBURG

LEGEND

- BEDROCK WELL
- DEEP BEDROCK WELL
- BACKGROUND BEDROCK WELL LOCATION
- BACKGROUND DEEP BEDROCK WELL LOCATION
- DIRECTIONAL WELL
- UNCONSOLIDATED WELL
- MONITORING WELL DAMAGED OR NOT AVAILABLE FOR SAMPLING
- APPROXIMATE LIMITS OF REMOVAL AREAS – SOIL, PAINT SLUDGE, AND DRUM REMNANTS
- APPROXIMATE LIMITS OF REMOVAL AREA – SOIL AND DRUM REMNANTS
- APPROXIMATE LIMITS OF REMOVAL AREA – SOIL, DRUMS, AND DRUM REMNANTS
- APPROXIMATE LIMITS OF REMOVAL AREAS – SOIL AND PAINT SLUDGE
- APPROXIMATE LIMITS OF SURFICIAL SOIL SCRAPING
- HISTORICAL FILL AREA SURROUNDING PETERS MINE PIT (AREA 1)
- INDICATES VERNAL CONDITIONS TYPICALLY OBSERVED IN THE SPRING AND FALL SEASONS
- WATER BODY

- **SW/SD-2** ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION
- **SW/SD-MRB-01** ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM MINE BROOK
- **SW/SD-PMB-01** ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM PETERS MINE BROOK
- **SW/SD-NOB-01** ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM NORTH BROOK
- **SW/SD-PAB-01** ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM PARK BROOK
- **SW-RC-01** ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM RINGWOOD CREEK
- **SW-RM-01** ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM UNNAMED TRIBUTARY
- **SW-SP-00** ▲ SURFACE WATER AND SEDIMENT – SAMPLE LOCATION FROM SALLY'S POND

- TRAIL/ DIRT ROAD
- STREAM
- INFERRED STREAM

NOTES:

1. MAP SOURCE: "SITE PLAN DEPICITING TOPOGRAPHIC FEATURES," RINGWOOD MINES/LANDFILL SITE, SITE RELATED GROUNDWATER REMEDIAL INVESTIGATION REPORT, MAP LATEST REVISION DATE 11/24/14.
2. EXISTING CONTOURS DEPICT TOPOGRAPHY PRIOR TO REMOVAL ACTIVITIES.

400 200 0 400 800 1200

SCALE: 1"=400'

RINGWOOD MINES/LANDFILL SUPERFUND SITE
RINGWOOD, NEW JERSEY

ANNUAL GROUNDWATER SURFACE WATER & MINE WATER SAMPLING

ANSI D PORTRAIT

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

APPENDIX A

2008 – 2017 Annual Groundwater Data

APPENDIX A1

2008 – 2017 Site-wide Annual Overburden and Bedrock Groundwater Data

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	OB-02 OB-2(080428) 4/28/2008	OB-02 OB-2 (080917) 9/17/2008	OB-02 OB-2(063009) 6/30/2009	OB-02 OB-2(102009) 10/20/2009	OB-02 OB-2(052510) 5/25/2010	OB-02 OB-2(051611) 5/16/2011	OB-02 OB-2 (041912) 4/19/2012	OB-02 OB-2 6/19/2012	OB-02 OB-2 (111813) 11/18/2013	OB-02 OB-2(091514) 9/15/2014	OB-03 OB-3(080428) 4/28/2008	OB-03 OB-3(080909) 9/9/2008	OB-03 OB-3(063009) 6/30/2009	OB-03 OB-3(102009) 10/20/2009	OB-03 OB-3(052510) 5/25/2010	OB-03 OB-3(151711) 5/17/2011
Volatile Organic Compounds																		
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	NA	< 0.25	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2	NA	< 0.20	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	NA	< 0.21	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13
1,1-Dichloroethane	75-34-3	µg/L	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29	< 0.16	< 0.19	NA	< 0.26	< 0.35	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29	< 0.16
1,1-Dichloroethene	75-35-4	µg/L	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	NA	< 0.34	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	NA	< 0.22	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3*	NA	< 1.3	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2 J
1,2-Dibromoethane	106-93-4	µg/L	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21*	NA	< 0.16	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	NA	< 0.20	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15
1,2-Dichloroethane	107-06-2	µg/L	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	NA	< 0.22	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	NA	< 0.28	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	NA	< 0.31	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	NA	< 0.30	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22
2-Butanone (MEK)	78-93-3	µg/L	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9	NA	< 3.2	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9	< 3	NA	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2	NA	< 1.5	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74
Acetone	67-64-1	µg/L	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4	< 7.6	NA	< 3.3	< 2.6	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4
Benzene	71-43-2	µg/L	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.26	< 0.22	NA	< 0.28	< 0.21	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.26
Bromodichloromethane	75-27-4	µg/L	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	NA	< 0.21	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	NA	< 0.30	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42
Bromomethane	74-83-9	µg/L	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.24	< 0.31	NA	< 0.56	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.24
Carbon disulfide	75-15-0	µg/L	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	NA	< 0.18	< 0.50	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13
Carbon tetrachloride	56-23-5	µg/L	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	NA	< 0.23	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35
Chlorobenzene	108-90-7	µg/L	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.15	< 0.22	NA	< 0.35	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.15
Chloroethane	75-00-3	µg/L	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.25	< 0.37	NA	< 0.39	< 0.56	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.25
Chloroform	67-66-3	µg/L	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.14	< 0.21	NA	< 0.25	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.14
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	NA	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.34
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	NA	< 0.24	< 0.33	< 0.19	0.5 J	< 0.22	< 0.22	< 0.22	< 0.24
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	NA	< 0.15	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	NA	< 0.18	< 0.37	< 0.85 J	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43
Dibromochloromethane	124-48-1	µg/L	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	NA	< 0.19	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16
Dichlorodifluoromethane	75-71-8	µg/L	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	NA	< 0.63	< 0.73	< 0.88 J	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	NA	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.31
Freon 113	76-13-1	µg/L	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.66	< 0.49	NA	< 0.77	< 0.45	< 0.8 J	< 0.8	< 0.38	< 0.38	< 0.38	< 0.66
Isopropylbenzene	98-82-8	µg/L	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.31	< 0.19	NA	< 0.22	< 0.26	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.31
Methyl acetate	79-20-9	µg/L	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9	NA	< 1.5	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3
Methyl tert butyl ether	1634-04-4	µg/L	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.2	< 0.18	NA	< 0.29	< 0.26	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.2
Methylcyclohexane	108-87-2	µg/L	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	NA	< 0.15	< 0.22	< 0.11 J	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16
Methylene chloride	75-09-2	µg/L	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	NA	< 0.86	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2
o-Xylene	95-47-6	µg/L	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA
Styrene	100-42-5	µg/L	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	NA	NA	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	NA	< 0.44	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24
Toluene	108-88-3	µg/L	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.27	< 0.15	NA	< 0.38	< 0.22	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.27
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	NA	< 0.21	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	NA	< 0.50	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22
Trichloroethene	79-01-6	µg/L	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	NA	1.0 J	< 0.25	< 0.18	13.7	0.95 J	2.1	0.7 J	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	0.3 J	< 0.35	NA	< 0.41	< 0.28	< 0.25 J	< 0.25	< 0.54	< 0.54	< 0.54	< 0.23
Vinyl Chloride	75-01-4	µg/L	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	NA	NA	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22
Xylene, -m,p	179601-23-1	µg/L	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA
Xylenes	1330-20-7	µg/L	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.28	< 0.17	NA	< 0.19	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.28
Semi-Volatile Organic Compounds																		
1,1'-Biphenyl	92-52-4	µg/L	< 0.22	< 0.55	< 0.46	< 0.42	< 0.5	< 0.43	< 0.33	NA	< 0.34	< 0.27 J	< 0.24	< 0.59	< 0.48	< 0.47	< 0.48	< 0.47
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.1	< 2	< 1.5	< 1.3	< 1.6	< 1.3	< 1.7	NA	< 1.7	< 1.7 J	< 1.2	< 2.1	< 1.5	< 1.5	< 1.5	< 1.5
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1	< 1.6	< 1.3	< 1.2	< 1.5	< 1.2	< 1.4	NA	< 1.4	< 1.5 J	< 1.1	< 1.7	< 1.4	< 1.4	< 1.4	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 1.4	< 1.9	< 1.3	< 1.2	< 1.5	< 1.2	< 1.3	NA	< 1.3	< 1.6 J	< 1.5	< 2.1	< 1.4	< 1.4	< 1.4	< 1.4
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7	< 2	< 1.8	< 1.7	< 2	< 1.7	< 1.7	NA	< 1.7	< 1.8 J	< 1.8	< 2.1	< 1.9	< 1.8	< 1.9	< 1.8
2,4-Dinitrophenol	51-28-5	µg/L	< 1.1	< 4.2	< 0.81	< 0.74	< 0.88	< 0.75	< 18	NA	< 18	< 6.5 J	< 1.2	< 4.4	< 0.84	< 0.82	< 0.85	< 0.82
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.54	< 0.45	< 0.24	< 0.22	< 0.26	< 0.22 J	< 0.47	NA	< 0.47	< 0.32 J	< 0.59	< 0.48	< 0.25	< 0.24	< 0.25	< 0.24 J
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.5	< 0.6	< 0.36	< 0.33	< 0.39	< 0.33	< 0.51	NA	< 0.51	< 0.26 J	< 0.54	< 0.64	< 0.37	< 0.36	< 0.37	< 0.36
2-Chloronaphthalene	91-58-7	µg/L	< 0.2	< 0.48	< 0.46	< 0.42	< 0.5	< 0.42	< 0.33	NA	< 0.33	< 0.34 J	< 0.22	< 0.51	< 0.47	< 0.46	< 0.48	< 0.46
2-Chlorophenol	95-57-8	µg/L	< 0.87	< 1.5	< 1.2	< 1.1	< 1.3	< 1.1	< 1.1	NA	< 1.1	< 1.3 J	< 0.95	< 1.5	< 1.2	< 1.2	< 1.2	< 1.2
2-Methylnaphthalene	91-57-6	µg/L	< 0.76	< 0.43	< 0.72	< 0.66	< 0.78	< 0.67	< 0.42	NA	< 0.43	< 0.29 J	< 0.83	< 0.46	< 0.75	< 0.73	< 0.76	< 0.73
2-Methylphenol	95-48-7	µg/L	< 1	< 1.4	< 1.2	< 1.1	< 1.3	< 1.1	< 1.1	NA	< 1.2	< 1.3 J	< 1.1	< 1.5	< 1.3	< 1.2	< 1.3	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 0.5	< 0.45	< 0.26	< 0.24	< 0.28	< 0.24	< 1.2	NA	< 1.2	< 0.32 J	< 0.54	< 0.47	< 0.27	< 0.26	< 0.27	< 0.26
2-Nitrophenol	88-75-5	µg/L	< 1.5	< 1.9	< 1.4	< 1.2	< 1.5	< 1.3	< 1.6	NA	< 1.7	< 1.9 J	< 1.6	< 2.1	< 1.4	< 1.4	< 1.4	< 1.4
3&4-Methylphenol	12-03-3	µg/L	< 1.1	< 1.5	< 1.1	< 1	< 1.2	< 1.1	< 1	NA	< 1.0	< 1.1 J	< 1.2	< 1.6	< 1.2	< 1.2	< 1.2	< 1.2
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.97	< 4.6	< 0.32	< 0.3	< 0.35	< 0.3	< 0.4	NA	< 0.40	< 0.56 J	< 1.1	< 4.8	< 0.34	< 0.33	< 0.34	< 0.33
3-Nitroaniline	99-09-2	µg/L	< 0.32	< 0.45	< 0.32	< 0.29	< 0.34	< 0.29	< 1.4	NA	< 1.4	< 0.26 J	< 0.35	< 0.48	< 0.33	< 0.32	< 0.33	< 0.32
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.2	< 1.2	< 0.56	< 0.51	< 0.61	< 0.52	< 1.1	NA	< 1.1	< 1.3 J	< 2.4	< 1.2	< 0.58	< 0.57	< 0.59	< 0.57
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.37	< 0.41	< 0.38	< 0.35	< 0.42	< 0.36	< 0.39	NA	< 0.40	< 0.25 J	< 0.41	< 0.44	< 0.4	< 0.39	< 0.4	< 0.39
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.2	< 2.3	< 1.2	< 1.1	< 1.3	< 1.1	< 2	NA	< 2.0	< 1.3 J	< 1.3	< 2.4	< 1.2	< 1.2	< 1.2	< 1.2
Semi-Volatile Organic Compounds																		

Location ID Sample ID Sample Date	CAS	Units	OB-02 OB-2(080428) 4/28/2008	OB-02 OB-2 (080917) 9/17/2008	OB-02 OB-2(063009) 6/30/2009	OB-02 OB-2(102009) 10/20/2009	OB-02 OB-2(052510) 5/25/2010	OB-02 OB-2(051611) 5/16/2011	OB-02 OB-2 (041912) 4/19/2012	OB-02 OB-2 6/19/2012	OB-02 OB-2 (111813) 11/18/2013	OB-02 OB-2(091514) 9/15/2014	OB-03 OB-3(080428) 4/28/2008	OB-03 OB-3(080909) 9/9/2008	OB-03 OB-3(063009) 6/30/2009	OB-03 OB-3(102009) 10/20/2009	OB-03 OB-3(052510) 5/25/2010	OB-03 OB-3(151711) 5/17/2011
4-Chloroaniline	106-47-8	µg/L	< 0.35	< 0.33	< 0.28	< 0.25	< 0.3	< 0.26	< 0.58	NA	< 0.59	< 0.30 J	< 0.38	< 0.36	< 0.29	< 0.28	< 0.29	< 0.28
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.29	< 0.45	< 0.39	< 0.35	< 0.42	< 0.36	< 0.34	NA	< 0.35	< 0.38 J	< 0.32	< 0.48	< 0.4	< 0.39	< 0.41	< 0.39
4-Nitroaniline	100-01-6	µg/L	< 0.59	< 0.45	< 0.2	< 0.18	< 0.21	< 0.18	< 1.8	NA	< 1.8	< 0.30 J	< 0.64	< 0.48	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitrophenol	100-02-7	µg/L	< 1.6	< 2.3	< 0.91	< 0.83	< 0.99	< 0.84	< 5.7	NA	< 5.8	< 0.91 J	< 1.7	< 2.4	< 0.94	< 0.92	< 0.95	< 0.92
Acenaphthene	83-32-9	µg/L	< 0.016	< 0.016	< 0.017	< 0.029	< 0.035	< 0.014	< 0.015	NA	< 0.023	< 0.020 J	< 0.017	< 0.016	< 0.018	< 0.032	< 0.033	< 0.015
Acenaphthylene	208-96-8	µg/L	< 0.007	< 0.007	< 0.0076	< 0.039	< 0.047	< 0.016	< 0.018	NA	< 0.026	< 0.024 J	< 0.0076	< 0.007	< 0.0078	< 0.044	< 0.045	< 0.018
Acetophenone	98-86-2	µg/L	< 0.36	< 0.47	< 0.44	< 0.4	< 0.48	< 0.41	< 0.31	NA	< 0.32	< 0.36 J	< 0.39	< 0.5	< 0.45	< 0.44	< 0.46	< 0.44
Anthracene	120-12-7	µg/L	< 0.021	< 0.021	< 0.023	< 0.026	< 0.03	< 0.01	< 0.011	NA	< 0.023	< 0.020 J	< 0.023	< 0.021	< 0.023	< 0.028	< 0.029	< 0.011
Atrazine	1912-24-9	µg/L	< 0.28	< 0.62	< 0.43	< 0.39	< 0.47	< 0.4	< 0.54	NA	< 0.54	< 0.42 J	< 0.31	< 0.66	< 0.44	< 0.43	< 0.45	< 0.43
Benzaldehyde	100-52-7	µg/L	< 0.76	NA	< 0.44	< 0.4	< 0.48	< 0.41	< 3.6	NA	< 3.6	< 0.67 J	< 0.83	< 1.7	< 0.46	< 0.45	< 0.46	< 0.45
Benzo(a)anthracene	56-55-3	µg/L	< 0.034	< 0.034	< 0.037	< 0.024	< 0.028	< 0.015	< 0.017	NA	< 0.013	< 0.012 J	< 0.037	< 0.034	< 0.037	< 0.026	< 0.027	< 0.017
Benzo(a)pyrene	50-32-8	µg/L	< 0.036	< 0.036	< 0.039	< 0.031	< 0.037	< 0.005	< 0.0054	NA	< 0.014	< 0.012 J	< 0.039	< 0.036	< 0.039	< 0.034	< 0.035	< 0.0054
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.017	< 0.017	< 0.018	< 0.036	< 0.043	< 0.017	< 0.018	NA	< 0.011	< 0.010 J	< 0.018	< 0.017	< 0.019	< 0.04	< 0.041	< 0.018
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.012	< 0.012	< 0.013	< 0.029	< 0.034	< 0.011	< 0.011	NA	< 0.017	< 0.016 J	< 0.013	< 0.012	< 0.013	< 0.032	< 0.033	< 0.011
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.019	< 0.019	< 0.02	< 0.028	< 0.034	< 0.013	< 0.014	NA	< 0.016	< 0.015 J	< 0.02	< 0.019	< 0.021	< 0.031	< 0.032	< 0.014
Benzyl butyl phthalate	85-68-7	µg/L	< 0.64	< 0.42	< 0.28	< 0.25	< 0.3	< 0.26	< 0.32	NA	< 0.32	< 0.22 J	< 0.69	< 0.44	< 0.29	< 0.28	< 0.29	< 0.28
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.32	< 0.52	< 0.27	< 0.25	< 0.3	< 0.25	< 0.34	NA	< 0.34	< 0.42 J	< 0.35	< 0.55	< 0.28	< 0.28	< 0.29	< 0.28
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.67	< 0.49	< 0.34	< 0.31	< 0.37	< 0.32	< 0.34	NA	< 0.34	< 0.43 J	< 0.73	< 0.52	< 0.35	< 0.34	< 0.36	< 0.34
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.58	< 0.54	< 0.43	< 0.39	< 0.46	< 0.4	< 0.5	NA	< 0.50	< 0.41 J	< 0.63	< 0.58	< 0.44	< 0.43	< 0.45	< 0.43
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.88	< 0.75	< 0.36	< 0.33	< 0.39	< 0.33	< 0.64	NA	< 0.65	< 3.2 BJ	< 0.95	< 0.8	< 0.37	< 0.36	< 0.38	< 0.36
Caprolactam	105-60-2	µg/L	< 0.49	< 0.63	< 0.21	< 0.2	< 0.23	< 0.2	< 0.76	NA	< 0.77	< 0.41 J	< 0.53	< 0.67	< 0.22	< 0.22	< 0.22	< 0.22
Carbazole	86-74-8	µg/L	< 0.4	< 0.45	< 0.18	< 0.17	< 0.2	< 0.17	< 0.4	NA	< 0.40	< 0.17 J	< 0.43	< 0.48	< 0.19	< 0.18	< 0.19	< 0.18
Chrysene	218-01-9	µg/L	< 0.018	< 0.018	< 0.019	< 0.022	< 0.026	< 0.024	< 0.025	NA	< 0.013	< 0.012 J	< 0.019	< 0.018	< 0.02	< 0.024	< 0.025	< 0.026
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.02	< 0.02	< 0.022	< 0.023	< 0.027	< 0.023	< 0.025	NA	< 0.018	< 0.017 J	< 0.022	< 0.02	< 0.022	< 0.025	< 0.026	< 0.025
Dibenzofuran	132-64-9	µg/L	< 0.23	< 0.49	< 0.33	< 0.3	< 0.36	< 0.31	< 0.29	NA	< 0.29	< 0.23 J	< 0.25	< 0.52	< 0.35	< 0.34	< 0.35	< 0.34
Diethyl phthalate	84-66-2	µg/L	< 0.34	< 0.36	< 0.18	< 0.17	< 0.2	< 0.17	< 0.36	NA	< 0.36	< 0.23 J	< 0.37	< 0.38	< 0.19	< 0.18	< 0.19	< 0.18
Dimethyl phthalate	131-11-3	µg/L	< 0.34	< 0.36	< 0.25	< 0.23	< 0.27	< 0.23	< 0.31	NA	< 0.31	< 0.26 J	< 0.37	< 0.38	< 0.26	< 0.25	< 0.26	< 0.25
di-n-butyl phthalate	84-74-2	µg/L	< 0.4	< 0.5	< 0.21	< 0.19	< 0.23	< 0.19	< 0.61	NA	< 0.62	< 0.58 J	< 0.43	< 0.53	< 0.22	< 0.21	< 0.22	< 0.21
di-n-octylphthalate	117-84-0	µg/L	< 0.48	< 0.5	< 0.43	< 0.4	< 0.47	< 0.4	< 0.34	NA	< 0.34	< 0.25 J	< 0.52	< 0.53	< 0.45	< 0.44	< 0.45	< 0.44
Fluoranthene	206-44-0	µg/L	< 0.0096	< 0.0096	< 0.01	< 0.024	< 0.029	< 0.0098	< 0.011	NA	< 0.015	< 0.013 J	< 0.01	< 0.0096	< 0.011	< 0.027	< 0.028	< 0.011
Fluorene	86-73-7	µg/L	< 0.02	< 0.02	< 0.021	< 0.027	< 0.032	< 0.015	< 0.016	NA	< 0.019	< 0.017 J	< 0.021	< 0.02	< 0.022	< 0.03	< 0.031	< 0.017
Hexachlorobenzene	118-74-1	µg/L	< 0.0099	< 0.0099	< 0.011	< 0.0099	< 0.012	< 0.0082	< 0.0088	NA	< 0.018	< 0.017 J	< 0.011	< 0.0099	< 0.011	< 0.011	< 0.011	< 0.0089
Hexachlorobutadiene	87-68-3	µg/L	< 0.13	< 0.38	< 0.41	< 0.37	< 0.15	< 0.13	< 0.56	NA	< 0.57	< 0.39 J	< 0.14	< 0.4	< 0.42	< 0.41	< 0.15	< 0.14
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.1	< 4.5	< 0.74	< 0.67	< 0.29	< 0.25	< 7.8	NA	< 7.9	< 0.48 J	< 0.11	< 4.8	< 0.76	< 0.75	< 0.28	< 0.27
Hexachloroethane	67-72-1	µg/L	< 0.16	< 0.3	< 0.29	< 0.26	< 0.25	< 0.21	< 0.6	NA	< 0.61	< 0.29 J	< 0.18	< 0.32	< 0.3	< 0.29	< 0.24	< 0.23
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.014	< 0.014	< 0.016	< 0.029	< 0.035	< 0.011	< 0.012	NA	< 0.016	< 0.014 J	< 0.016	< 0.014	< 0.016	< 0.032	< 0.034	< 0.012
Isophorone	78-59-1	µg/L	< 0.49	< 0.69	< 0.27	< 0.25	< 0.3	< 0.25	< 0.3	NA	< 0.30	< 0.34 J	< 0.53	< 0.74	< 0.28	< 0.28	< 0.29	< 0.28
Naphthalene	91-20-3	µg/L	< 0.014	< 0.014	< 0.015	< 0.019	< 0.022	< 0.017	< 0.018	NA	< 0.039	< 0.036 J	< 0.015	< 0.014	< 0.015	< 0.021	< 0.021	< 0.018
Nitrobenzene	98-95-3	µg/L	< 0.71	< 0.66	< 0.28	< 0.25	< 0.3	< 0.26	< 0.46	NA	< 0.47	< 0.52 J	< 0.77	< 0.7	< 0.29	< 0.28	< 0.29	< 0.28
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.38	< 0.39	< 0.48	< 0.44	< 0.52	< 0.45	< 0.33	NA	< 0.34	< 0.38 J	< 0.42	< 0.42	< 0.5	< 0.49	< 0.5	< 0.49
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.41	< 0.61	< 0.24	< 0.22	< 0.26	< 0.22	< 0.34	NA	< 0.34	< 0.21 J	< 0.45	< 0.65	< 0.24	< 0.24	< 0.25	< 0.24
Pentachlorophenol	87-86-5	µg/L	< 0.22	< 0.22	< 0.24	< 0.22	< 0.081	< 0.29	< 0.11 J	NA	< 0.11	< 0.10 J	< 0.24	< 0.22	< 0.25	< 0.25	< 0.078	< 0.32
Phenanthrene	85-01-8	µg/L	< 0.017	< 0.017	< 0.018	< 0.036	< 0.043	< 0.016	< 0.017	NA	< 0.023	< 0.021 J	< 0.018	< 0.017	< 0.019	< 0.04	< 0.041	< 0.017
Phenol	108-95-2	µg/L	< 0.68	< 1.4	< 0.63	< 0.58	< 0.69	< 0.59	< 1.4	NA	< 1.4	< 0.55 J	< 0.74	< 1.4	< 0.66	< 0.64	< 0.66	< 0.64
Pyrene	129-00-0	µg/L	< 0.012	< 0.012	< 0.013	< 0.022	< 0.026	< 0.0083	< 0.0089	NA	< 0.017	< 0.015 J	< 0.013	< 0.012	< 0.013	< 0.025	< 0.025	< 0.009
Metals - Total																		
Aluminum, total	7429-90-5	µg/L	< 24	32.1 B	< 26	< 26	< 200	< 200	70.1 J	NA	68.8 B	43.8 J	< 24	< 200	< 26	< 26	< 200	< 200
Antimony, total	7440-36-0	µg/L	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3	< 6	NA	< 1.8	< 2.6	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3
Arsenic, total	7440-38-2	µg/L	< 1.7	< 1.7	< 2.4	< 2.4	< 1.4	< 0.92	< 0.97	NA	< 1.5	< 2.6	< 1.7	< 1.7	< 2.4	< 2.4	< 1.4	< 0.92
Barium, total	7440-39-3	µg/L	4.5 B	7.2 BJ	5.4 BJ	5.7 B	3.8 BJ	4.2 B	5.6 J	NA	7.1 B	6.4 B	2.2 B	5.5 B	< 200	4.5 B	< 200 J	2.5 B
Beryllium, total	7440-41-7	µg/L	< 0.15	< 0.15	< 1	< 0.4	< 0.24	< 0.24	< 0.44	NA	< 0.17	< 0.40	< 0.15	< 0.15	< 1	< 0.4	< 0.24	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.28	< 0.28	< 0.4	< 0.4	< 0.35	< 0.17	< 0.24	NA	< 0.24	< 0.70	< 0.28	< 0.28	< 0.4	< 0.4	< 0.35	< 0.17
Calcium, total	7440-70-2	µg/L	10000	10800	11900	13600	8920	10600	15900	13800	23000	19300	7290	29700	14100	16100	13500	19400
Chromium, total	7440-47-3	µg/L	0.8 B	0.7 B	< 10	< 0.9	< 0.59	2.6 J	< 0.91	NA	< 0.92	< 0.89	< 0.53	< 0.53	< 10	< 0.9	< 0.59	< 0.9
Cobalt, total	7440-48-4	µg/L	< 0.51	< 0.51	< 0.4	< 1.6	< 0.65	< 0.3	< 0.59	NA	< 0.48	< 0.83	< 0.51	< 0.51	< 0.4	< 1.6	< 0.65	< 0.3
Copper, total	7440-50-8	µg/L	< 2.5 B	2.2 B	< 10	< 1.6	< 2.5	< 0.85	4.1 J	NA	4.4 B	2.6 J	< 2.5 B	< 10	< 1.6	< 1.6	< 2.5	< 0.85
Iron, total	7439-89-6	µg/L	38.6 B	52.6 B	< 100	32.4 B	< 100	38.6 J	261	141 J	120	61.3 B	1710	590	1390	2550	2080	3090
Lead, total	7439-92-1	µg/L	1.8 B	< 1.4	< 1.7	< 1.7	< 1.9	1.3 B	< 1.7	NA	2.6 B	< 1.3	< 1.4	< 1.4	< 1.7	< 1.7	< 1.9	< 0.94
Magnesium, total	7439-95-4	µg/L	3740 B	3860 B	4170 B	4740 B	3220 B	3640 B	5270	4890 B	7510	6010	2330 B	8580	3850 B	4750 B	3920 B	5260
Manganese, total	7439-96-5	µg/L	1.3 B	2.2 B	< 15	0.7 B	2.7 BJ	< 15 J	7.6 J	< 15	4.0 B	3.1 B	10.2 B	< 15	35.2	1010	34.2 J	20.3 J
Mercury, total	7439-97-6	µg/L	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	< 0.088	< 0.075	NA	< 0.089	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	< 0.088
Nickel, total	7440-02-0	µg/L	< 1.2	< 1.2	< 0.6	< 0.6	< 10	1 J	< 0.94	NA	< 1.6	< 0.75	< 1.2	< 1.2	< 0.6	2.4 B	< 0.51	< 10
Potassium, total	7440-09-7	µg/L	1140 B	1520 B	1580 B	1660 B	1150 BJ	1210 B	1510 B	1420 J	1840 B	1510 B	668 B	1450 B	978 B	1160 B	910 BJ	911 B
Selenium, total	7782-49-2	µg/L	< 1.6	< 1.6	< 3.7	< 3.7	< 1.9	< 1.5	< 2.4	NA	< 2.4	< 3.6	< 1.6	< 1.6	< 3.7	< 3.7	< 1.9	< 1.5
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	4110 B	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1	< 1	< 1	< 1	< 0.53	< 0.72	< 0.85	NA	< 1.5	< 1.2	< 1	< 1	< 1	< 1	< 0.53	< 0.72
Sodium, total	7440-23-5	µg/L	3310 B	3540 BJ	3320 B	4110 B	3270 BJ	3080 B	3880 B	3430 B	4790 B	4210 B	2500 B	4330 B	3490 B	3760 B	3060 BJ	3380 B
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	NA	< 1.3	< 1.8	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17
Vanadium, total	7440-62-2	µg/L	< 0.43	0.9 B	< 0.9	< 0.9	< 0.56	< 0.43	< 0.77	NA	< 0.72	< 0.87	< 0.43	< 0.43	< 0.9	< 0.9	< 0.56	< 0.43
Zinc, total	7440-66-6	µg/L	5.6 B	< 4	< 2.9	3.3 B	< 20	< 20	3.4 J	NA	< 4.4	< 7.6	< 4	< 4	< 2.9	< 2.9	< 20	< 20
Other																		
Cyanide, total	57-12-5	µg/L	< 10	< 10	NA	NA	NA	NA	NA	NA	NA	NA	< 10	< 10	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID			OB-03	OB-03	OB-03	OB-04	OB-04	OB-04	OB-04	OB-04	OB-04	OB-04	OB-04	OB-04	OB-05	OB-05	OB-05
Sample ID			OB-3(042312)	OB-3 (111513)	OB-3(090814) & DUP	OB-4(080428)	OB-4(080910)	OB-4(070109)	OB-4(102109)	OB-4(052610)	OB-4(051711)	OB-4 (042712)	OB-4 (111313)	OB-4(091514)	OB-5(080428)	OB-5(080909)	OB-5(070109)
Sample Date	CAS	Units	4/23/2012	11/15/2013	9/8/2014	4/28/2008	9/10/2008	7/1/2009	10/21/2009	5/26/2010	5/17/2011	4/27/2012	11/13/2013	9/15/2014	4/28/2008	9/9/2008	7/1/2009
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24 [< 0.24]	< 0.25 J	< 0.32 [< 0.32]	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.24	< 0.24	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.2 J [< 0.2]	< 0.20 J	< 0.39 [< 0.39]	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2 J	< 0.20	< 0.39	< 0.13	< 0.13	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23 [< 0.23]	< 0.21 J	< 0.28 [< 0.28]	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.17	< 0.17	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.19 [< 0.19]	< 0.26 J	< 0.35 [< 0.35]	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29	< 0.16	< 0.19	< 0.26	< 0.35	< 0.16	< 0.24	< 0.29
1,1-Dichloroethene	75-35-4	µg/L	< 0.28 [< 0.28]	< 0.34 J	< 0.50 [< 0.50]	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.29	< 0.29	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.15 [< 0.15]	< 0.22 J	< 0.22 [< 0.22]	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 1.3	< 1.3	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3* J [< 1.3*]	< 1.3 J	< 1.2 [< 1.2]	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3* J	< 1.3	< 1.2	< 2.4	< 1.3	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.21* J [< 0.21*]	< 0.16 J	< 0.23 [< 0.23]	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21* J	< 0.16	< 0.23	< 0.17	< 0.18	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18 [< 0.18]	< 0.20 J	< 0.16 [< 0.16]	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.18	< 0.18	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.18 [< 0.18]	< 0.22 J	< 0.30 [< 0.30]	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.35	< 0.35	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.22 [< 0.22]	< 0.28 J	< 0.43 [< 0.43]	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.18	< 0.18	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.29 [< 0.29]	< 0.31 J	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.26 [< 0.26]	< 0.30 J	< 0.24 [< 0.24]	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.32	< 0.22	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 2.9 J [< 2.9]	< 3.2 J	< 2.5 [< 2.5]	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9 J	< 3.2	< 2.5	< 2.3	< 2.3	< 1.6
2-Hexanone	591-78-6	µg/L	< 3 J [< 3]	< 1.7 J	< 1.7 [< 1.7]	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9	< 3 J	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.2 J [< 1.2]	< 1.5 J	< 1.1 [< 1.1]	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2 J	< 1.5	< 1.1	< 1.9	< 1.3	< 0.86
Acetone	67-64-1	µg/L	< 5 J [< 5]	< 3.3 J	< 2.6 [< 2.6]	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4	< 5 J	< 3.3	< 2.6	< 2.1	< 2.1	< 2.9
Benzene	71-43-2	µg/L	< 0.22 [< 0.22]	< 0.28 J	< 0.21 [< 0.21]	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21	< 0.26	< 0.26	< 0.23
Bromodichloromethane	75-27-4	µg/L	< 0.23 [< 0.23]	< 0.21 J	< 0.28 [< 0.28]	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.14	< 0.14	< 0.22
Bromoform	75-25-2	µg/L	< 0.24 J [< 0.24]	< 0.30 J	< 0.31 [< 0.31]	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.18	< 0.18	< 0.23
Bromomethane	74-83-9	µg/L	< 0.31 [< 0.31]	< 0.56 J	< 0.39 [< 0.39]	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.24	< 0.31 J	< 0.56	< 0.39	< 0.32	< 0.32	< 0.3
Carbon disulfide	75-15-0	µg/L	< 0.18 [< 0.18]	< 0.18 J	< 0.50 [< 0.50]	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.15	< 0.16	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.19 [< 0.19]	< 0.23 J	< 0.24 [< 0.24]	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24	< 0.18	< 0.18	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.22 [< 0.22]	< 0.35 J	< 0.27 [< 0.27]	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27	< 0.14	< 0.19	< 0.39
Chloroethane	75-00-3	µg/L	< 0.37 [< 0.37]	< 0.39 J	< 0.56 [< 0.56]	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.25	< 0.37 J	< 0.39	< 0.56	< 0.22	< 0.22	< 0.37
Chloroform	67-66-3	µg/L	< 0.21 [< 0.21]	< 0.25 J	< 0.20 [< 0.20]	< 0.16	< 0.16	0.4 J	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	< 0.16	< 0.16	< 0.23
Chloromethane	74-87-3	µg/L	< 0.22 [< 0.22]	< 0.36 J	< 0.33 [< 0.33]	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22 [< 0.22]	< 0.24 J	< 0.33 [< 0.33]	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.19	< 0.25	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.22 [< 0.22]	< 0.15 J	< 0.28 [< 0.28]	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.15	< 0.18	< 0.25
Cyclohexane	110-82-7	µg/L	< 0.29 [< 0.29]	< 0.18 J	< 0.37 [< 0.37]	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37	< 0.85	< 0.85	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.2 [< 0.2]	< 0.19 J	< 0.25 [< 0.25]	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.12	< 0.16	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.31 [< 0.31]	< 0.63 J	< 0.73 [< 0.73]	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73	< 0.88	< 0.88	< 0.92
Ethylbenzene	100-41-4	µg/L	< 0.21 [< 0.21]	< 0.21 J	< 0.40 [< 0.40]	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27
Isopropylbenzene	98-82-8	µg/L	< 0.19 [< 0.19]	< 0.22 J	< 0.26 [< 0.26]	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26	< 0.15	< 0.19	< 0.57
Methyl acetate	79-20-9	µg/L	< 2.9 [< 2.9]	< 1.5 J	< 3.1 [< 3.1]	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9 J	< 1.5	< 3.1	< 2.5	< 1.7	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.18 [< 0.18]	< 0.29 J	< 0.26 [< 0.26]	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26	3.2	3.9	2.4
Methylcyclohexane	108-87-2	µg/L	< 0.18 [< 0.18]	< 0.15 J	< 0.22 [< 0.22]	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22	< 0.11	< 0.11	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.2 [< 0.2]	< 0.86 J	< 0.81 [< 0.81]	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.16	< 0.16	< 0.3
o-Xylene	95-47-6	µg/L	NA	< 0.30 J	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.25
Styrene	100-42-5	µg/L	< 0.23 [< 0.23]	NA	< 0.26 [< 0.26]	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.17	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	< 0.25 J	NA	NA	NA	NA	NA	NA	NA	NA	R	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.32 [< 0.32]	< 0.44 J	< 0.35 [< 0.35]	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.29	< 0.29	< 0.27
Toluene	108-88-3	µg/L	< 0.15 [< 0.15]	< 0.38 J	< 0.22 [< 0.22]	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22	< 0.15	< 0.15	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.31 [< 0.31]	< 0.21 J	< 0.51 [< 0.51]	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.16	< 0.16	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19 [< 0.19]	< 0.50 J	< 0.32 [< 0.32]	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.11	< 0.15	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.21 [< 0.21]	< 0.33 J	< 0.25 [< 0.25]	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.18	< 0.18	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.35 [< 0.35]	< 0.41 J	< 0.28 [< 0.28]	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.25	< 0.25	< 0.54
Vinyl Chloride	75-01-4	µg/L	< 0.27 [< 0.27]	NA	< 0.17 [< 0.17]	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21	< 0.44
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25
Xylenes	1330-20-7	µg/L	< 0.17 [< 0.17]	< 0.19 J	< 0.20 [< 0.20]	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20	< 0.39	< 0.39	< 0.25
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 0.34 [< 0.34]	< 0.33	< 0.28 [< 0.28 J]	< 0.22	< 0.6	< 0.46	< 0.47	< 0.53	< 0.47	< 0.32	< 0.31	< 0.28 J	< 0.25	< 0.56	< 0.43
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.8 [< 1.8]	< 1.7	< 1.7 [< 1.8 J]	< 1.1	< 2.2	< 1.4	< 1.5	< 1.7	< 1.5	< 1.7	< 1.6	< 1.8 J	< 1.3	< 2	< 1.4
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4 [< 1.4]	< 1.4	< 1.6 [< 1.6 J]	< 1	< 1.7	< 1.3	< 1.4	< 1.5	< 1.4	< 1.4	< 1.3	< 1.6 J	< 1.2	< 1.6	< 1.3
2,4-Dichlorophenol	120-83-2	µg/L	< 1.3 [< 1.3]	< 1.3	< 1.6 [< 1.7 J]	< 1.4	< 2.1	< 1.3	< 1.4	< 1.5	< 1.4	< 1.2	< 1.2	< 1.7 J	< 1.6	< 2	< 1.3
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7 [< 1.7]	< 1.7	< 1.9 [< 1.9 J]	< 1.7	< 2.2	< 1.8	< 1.8	< 2.1	< 1.8	< 1.6	< 1.6	< 1.9 J	< 1.9	< 2	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	< 19 [< 19]	< 18	< 6.6 [< 6.7 J]	< 1.1	< 4.6	< 0.8	< 0.82	< 0.92	< 0.82	< 18	< 17	< 6.7 J	< 1.3	< 4.3	< 0.76
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.48 [< 0.48]	< 0.47	< 0.32 [< 0.33 J]	< 0.54	< 0.5	< 0.24	< 0.24	< 0.28	< 0.24 J	< 0.45	< 0.43	< 0.33 J	< 0.63	< 0.46	< 0.23
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.52 [< 0.52]	< 0.51	< 0.26 [< 0.26 J]	< 0.5	< 0.66	< 0.35	< 0.36	< 0.41	< 0.36	< 0.49	< 0.47	< 0.26 J	< 0.58	< 0.61	< 0.34
2-Chloronaphthalene	91-58-7	µg/L	< 0.33 [< 0.33]	< 0.33	< 0.35 [< 0.35 J]	< 0.2	< 0.53	< 0.45	< 0.46	< 0.52	< 0.46	< 0.32	< 0.30	< 0.35 J	< 0.23	< 0.49	< 0.43
2-Chlorophenol	95-57-8	µg/L	< 1.1 [< 1.1]	< 1.1	< 1.3 [< 1.3 J]	< 0.87	< 1.6	< 1.2	< 1.2	< 1.3	< 1.2	< 1	< 0.99	< 1.3 J	< 1	< 1.5	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	< 0.43 [< 0.43]	< 0.42	< 0.29 [< 0.30 J]	< 0.76	< 0.48	< 0.72	< 0.73	< 0.82	< 0.73	< 0.41	< 0.39	< 0.30 J	< 0.88	< 0.44	< 0.68
2-Methylphenol	95-48-7	µg/L	< 1.2 [< 1.2]	< 1.1	< 1.3 [< 1.3 J]	< 1	< 1.5	< 1.2	< 1.2	< 1.4	< 1.2	< 1.1	< 1.1	< 1.3 J	< 1.2	< 1.4	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 1.2 [< 1.2]	< 1.2	< 0.32 [< 0.33 J]	< 0.5	< 0.49	< 0.26	< 0.26	< 0.29	< 0.26	< 1.2	< 1.1	< 0.32 J	< 0.57	< 0.45	< 0.24
2-Nitrophenol	88-75-5	µg/L	< 1.7 [< 1.7]	< 1.6	< 1.9 [< 1.9 J]	< 1.5	< 2.1	< 1.3	< 1.4	< 1.6	< 1.4	< 1.6	< 1.5	< 1.9 J	< 1.7	< 2	< 1.3
3&4-Methylphenol	12-03-3	µg/L	< 1 [< 1]	< 1.0	< 1.1 [< 1.1 J]	< 1.1	< 1.6	< 1.1	< 1.2	< 1.3	< 1.2	< 0.98	< 0.94	< 1.1 J	< 1.3	< 1.5	< 1.1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.4 [< 0.4]	< 0.40	< 0.57 [< 0.58 J]	< 0.97	< 5	< 0.32	< 0.33	< 0.37	< 0.33	< 0.38	< 0.37	< 0.58 J	< 1.1	< 4.6	< 0.3
3-Nitroaniline	99-09-2	µg/L	< 1.4 [< 1.4]	< 1.4	< 0.26 [< 0.27 J]	< 0.32	< 0.49	< 0.31	< 0.32	< 0.36	< 0.32	< 1.3	< 1.3 J	< 0.27 J	< 0.37	< 0.46	< 0.3
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.1 [< 1.1]	< 1.1	< 1.3 [< 1.4 J]	< 2.2	< 1.3	< 0.56	< 0.57	< 0.64	< 0.57	< 1.1	< 1.0	< 1.4 J	< 2.6	< 1.2	< 0.53
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.4 [< 0.4]	< 0.39	< 0.25 [< 0.26 J]	< 0.37	< 0.45	< 0.38	< 0.39	< 0.44	< 0.39	< 0.38	< 0.36	< 0.25 J	< 0.43	< 0.42	< 0.36
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 2 [< 2]	< 2.0	< 1.3 [< 1.3 J]	< 1.2	< 2.5	< 1.1	< 1.2	< 1.3	< 1.2	< 1.9	< 1.9	< 1.3 J	< 1.4	< 2.3	< 1.1
Semi-Volatile Organic Compounds																	

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID			OB-03	OB-03	OB-03	OB-04	OB-04	OB-04	OB-04	OB-04	OB-04	OB-04	OB-04	OB-04	OB-05	OB-05	OB-05
Sample ID			OB-3(042312)	OB-3 (111513)	OB-3(090814) & DUP	OB-4(080428)	OB-4(080910)	OB-4(070109)	OB-4(102109)	OB-4(052610)	OB-4(051711)	OB-4 (042712)	OB-4 (111313)	OB-4(091514)	OB-5(080428)	OB-5(080909)	OB-5(070109)
Sample Date	CAS	Units	4/23/2012	11/15/2013	9/8/2014	4/28/2008	9/10/2008	7/1/2009	10/21/2009	5/26/2010	5/17/2011	4/27/2012	11/13/2013	9/15/2014	4/28/2008	9/9/2008	7/1/2009
4-Chloroaniline	106-47-8	µg/L	< 0.59 [< 0.59]	< 0.58	< 0.30 [< 0.31 J]	< 0.35	< 0.37	< 0.28	< 0.28	< 0.32	< 0.28	< 0.56	< 0.54 J	< 0.31 J	< 0.4	< 0.34	< 0.26
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.35 [< 0.35]	< 0.34	< 0.38 [< 0.39 J]	< 0.29	< 0.5	< 0.38	< 0.39	< 0.44	< 0.39	< 0.33	< 0.32	< 0.39 J	< 0.33	< 0.46	< 0.36
4-Nitroaniline	100-01-6	µg/L	< 1.9 [< 1.9]	< 1.8	< 0.30 [< 0.31 J]	< 0.59	< 0.5	< 0.19	< 0.2	< 0.22	< 0.2	< 1.8	< 1.7	< 0.31 J	< 0.68	< 0.46	< 0.18
4-Nitrophenol	100-02-7	µg/L	< 5.8 [< 5.8]	< 5.7	< 0.92 [< 0.94 J]	< 1.6	< 2.5	< 0.9	< 0.92	< 1	< 0.92	< 5.5	< 5.3	< 0.93 J	< 1.8	< 2.3	< 0.85
Acenaphthene	83-32-9	µg/L	< 0.015 [< 0.015]	< 0.022	< 0.021 [< 0.021 J]	< 0.016	< 0.018	< 0.017	< 0.032	< 0.036	< 0.015	< 0.015	< 0.021 J	< 0.021 J	< 0.018	< 0.016	< 0.016
Acenaphthylene	208-96-8	µg/L	< 0.018 [< 0.018]	< 0.026	< 0.024 [< 0.024 J]	< 0.007	< 0.0077	< 0.0076	< 0.044	< 0.049	< 0.018	< 0.017	< 0.024 J	< 0.024 J	< 0.008	< 0.007	< 0.0072
Acetophenone	98-86-2	µg/L	< 0.32 [< 0.32]	< 0.31	< 0.37 [< 0.38 J]	< 0.36	< 0.51	< 0.43	< 0.44	< 0.5	< 0.44	< 0.3	< 0.29	< 0.37 J	< 0.41	< 0.48	< 0.41
Anthracene	120-12-7	µg/L	< 0.011 [< 0.011]	< 0.022	< 0.021 [< 0.021 J]	< 0.021	< 0.023	< 0.023	< 0.028	< 0.032	< 0.011	< 0.011	< 0.021 J	< 0.021 J	< 0.024	< 0.021	< 0.022
Atrazine	1912-24-9	µg/L	< 0.55 [< 0.55]	< 0.54	< 0.43 [< 0.44 J]	< 0.28	< 0.68	< 0.43	< 0.43	< 0.49	< 0.43	< 0.52	< 0.50	< 0.43 J	< 0.33	< 0.63	< 0.4
Benzaldehyde	100-52-7	µg/L	< 3.7 [< 3.7]	< 3.6	< 0.68 [< 0.69 J]	< 0.76	< 1.8	< 0.44	< 0.45	< 0.51	< 0.45	< 3.5	< 3.3	< 0.69 J	< 0.87	< 1.6	< 0.42
Benzo(a)anthracene	56-55-3	µg/L	< 0.017 [< 0.017]	< 0.013	< 0.012 [< 0.012 J]	< 0.034	< 0.037	< 0.037	< 0.026	< 0.03	< 0.017	< 0.016	< 0.012	< 0.012 J	< 0.039	< 0.034	< 0.035
Benzo(a)pyrene	50-32-8	µg/L	< 0.0054 [< 0.0055]	< 0.014	< 0.012 [< 0.013 J]	< 0.036	< 0.039	< 0.039	< 0.034	< 0.039	< 0.0054	< 0.0052	< 0.013	< 0.013 J	< 0.041	< 0.036	< 0.037
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.018 [< 0.018]	< 0.011	< 0.010 [< 0.010 J]	< 0.017	< 0.019	< 0.018	< 0.04	< 0.045	< 0.018	< 0.017	< 0.010	< 0.010 J	< 0.02	< 0.017	< 0.018
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.011 [< 0.012]	< 0.017	< 0.016 [< 0.016 J]	< 0.012	< 0.013	< 0.013	< 0.032	< 0.036	< 0.011	< 0.011	< 0.016	< 0.016 J	< 0.013	< 0.012	< 0.012
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.014 [< 0.014]	< 0.016	< 0.015 [< 0.015 J]	< 0.019	< 0.021	< 0.02	< 0.031	< 0.035	< 0.014	< 0.013	< 0.015	< 0.015 J	< 0.022	< 0.019	< 0.019
Benzyl butyl phthalate	85-68-7	µg/L	< 0.32 [< 0.32]	< 0.32	< 0.22 [< 0.23 J]	< 0.64	< 0.46	< 0.27	< 0.28	< 0.31	< 0.28	< 0.31	< 0.29	< 0.23 J	< 0.73	< 0.43	< 0.26
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.34 [< 0.34]	< 0.34	< 0.42 [< 0.43 J]	< 0.32	< 0.57	< 0.27	< 0.28	< 0.31	< 0.28	< 0.33	< 0.31	< 0.43 J	< 0.37	< 0.53	< 0.26
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.35 [< 0.35]	< 0.34	< 0.44 [< 0.45 J]	< 0.67	< 0.54	< 0.34	< 0.34	< 0.39	< 0.34	< 0.33	< 0.31	< 0.45 J	< 0.77	< 0.5	< 0.32
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.51 [< 0.51]	< 0.50	< 0.41 [< 0.42 J]	< 0.58	< 0.6	< 0.42	< 0.43	< 0.49	< 0.43	< 0.48	< 0.46	< 0.42 J	< 0.66	< 0.56	< 0.4
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.66 [< 0.66]	< 0.64	< 0.56 [< 2.8 BJ]	< 0.88	< 0.82	< 0.36	< 2.2	< 0.41	< 0.36	< 0.62	< 0.60	< 6.7 BJ	< 1	< 0.77	< 0.34
Caprolactam	105-60-2	µg/L	< 0.77 [< 0.77]	< 0.76	< 0.41 [< 0.42 J]	< 0.49	< 0.69	< 0.21	< 0.22	< 0.24	< 0.22	< 0.73	< 0.70	< 0.42 J	< 0.57	< 0.64	< 0.2
Carbazole	86-74-8	µg/L	< 0.4 [< 0.4]	< 0.40	< 0.17 [< 0.17 J]	< 0.4	< 0.49	< 0.18	< 0.18	< 0.21	< 0.18	< 0.38	< 0.37	< 0.17 J	< 0.46	< 0.46	< 0.17
Chrysene	218-01-9	µg/L	< 0.026 [< 0.026]	< 0.013	< 0.012 [< 0.012 J]	< 0.018	< 0.019	< 0.019	< 0.024	< 0.028	< 0.026	< 0.025	< 0.012	< 0.012 J	< 0.02	< 0.018	< 0.018
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.025 [< 0.025]	< 0.018	< 0.017 [< 0.017 J]	< 0.02	< 0.022	< 0.022	< 0.025	< 0.028	< 0.025	< 0.024	< 0.017	< 0.017 J	< 0.023	< 0.02	< 0.021
Dibenzofuran	132-64-9	µg/L	< 0.3 [< 0.3]	< 0.29	< 0.23 [< 0.24 J]	< 0.23	< 0.54	< 0.33	< 0.34	< 0.38	< 0.34	< 0.28	< 0.27	< 0.23 J	< 0.26	< 0.5	< 0.31
Diethyl phthalate	84-66-2	µg/L	< 0.37 [< 0.37]	< 0.36	< 0.24 [< 0.24 J]	< 0.34	< 0.4	< 0.18	< 0.18	< 0.21	< 0.18	< 0.35	< 0.33	< 0.24 J	< 0.4	< 0.37	< 0.17
Dimethyl phthalate	131-11-3	µg/L	< 0.32 [< 0.32]	< 0.31	< 0.26 [< 0.27 J]	< 0.34	< 0.4	< 0.24	< 0.25	< 0.28	< 0.25	< 0.3	< 0.29	< 0.27 J	< 0.39	< 0.37	< 0.23
di-n-butyl phthalate	84-74-2	µg/L	< 0.62 [< 0.62]	< 0.61	< 0.59 [< 3.8 BJ]	< 0.4	< 0.55	< 0.21	< 0.21	< 0.24	< 0.21	< 0.59	< 0.57	4.7 J	< 0.46	< 0.51	< 0.2
di-n-octylphthalate	117-84-0	µg/L	< 0.35 [< 0.35]	< 0.34	< 0.25 [< 0.26 J]	< 0.48	< 0.55	< 0.43	< 0.44	< 0.49	< 0.44	< 0.33	< 0.31	< 0.26 J	< 0.55	< 0.51	< 0.41
Fluoranthene	206-44-0	µg/L	< 0.011 [< 0.011]	< 0.015	< 0.013 [< 0.014 J]	< 0.0096	< 0.011	< 0.01	< 0.027	< 0.03	< 0.011	< 0.01	< 0.014	< 0.014 J	< 0.011	< 0.0096	< 0.0099
Fluorene	86-73-7	µg/L	< 0.017 [< 0.017]	< 0.019	< 0.017 [< 0.018 J]	< 0.02	< 0.022	< 0.021	< 0.03	< 0.034	< 0.017	< 0.016	< 0.017 J	< 0.017 J	< 0.023	< 0.02	< 0.02
Hexachlorobenzene	118-74-1	µg/L	< 0.0089 [< 0.009]	< 0.018	< 0.017 [< 0.017 J]	< 0.0099	< 0.011	< 0.011	< 0.011	< 0.012	< 0.0089	< 0.0085	< 0.017	< 0.017 J	< 0.011	< 0.0099	< 0.01
Hexachlorobutadiene	87-68-3	µg/L	< 0.58 [< 0.58]	< 0.56	< 0.39 [< 0.40 J]	< 0.13	< 0.41	< 0.4	< 0.41	< 0.16	< 0.14	< 0.54	< 0.52	< 0.40 J	< 0.15	< 0.38	< 0.38
Hexachlorocyclopentadiene	77-47-4	µg/L	< 8 [< 8]	< 7.8	< 0.49 [< 0.50 J]	< 0.1	< 5	< 0.73	< 0.75	< 0.31	< 0.27	< 7.6	< 7.3	< 0.49 J	< 0.12	< 4.6	< 0.69
Hexachloroethane	67-72-1	µg/L	< 0.62 [< 0.62]	< 0.60	< 0.29 [< 0.30 J]	< 0.16	< 0.33	< 0.29	< 0.29	< 0.26	< 0.23	< 0.59	< 0.56	< 0.29 J	< 0.19	< 0.31	< 0.27
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.012 [< 0.012]	< 0.016	< 0.015 [< 0.015 J]	< 0.014	< 0.016	< 0.016	< 0.032	< 0.037	< 0.012	< 0.011	< 0.015	< 0.015 J	< 0.017	< 0.014	< 0.015
Isophorone	78-59-1	µg/L	< 0.31 [< 0.31]	< 0.30	< 0.34 [< 0.35 J]	< 0.49	< 0.76	< 0.27	< 0.28	< 0.31	< 0.28	< 0.29	< 0.28	< 0.35 J	< 0.56	< 0.71	< 0.26
Naphthalene	91-20-3	µg/L	< 0.018 [< 0.018]	< 0.039	< 0.036 [< 0.037 J]	< 0.014	< 0.015	< 0.015	< 0.021	< 0.023	< 0.018	< 0.017	< 0.036 J	< 0.036 J	< 0.016	< 0.014	< 0.014
Nitrobenzene	98-95-3	µg/L	< 0.47 [< 0.47]	< 0.46	< 0.52 [< 0.54 J]	< 0.71	< 0.72	< 0.28	< 0.28	< 0.32	< 0.28	< 0.45	< 0.43	< 0.53 J	< 0.81	< 0.67	< 0.26
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.34 [< 0.34]	< 0.33	< 0.38 [< 0.39 J]	< 0.38	< 0.43	< 0.48	< 0.49	< 0.55	< 0.49	< 0.32	< 0.31	< 0.39 J	< 0.44	< 0.4	< 0.45
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.34 [< 0.34]	< 0.34	< 0.21 [< 0.21 J]	< 0.41	< 0.67	< 0.23	< 0.24	< 0.27	< 0.24	< 0.32	< 0.31	< 0.21 J	< 0.48	< 0.62	< 0.22
Pentachlorophenol	87-86-5	µg/L	< 0.11 [< 0.11]	< 0.11	< 0.10 [< 0.10 J]	< 0.22	< 0.25	< 0.24	< 0.25	< 0.085	< 0.32	< 0.11 J	< 0.10 J	< 0.10 J	< 0.26	< 0.22	< 0.23
Phenanthrene	85-01-8	µg/L	< 0.017 [< 0.018]	< 0.023	< 0.021 [< 0.022 J]	< 0.017	< 0.019	< 0.018	< 0.04	< 0.045	< 0.017	< 0.017	< 0.021 J	< 0.021 J	< 0.02	< 0.017	< 0.018
Phenol	108-95-2	µg/L	< 1.4 [< 1.4]	< 1.4	< 0.55 [< 0.56 J]	< 0.68	< 1.5	< 0.63	< 0.64	< 0.72	< 0.64	< 1.4	< 1.3	< 0.56 J	< 0.79	< 1.4	< 0.59
Pyrene	129-00-0	µg/L	< 0.009 [< 0.0091]	< 0.016	< 0.015 [< 0.015 J]	< 0.012	< 0.013	< 0.013	< 0.025	< 0.028	< 0.009	< 0.0086	< 0.015	< 0.015 J	< 0.014	< 0.012	< 0.012
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	< 16 [< 16]	49.9 B	< 200 B [< 11]	< 24	24.7 B	< 200	102 B	< 7.8	347	45.6 J	215 J	64.4 J	< 24	94.4 BJ	< 26
Antimony, total	7440-36-0	µg/L	< 1.4 [< 1.4]	< 6.0 B	< 2.6 [< 2.6]	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3	< 1.4	< 1.8	< 2.6	< 1.8	< 1.8	< 4
Arsenic, total	7440-38-2	µg/L	< 0.97 [< 0.97]	< 1.5	< 2.6 [< 2.6]	< 1.7	< 1.7	< 2.4	< 2.4	< 1.4	1.1 B	< 0.97	1.7 B	< 2.6	< 1.7	< 1.7	< 2.4
Barium, total	7440-39-3	µg/L	4.4 B [2.7 B]	3.4 J	4.2 B [3.3 J]	47.9 B	30.4 B	32.7 B	28.4 B	70.3 B	66.1 B	58.2 B	76.2 B	70.2 B	25.7 B	23.3 B	19.5 B
Beryllium, total	7440-41-7	µg/L	< 0.44 [< 0.44]	< 0.17	< 0.40 [< 0.40]	< 0.15	< 0.15	< 1	< 0.4	< 0.24	< 0.24	< 0.44	< 0.17	< 0.40	< 0.15	< 0.15	< 1
Cadmium, total	7440-43-9	µg/L	< 0.24 [< 0.24]	0.40 B	< 0.70 [< 0.70]	< 0.28	< 0.28	< 0.4	< 0.4	< 0.35	0.2 B	0.9 J	< 3.0 B	< 0.70	< 0.28	< 0.28	< 0.4
Calcium, total	7440-70-2	µg/L	15500 [15100]	17000	19600 [18000]	48400	33000	29500	30900	59600 J	48400	47300	72100 J	60200	84200	96300	69800
Chromium, total	7440-47-3	µg/L	< 0.91 [< 0.91]	< 0.92	< 0.89 [< 0.89]	< 0.53	0.7 B	< 10	< 0.9	1 B	3.4 J	< 0.91	1.0 B	< 0.89	< 0.53	< 0.53	8.4 BJ
Cobalt, total	7440-48-4	µg/L	< 0.59 [< 0.59]	< 0.48	< 0.83 [< 0.83]	1.7 B	1.7 B	4.6 B	< 1.6	1.9 B	26.8 B	< 0.59	< 0.48	0.90 B	2.7 B	< 50	2.1 BJ
Copper, total	7440-50-8	µg/L	< 1.3 [< 10]	< 1.0	1.7 B [1.7 B]	< 2.5 B	< 0.7	2.7 BJ	< 1.6	< 2.5	1.8 B	< 10	1.5 B	1.2 J	< 2.5 B	< 10	4.8 BJ
Iron, total	7439-89-6	µg/L	819 [804]	7350	3550 J [2510 J]	3770	2540	7480	3160	4710	22500	15700	14900	11300	29300	21600	16900
Lead, total	7439-92-1	µg/L	< 1.7 [< 1.7]	< 2.4	< 1.3 [< 1.3]	1.6 B	< 1.4	< 1.7	< 1.7	< 1.9	1.2 B	1.9 J	< 3.9 B	< 1.3	1.5 B	1.7 B	< 1.7
Magnesium, total	7439-95-4	µg/L	4340 B [4180 B]	5050	5440 [5120]	14300	9040	8000	7900	16400	13500	13500	20000	17400	43300	50200	32300
Manganese, total	7439-96-5	µg/L	8.4 B [6.9 B]	78.6	71.9 J [97.9 J]	1840	680	440	402	1320	1460 J	1300	1680	1610	2100	1740	776
Mercury, total	7439-97-6	µg/L	< 0.075 [< 0.2]	< 0.089	< 0.064 [< 0.20 B]	< 0.15	< 0.049	< 0.049	< 0.082 J	0.14 B	< 0.088	< 0.075	< 0.089	< 0.064	< 0.15	< 0.049	< 0.049
Nickel, total	7440-02-0	µg/L	< 0.94 [< 0.94]	< 1.6	< 0.75 [0.90 B]	< 1.2	1.3 B	< 10	1.1 B	1.5 B	10.9	< 0.94	< 1.6	1.7 J	1.2 B	< 1.2	< 10
Potassium, total	7440-09-7	µg/L	1000 B [999 B]	1160 B	1050 B [1040 B]	2170 B	1760 B	1690 B	1600 B	3150 B	3360 B	2930 B	3000 J	2820 B	3670 B	3280 B	2920 B
Selenium, total	7782-49-2	µg/L	< 2.4 [< 2.4]	3.2 B	< 3.6 [< 3.6]	< 1.6	< 1.6	< 3.7	< 3.7	< 1.9	< 1.5	< 2.4	< 2.4	< 3.6	< 1.6	< 1.6	< 3.7
Silicon, total	7440-21-3	µg/L	6550 [6560]	NA	3360 B [3400 B]	NA	NA	NA	NA	NA	NA	8140 J	NA	99900	NA	NA	NA
Silver, total	7440-22-4	µg/L	1.2 J [< 10]	< 1.5	< 1.2 [< 1.2]	< 1	< 1	< 1	< 1	0.7 B	1.1 J	< 0.85	< 1.5	1.7 B	< 1	< 1	< 1
Sodium, total	7440-23-5	µg/L	3150 B [3160 B]	3700 B	3440 B [3380 B]	54300	41300	39800	41300	95400 J	100000	94900	106000	103000	29500	26800	18000
Thallium, total	7440-28-0	µg/L	< 2 [< 1.7]	< 1.3	< 1.8 [< 1.8]	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8	< 1.3	< 1.3	< 1.5
Vanadium, total	7440-62-2	µg/L	< 0.77 [< 0.77]	< 0.72	< 0.87 [< 0.87]	0.6 B	0.6 B	< 0.9	< 0.9	< 0.56	3.9 J	0.9 J	2.7 J	4.0 B	0.5 B	< 0.43	< 50
Zinc, total	7440-66-6	µg/L	< 2.8 [< 2.8]	< 4.4	< 7.6 [< 7.6]	4 B	7.4 B	40.1	12.9 B	19.1 B	44.7	< 30	< 4.4	< 7.6	9 B	< 20	< 20
Other																	
Cyanide, total	57-12-5	µg/L	NA	NA	NA	< 10	< 10	NA	NA	NA	NA	NA	NA	NA	< 10	< 10	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-05 OB-5(102109) 10/21/2009	OB-05 OB-5(052610) 5/26/2010	OB-05 OB-5(051711) 5/17/2011	OB-05 OB-5 (041912) 4/19/2012	OB-05 OB-5 6/20/2012	OB-05 OB-5(111113) 11/11/2013	OB-05 OB-5(090814) 9/8/2014	OB-12 OB-12(080428) 4/28/2008	OB-12 OB-12(080909) 9/9/2008	OB-12 OB-12(063009) 6/30/2009	OB-12 OB-12(102009) 10/20/2009	OB-12 OB-12(052510) 5/25/2010	OB-12 OB-12(051711) 5/17/2011	OB-12 OB-12 (041912) 4/19/2012	OB-12 OB-12 (111813) 11/18/2013	OB-12 OB-12(091514) 9/15/2014
Volatile Organic Compounds																		
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	< 0.26	< 0.2	< 0.24 [< 0.24]	NA	< 0.25	< 0.32	< 0.24	< 0.24	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	< 0.24	< 0.12	< 0.2 [< 0.2]	NA	< 0.20	< 0.39	< 0.13	< 0.13	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23	< 0.13	< 0.23 [< 0.23]	NA	< 0.21	< 0.28	< 0.17	< 0.17	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28
1,1-Dichloroethane	75-34-3	µg/L	< 0.29	< 0.29	< 0.16	< 0.19 [< 0.19]	NA	< 0.26	< 0.35	< 0.16	< 0.24	< 0.29 [< 0.29]	< 0.29	< 0.29	< 0.16	< 0.19	< 0.26	< 0.35
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	< 0.4	< 0.24	< 0.28 [< 0.28]	NA	< 0.34	< 0.50	< 0.29	< 0.29	< 0.4 [< 0.4]	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	< 0.56	< 0.16	< 0.15 [< 0.15]	NA	< 0.22	< 0.22	< 1.3	< 1.3	< 0.56 [< 0.56]	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	< 1.1	< 1.2	< 1.3* [< 1.3*]	NA	< 1.3	< 1.2	< 2.4	< 1.3	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	< 0.39	< 0.39	< 0.21* [< 0.21*]	NA	< 0.16	< 0.23	< 0.17	< 0.18	< 0.39 [< 0.39]	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	< 0.26	< 0.15	< 0.18 [< 0.18]	NA	< 0.20	< 0.16	< 0.18	< 0.18	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	< 0.33	< 0.31	< 0.18 [< 0.18]	NA	< 0.22	< 0.30	< 0.35	< 0.35	< 0.33 [< 0.33]	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	< 0.27	< 0.23	< 0.22 [< 0.22]	NA	< 0.28	< 0.43	< 0.18	< 0.18	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	< 0.25	< 0.19	< 0.29 [< 0.29]	NA	< 0.31	< 0.26	< 0.26	< 0.26	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	< 0.28	< 0.22	< 0.26 [< 0.26]	NA	< 0.30	< 0.24	< 0.32	< 0.22	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	< 1.6	< 1.7	< 2.9 [< 2.9]	NA	< 3.2	< 2.5	< 2.3	< 2.3	< 1.6 [< 1.6]	< 1.6	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5
2-Hexanone	591-78-6	µg/L	< 1.4	< 1.4	< 1.9	< 3 [< 3]	NA	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	< 0.86	< 0.74	< 1.2 [< 1.2]	NA	< 1.5	< 1.1	< 1.9	< 1.3	< 0.86 [< 0.86]	< 0.86	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1
Acetone	67-64-1	µg/L	< 2.9	< 2.9	< 4.4	< 7.6 [< 7.6]	NA	< 3.3	< 2.6	< 2.1	< 2.1	< 2.9 [< 2.9]	< 2.9	< 2.9	< 4.4	< 7.6	< 3.3	< 2.6
Benzene	71-43-2	µg/L	< 0.23	< 0.23	< 0.26	< 0.22 [< 0.22]	NA	< 0.28	< 0.21	< 0.26	< 0.26	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21
Bromodichloromethane	75-27-4	µg/L	< 0.22	< 0.22	< 0.18	< 0.23 [< 0.23]	NA	< 0.21	< 0.28	< 0.14	< 0.14	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28
Bromoform	75-25-2	µg/L	< 0.23	< 0.23	< 0.42	< 0.24 [< 0.24]	NA	< 0.30	< 0.31	< 0.18	< 0.18	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31
Bromomethane	74-83-9	µg/L	< 0.3	< 0.3	< 0.24	< 0.31 [< 0.31]	NA	< 0.56	< 0.39	< 0.32	< 0.32	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39
Carbon disulfide	75-15-0	µg/L	< 0.74	< 0.74	< 0.13	< 0.18 [< 0.18]	NA	< 0.18	< 0.50	< 0.15	< 0.16	< 0.74 [< 0.74]	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50
Carbon tetrachloride	56-23-5	µg/L	< 0.26	< 0.26	< 0.35	< 0.19 [< 0.19]	NA	< 0.23	< 0.24	< 0.18	< 0.18	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24
Chlorobenzene	108-90-7	µg/L	< 0.39	< 0.39	< 0.15	< 0.22 [< 0.22]	NA	< 0.35	< 0.27	< 0.14	< 0.19	< 0.39 [< 0.39]	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.25	< 0.37 [< 0.37]	NA	< 0.39	< 0.56	< 0.22	< 0.22	< 0.37 [< 0.37]	< 0.37	< 0.37	< 0.25	< 0.37	< 0.39	< 0.56
Chloroform	67-66-3	µg/L	< 0.23	< 0.23	< 0.14	< 0.21 [< 0.21]	NA	< 0.25	< 0.20	< 0.16	< 0.16	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.34	< 0.22 [< 0.22]	NA	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29 [< 0.29]	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22	< 0.24	< 0.22 [< 0.22]	NA	< 0.24	< 0.33	< 0.19	< 0.25	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	< 0.25	< 0.16	< 0.22 [< 0.22]	NA	< 0.15	< 0.28	< 0.15	< 0.18	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28
Cyclohexane	110-82-7	µg/L	< 1.9	< 1.9	< 0.43	< 0.29 [< 0.29]	NA	< 0.18	< 0.37	< 0.85	< 0.85	< 1.9 [< 1.9]	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.16	< 0.2 [< 0.2]	NA	< 0.19	< 0.25	< 0.12	< 0.16	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	< 0.92	< 0.39	< 0.31 [< 0.31]	NA	< 0.63	< 0.73	< 0.88	< 0.88	< 0.92 [< 0.92]	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.31	< 0.21 [< 0.21]	NA	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40
Isopropylbenzene	98-82-8	µg/L	< 0.57	< 0.57	< 0.31	< 0.19 [< 0.19]	NA	< 0.22	< 0.26	< 0.15	< 0.19	< 0.57 [< 0.57]	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26
Methyl acetate	79-20-9	µg/L	< 1.5	< 1.5	< 1.3	< 2.9 [< 2.9]	NA	< 1.5	< 3.1	< 2.5	< 1.7	< 1.5 [< 1.5]	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1
Methyl tert butyl ether	1634-04-4	µg/L	2.1	1.7	0.68 J	0.57 J [0.55 J]	NA	0.76 J	< 0.26	< 0.14	< 0.16	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26
Methylcyclohexane	108-87-2	µg/L	< 0.35	< 0.35	< 0.16	< 0.18 [< 0.18]	NA	< 0.15	< 0.22	< 0.11	< 0.11	< 0.35 [< 0.35]	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.3	< 0.3	< 0.2	< 0.2 [< 0.2]	NA	< 0.86	< 0.81	< 0.16	< 0.16	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81
o-Xylene	95-47-6	µg/L	< 0.25	NA	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.25 [< 0.25]	< 0.25	NA	NA	NA	< 0.30	NA
Styrene	100-42-5	µg/L	< 0.58	< 0.58	< 0.48	< 0.23 [< 0.23]	NA	NA	< 0.26	< 0.11	< 0.17	< 0.58 [< 0.58]	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA
Tetrachloroethene	127-18-4	µg/L	< 0.27	< 0.27	< 0.24	< 0.32 [< 0.32]	NA	< 0.44	< 0.35	< 0.29	< 0.29	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35
Toluene	108-88-3	µg/L	< 0.3	< 0.3	< 0.27	< 0.15 [< 0.15]	NA	< 0.38	< 0.22	< 0.15	< 0.15	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	< 0.25	< 0.3	< 0.31 [< 0.31]	NA	< 0.21	< 0.51	< 0.16	< 0.16	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	< 0.21	< 0.22	< 0.19 [< 0.19]	NA	< 0.50	< 0.32	< 0.11	< 0.15	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32
Trichloroethene	79-01-6	µg/L	< 0.24	< 0.24	< 0.22	< 0.21 [< 0.21]	NA	< 0.33	< 0.25	< 0.18	< 0.18	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	< 0.54	< 0.23	< 0.35 [< 0.35]	NA	< 0.41	< 0.28	< 0.25 J	< 0.25	< 0.54 [< 0.54]	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28
Vinyl Chloride	75-01-4	µg/L	< 0.44	< 0.44	< 0.22	< 0.27 [< 0.27]	NA	NA	< 0.17	< 0.21	< 0.21	< 0.44 [< 0.44]	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17
Xylene, -m,p	179601-23-1	µg/L	< 0.25	NA	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25 [< 0.25]	< 0.25	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.25	< 0.25	< 0.28	< 0.17 [< 0.17]	NA	< 0.19	< 0.20	< 0.39	< 0.39	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20
Semi-Volatile Organic Compounds																		
1,1'-Biphenyl	92-52-4	µg/L	< 0.48	< 0.47	< 0.42	< 0.3 [< 0.33]	NA	< 0.31	< 0.27	< 0.23	< 0.61	< 0.45 [< 0.44]	< 0.42	< 0.49	< 0.45	< 0.34	< 0.33	< 0.27 J
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.5	< 1.5	< 1.3	< 1.6 [< 1.7]	NA	< 1.6	< 1.7	< 1.1	< 2.2	< 1.4 [< 1.4]	< 1.3	< 1.5	< 1.4	< 1.7	< 1.7	< 1.7 J
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4	< 1.4	< 1.2	< 1.3 [< 1.4]	NA	< 1.3	< 1.5	< 1.1	< 1.7	< 1.3 [< 1.3]	< 1.2	< 1.4	< 1.3	< 1.4	< 1.4	< 1.5 J
2,4-Dichlorophenol	120-83-2	µg/L	< 1.4	< 1.4	< 1.2	< 1.2 [< 1.3]	NA	< 1.2	< 1.6	< 1.5	< 2.1	< 1.3 [< 1.3]	< 1.2	< 1.4	< 1.3	< 1.3	< 1.3	< 1.6 J
2,4-Dimethylphenol	105-67-9	µg/L	< 1.9	< 1.9	< 1.7	< 1.5 [< 1.7]	NA	< 1.6	< 1.8	< 1.7	< 2.2	< 1.8 [< 1.7]	< 1.7	< 1.9	< 1.8	< 1.7	< 1.7	< 1.8 J
2,4-Dinitrophenol	51-28-5	µg/L	< 0.84	< 0.83 J	< 0.74	< 17 [< 18]	NA	< 17	< 6.5	< 1.1	< 4.6	< 0.78 [< 0.78]	< 0.74	< 0.86	< 0.78	< 18	< 18	< 6.5 J
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.25	< 0.25	< 0.22	< 0.43 [< 0.47]	NA	< 0.44	< 0.32	< 0.57	< 0.5	< 0.23 [< 0.23]	< 0.22	< 0.26	< 0.23	< 0.47	< 0.47	< 0.32 J
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.37	< 0.37	< 0.33	< 0.46 [< 0.5]	NA	< 0.48	< 0.26	< 0.52	< 0.67	< 0.35 [< 0.34]	< 0.33	< 0.38	< 0.35	< 0.51	< 0.51	< 0.26 J
2-Chloronaphthalene	91-58-7	µg/L	< 0.47	< 0.47	< 0.42	< 0.3 [< 0.32]	NA	< 0.31	< 0.34	< 0.21	< 0.54	< 0.44 [< 0.44]	< 0.42	< 0.48	< 0.44	< 0.33	< 0.33	< 0.34 J
2-Chlorophenol	95-57-8	µg/L	< 1.2	< 1.2	< 1.1	< 0.97 [< 1.1]	NA	< 1.0	< 1.3	< 0.91	< 1.6	< 1.1 [< 1.1]	< 1.1	< 1.2	< 1.1	< 1.1	< 1.1	< 1.3 J
2-Methylnaphthalene	91-57-6	µg/L	< 0.75	< 0.74	< 0.66	< 0.38 [< 0.42]	NA	< 0.40	< 0.29	< 0.8	< 0.48	< 0.7 [< 0.69]	< 0.66	< 0.77	< 0.7	< 0.43	< 0.42	< 0.29 J
2-Methylphenol	95-48-7	µg/L	< 1.3	< 1.3	< 1.1	< 1 [< 1.1]	NA	< 1.1	< 1.3	< 1.1	< 1.5	< 1.2 [< 1.2]	< 1.1	< 1.3	< 1.2	< 1.2	< 1.1	< 1.3 J
2-Nitroaniline	88-74-4	µg/L	< 0.27	< 0.26	< 0.24	< 1.1 [< 1.2]	NA	< 1.1	< 0.32	< 0.52	< 0.49	< 0.25 [< 0.25]	< 0.24	< 0.27	< 0.25	< 1.2	< 1.2	< 0.32 J
2-Nitrophenol	88-75-5	µg/L	< 1.4	< 1.4	< 1.2	< 1.5 [< 1.6]	NA	< 1.5	< 1.9	< 1.6	< 2.1	< 1.3 [< 1.3]	< 1.2	< 1.4	< 1.3	< 1.7	< 1.6	< 1.9 J
3&4-Methylphenol	12-03-3	µg/L	< 1.2	< 1.2	< 1	< 0.93 [< 1]	NA	< 0.95	< 1.1	< 1.1	< 1.6	< 1.1 [< 1.1]	< 1	< 1.2	< 1.1	< 1	< 1.0	< 1.1 J
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.34	< 0.33	< 0.3	< 0.36 [< 0.39]	NA	< 0.37	< 0.56	< 1	< 5.1	< 0.31 [< 0.31]	< 0.3	< 0.34	< 0.31	< 0.4	< 0.40	< 0.56 J
3-Nitroaniline	99-09-2	µg/L	< 0.33	< 0.32	< 0.29	< 1.3 [< 1.4]	NA	< 1.3	< 0.26	< 0.34	< 0.5	< 0.31 [< 0.3]	< 0.29	< 0.33	< 0.31	< 1.4	< 1.4	< 0.26 J
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.58	< 0.58 J	< 0.51	< 0.99 [< 1.1]	NA	< 1.0	< 1.3	< 2.3	< 1.3	< 0.55 [< 0.54]	< 0.51	< 0.6	< 0.55	< 1.1	< 1.1	< 1.3 J
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.4	< 0.39	< 0.35	< 0.36 [< 0.39]	NA	< 0.37	< 0.25	< 0.39	< 0.46	< 0.37 [< 0.37]	< 0.35	< 0.41	< 0.37	< 0.4	< 0.39	< 0.25 J
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.2	< 1.2	< 1.1	< 1.8 [< 2]	NA	< 1.9	< 1.3	< 1.3	< 2.5	< 1.1 [< 1.1]	< 1.1	< 1.2	< 1.1	< 2	< 2.0	< 1.3 J
Semi-Volatile Organic Compounds																		

Location ID			OB-05	OB-05	OB-05	OB-05	OB-05	OB-05	OB-05	OB-12	OB-12	OB-12	OB-12	OB-12	OB-12	OB-12	OB-12	OB-12
Sample ID			OB-5(102109)	OB-5(052610)	OB-5(051711)	OB-5 (041912)	OB-5	OB-5(111113)	OB-5(090814)	OB-12(080428)	OB-12(080909)	OB-12(063009)	OB-12(102009)	OB-12(052510)	OB-12(051711)	OB-12 (041912)	OB-12 (111813)	OB-12(091514)
Sample Date	CAS	Units	10/21/2009	5/26/2010	5/17/2011	4/19/2012	6/20/2012	11/11/2013	9/8/2014	4/28/2008	9/9/2008	6/30/2009	10/20/2009	5/25/2010	5/17/2011	4/19/2012	11/18/2013	9/15/2014
4-Chloroaniline	106-47-8	µg/L	< 0.29	< 0.28	< 0.25	< 0.53 [< 0.58]	NA	< 0.54	< 0.30	< 0.36	< 0.37	< 0.27 [< 0.27]	< 0.25	< 0.29	< 0.27	< 0.59	< 0.58	< 0.30 J
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.4	< 0.4	< 0.35	< 0.31 [< 0.34]	NA	< 0.32	< 0.38	< 0.3	< 0.5	< 0.38 [< 0.37]	< 0.35	< 0.41	< 0.38	< 0.35	< 0.34	< 0.38 J
4-Nitroaniline	100-01-6	µg/L	< 0.2	< 0.2	< 0.18	< 1.7 [< 1.8]	NA	< 1.7	< 0.30	< 0.61	< 0.5	< 0.19 [< 0.19]	< 0.18	< 0.21	< 0.19	< 1.8	< 1.8	< 0.30 J
4-Nitrophenol	100-02-7	µg/L	< 0.94	< 0.93	< 0.83	< 5.2 [< 5.7]	NA	< 5.4	< 0.91	< 1.6	< 2.5	< 0.88 [< 0.87]	< 0.83	< 0.96	< 0.88	< 5.8	< 5.7	< 0.91 J
Acenaphthene	83-32-9	µg/L	< 0.033	< 0.033	< 0.014	0.136 [< 0.015]	NA	< 0.021	< 0.020	< 0.017	< 0.017	< 0.017 [< 0.017]	< 0.029	< 0.034	< 0.015	< 0.015	< 0.022	< 0.020 J
Acenaphthylene	208-96-8	µg/L	< 0.045	< 0.044	< 0.016	0.119 [< 0.018]	NA	< 0.024	< 0.024	< 0.0073	< 0.0076	< 0.0074 [< 0.0076]	< 0.039	< 0.046	< 0.017	< 0.018	< 0.026	< 0.024 J
Acetophenone	98-86-2	µg/L	< 0.45	< 0.45	< 0.4	< 0.29 [< 0.31]	NA	< 0.29	< 0.36	< 0.38	< 0.52	< 0.42 [< 0.42]	< 0.4	< 0.46	< 0.42	< 0.32	< 0.31	< 0.36 J
Anthracene	120-12-7	µg/L	< 0.029	< 0.029	< 0.01	< 0.01 [< 0.011]	NA	< 0.021	< 0.020	< 0.022	< 0.023	< 0.022 [< 0.023]	< 0.026	< 0.03	< 0.011	< 0.011	< 0.022	< 0.020 J
Atrazine	1912-24-9	µg/L	< 0.44	< 0.44	< 0.39	< 0.49 [< 0.53]	NA	< 0.50	< 0.42	< 0.29	< 0.68	< 0.42 [< 0.41]	< 0.39	< 0.45	< 0.42	< 0.54	< 0.54	< 0.42 J
Benzaldehyde	100-52-7	µg/L	< 0.46	< 0.45	< 0.4	< 3.3 [< 3.6]	NA	< 3.4	< 0.67	< 0.79	< 1.8	< 0.43 [< 0.43]	< 0.4	< 0.47	< 0.43	< 3.6	< 3.6	< 0.67 J
Benzo(a)anthracene	56-55-3	µg/L	< 0.027	< 0.027	< 0.015	< 0.015 [< 0.017]	NA	< 0.012	< 0.012	< 0.035	< 0.037	< 0.035 [< 0.037]	< 0.024	< 0.028	< 0.016	< 0.017	< 0.013	< 0.012 J
Benzo(a)pyrene	50-32-8	µg/L	< 0.035	< 0.035	< 0.0049	< 0.0049 [< 0.0054]	NA	< 0.013	< 0.012	< 0.037	< 0.039	< 0.037 [< 0.039]	< 0.031	< 0.036	< 0.0052	< 0.0054	< 0.014	< 0.012 J
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.041	< 0.04	< 0.016	< 0.016 [< 0.018]	NA	< 0.010	< 0.010	< 0.018	< 0.018	< 0.018 [< 0.018]	< 0.036	< 0.042	< 0.017	< 0.018	< 0.011	< 0.010 J
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.033	< 0.032	< 0.01	< 0.01 [< 0.011]	NA	< 0.016	< 0.016	< 0.012	< 0.013	< 0.012 [< 0.013]	< 0.029	< 0.033	< 0.011	< 0.011	< 0.017	< 0.016 J
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.032	< 0.032	< 0.013	< 0.013 [< 0.014]	NA	< 0.015	< 0.015	< 0.02	< 0.02	< 0.02 [< 0.02]	< 0.028	< 0.033	< 0.013	< 0.014	< 0.016	< 0.015 J
Benzyl butyl phthalate	85-68-7	µg/L	< 0.29	< 0.28	< 0.25	< 0.29 [< 0.32]	NA	< 0.30	< 0.22	< 0.66	< 0.46	< 0.27 [< 0.26]	< 0.25	< 0.29	< 0.27	< 0.32	< 0.32	< 0.22 J
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.28	< 0.28	< 0.25	< 0.31 [< 0.34]	NA	< 0.32	< 0.42	< 0.33	< 0.57	< 0.26 [< 0.26]	< 0.25	< 0.29	< 0.26	< 0.34	< 0.34	< 0.42 J
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.35	< 0.35	< 0.31	< 0.31 [< 0.34]	NA	< 0.32	< 0.43	< 0.7	< 0.55	< 0.33 [< 0.33]	< 0.31	< 0.36	< 0.33	< 0.34	< 0.34	< 0.43 J
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.44	< 0.44	< 0.39	< 0.45 [< 0.5]	NA	< 0.47	< 0.41	< 0.6	< 0.6	< 0.41 [< 0.41]	< 0.39	< 0.45	< 0.41	< 0.5	< 0.50	< 0.41 J
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	8.4 J	< 0.37	< 0.33	< 0.59 [< 0.64]	NA	< 0.60	< 15.5 BJ	< 0.91	< 0.83	< 0.35 [< 0.34]	< 0.33	< 0.38	< 0.35	< 0.65	< 0.64	< 5.0 BJ
Caprolactam	105-60-2	µg/L	< 0.22	< 0.22	< 0.2	< 0.69 [< 0.75]	NA	< 0.71	< 0.41	< 0.51	< 0.7	< 0.21 [< 0.21]	< 0.2	< 0.23	< 0.21	< 0.77	< 0.76	< 0.41 J
Carbazole	86-74-8	µg/L	< 0.19	< 0.19	< 0.17	< 0.36 [< 0.39]	NA	< 0.37	< 0.17	< 0.41	< 0.5	< 0.18 [< 0.17]	< 0.17	< 0.19	< 0.18	< 0.4	< 0.40	< 0.17 J
Chrysene	218-01-9	µg/L	< 0.025	< 0.025	< 0.023	< 0.023 [< 0.025]	NA	< 0.012	< 0.012	< 0.018	< 0.019	< 0.019 [< 0.019]	< 0.022	< 0.026	< 0.025	< 0.026	< 0.013	< 0.012 J
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.026	< 0.025	< 0.023	< 0.023 [< 0.025]	NA	< 0.017	< 0.017	< 0.021	< 0.022	< 0.021 [< 0.022]	< 0.023	< 0.026	< 0.024	< 0.025	< 0.018	< 0.017 J
Dibenzofuran	132-64-9	µg/L	< 0.35	< 0.34	< 0.3	< 0.27 [< 0.29]	NA	< 0.27	< 0.23	< 0.24	< 0.54	< 0.32 [< 0.32]	< 0.3	< 0.35	< 0.32	< 0.29	< 0.29	< 0.23 J
Diethyl phthalate	84-66-2	µg/L	< 0.19	< 0.19	< 0.17	< 0.33 [< 0.36]	NA	< 0.34	< 0.23	< 0.36	< 0.4	< 0.18 [< 0.17]	< 0.17	< 0.19	< 0.18	< 0.36	< 0.36	< 0.23 J
Dimethyl phthalate	131-11-3	µg/L	< 0.26	< 0.25	< 0.23	< 0.28 [< 0.31]	NA	< 0.29	< 0.26	< 0.35	< 0.4	< 0.24 [< 0.24]	< 0.23	< 0.26	< 0.24	< 0.31	< 0.31	< 0.26 J
di-n-butyl phthalate	84-74-2	µg/L	< 0.22	< 0.21	< 0.19	< 0.56 [< 0.61]	NA	< 0.57	< 0.58	< 0.42	< 0.55	< 0.2 [< 0.2]	< 0.19	< 0.22	< 0.2	< 0.62	< 0.61	2.2 J
di-n-octylphthalate	117-84-0	µg/L	< 0.45	< 0.44	< 0.4	< 0.31 [< 0.34]	NA	< 0.32	< 0.25	< 0.5	< 0.55	< 0.42 [< 0.42]	< 0.4	< 0.46	< 0.42	< 0.34	< 0.34	< 0.25 J
Fluoranthene	206-44-0	µg/L	< 0.028	< 0.027	< 0.0096	< 0.0096 [< 0.01]	NA	< 0.014	< 0.013	< 0.01	< 0.01	< 0.01 [< 0.01]	< 0.024	< 0.028	< 0.01	< 0.011	< 0.015	< 0.013 J
Fluorene	86-73-7	µg/L	< 0.031	< 0.03	< 0.015	0.155 [< 0.016]	NA	< 0.018	< 0.017	< 0.02	< 0.021	< 0.021 [< 0.021]	< 0.027	< 0.031	< 0.016	< 0.017	< 0.019	< 0.017 J
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.011	< 0.008	< 0.008 [< 0.0087]	NA	< 0.017	< 0.017	< 0.01	< 0.011	< 0.01 [< 0.011]	< 0.0099	< 0.012	< 0.0085	< 0.0089	< 0.018	< 0.017 J
Hexachlorobutadiene	87-68-3	µg/L	< 0.42	< 0.14	< 0.13	< 0.51 [< 0.56]	NA	< 0.53	< 0.39	< 0.13	< 0.42	< 0.4 [< 0.39]	< 0.37	< 0.15	< 0.14	< 0.57	< 0.56	< 0.39 J
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.76	< 0.27	< 0.24	< 7.1 [< 7.8]	NA	< 7.3	< 0.48	< 0.11	< 5	< 0.71 [< 0.71]	< 0.67	< 0.28	< 0.26	< 7.9	< 7.8	< 0.48 J
Hexachloroethane	67-72-1	µg/L	< 0.3	< 0.23	< 0.21	< 0.55 [< 0.6]	NA	< 0.57	< 0.29	< 0.17	< 0.33	< 0.28 [< 0.28]	< 0.26	< 0.24	< 0.22	< 0.61	< 0.60	< 0.29 J
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.033	< 0.033	< 0.011	< 0.011 [< 0.012]	NA	< 0.015	< 0.014	< 0.015	< 0.016	< 0.015 [< 0.016]	< 0.029	< 0.034	< 0.011	< 0.012	< 0.016	< 0.014 J
Isophorone	78-59-1	µg/L	< 0.28	< 0.28	< 0.25	< 0.27 [< 0.3]	NA	< 0.28	< 0.34	< 0.51	< 0.77	< 0.26 [< 0.26]	< 0.25	< 0.29	< 0.26	< 0.3	< 0.30	< 0.34 J
Naphthalene	91-20-3	µg/L	< 0.021	< 0.021	< 0.016	0.231 [< 0.018]	NA	< 0.037	< 0.036	< 0.014	< 0.015	< 0.015 [< 0.015]	< 0.019	< 0.022	< 0.017	< 0.018	< 0.039	< 0.036 J
Nitrobenzene	98-95-3	µg/L	< 0.29	< 0.28	< 0.25	< 0.42 [< 0.46]	NA	< 0.43	< 0.52	< 0.73	< 0.73	< 0.27 [< 0.27]	< 0.25	< 0.29	< 0.27	< 0.47	< 0.46	< 0.52 J
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.5	< 0.49	< 0.44	< 0.3 [< 0.33]	NA	< 0.31	< 0.38	< 0.4	< 0.44	< 0.47 [< 0.46]	< 0.44	< 0.51	< 0.47	< 0.34	< 0.33	< 0.38 J
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.24	< 0.24	< 0.22	< 0.31 [< 0.33]	NA	< 0.31	< 0.21	< 0.43	< 0.67	< 0.23 [< 0.23]	< 0.22	< 0.25	< 0.23	< 0.34	< 0.34	< 0.21 J
Pentachlorophenol	87-86-5	µg/L	< 0.25	< 0.076	< 0.29	< 0.1 J [< 0.11 J]	NA	< 0.10	< 0.10	< 0.23	< 0.24	< 0.23 [< 0.24]	< 0.22	< 0.079	< 0.3	< 0.11 J	< 0.11	< 0.10 J
Phenanthrene	85-01-8	µg/L	< 0.041	< 0.041	< 0.016	0.131 [< 0.017]	NA	< 0.022	< 0.021	< 0.018	< 0.018	< 0.018 [< 0.018]	< 0.036	< 0.042	< 0.017	< 0.017	< 0.023	< 0.021 J
Phenol	108-95-2	µg/L	< 0.66	< 0.65	< 0.58	< 1.3 [< 1.4]	NA	< 1.3	< 0.55	< 0.71	< 1.5	< 0.61 [< 0.61]	< 0.58	< 0.67	< 0.61	< 1.4	< 1.4	< 0.55 J
Pyrene	129-00-0	µg/L	< 0.025	< 0.025	< 0.0081	< 0.0081 [< 0.0089]	NA	< 0.015	< 0.015	< 0.013	< 0.013	< 0.013 [< 0.013]	< 0.022	< 0.026	< 0.0086	< 0.009	< 0.016	< 0.015 J
Metals - Total																		
Aluminum, total	7429-90-5	µg/L	< 26	< 7.8	< 200	35.2 J [45.2 J]	NA	< 200 B	< 200 B	< 24	< 24	< 26 [< 26]	< 26	< 200	< 200	< 200	30.2 J	< 200 B
Antimony, total	7440-36-0	µg/L	< 2.9	< 2.2	< 1.3	< 6 [< 1.4]	NA	< 1.8	< 2.6	< 1.8	< 1.8	< 4 [< 4]	< 2.9	< 2.2	< 1.3	< 6	< 1.8	< 2.6
Arsenic, total	7440-38-2	µg/L	< 2.4	< 1.4	< 0.92	< 0.97 [< 0.97]	NA	< 1.5	< 2.6	< 1.7	< 1.7	< 2.4 [< 2.4]	< 2.4	< 1.4	< 0.92	< 0.97	< 1.5	< 2.6
Barium, total	7440-39-3	µg/L	17.9 B	22.1 B	24.1 B	27.3 B [28.4 B]	NA	19.4 B	25.7 B	2.6 B	2 B	3.7 BJ [3.7 BJ]	3.4 B	< 200 J	2.4 B	< 200	3.4 B	3.0 B
Beryllium, total	7440-41-7	µg/L	< 0.4	< 0.24	< 0.24	< 0.44 [< 0.44]	NA	< 0.17	< 0.40	< 0.15	< 0.15	< 1 [< 1]	< 0.4	< 0.24	< 0.24	< 0.44	< 0.17	< 0.40
Cadmium, total	7440-43-9	µg/L	< 0.4	< 0.35	< 0.17	< 3 [< 3]	NA	< 3.0 B	< 0.70	< 0.28	< 0.28	< 0.4 [< 0.4]	< 0.4	< 0.35	< 0.17	< 3	< 0.24	< 0.70
Calcium, total	7440-70-2	µg/L	81300	77500 J	74400	66500 [68500]	73000	68300	76600	6860	8500	7400 [7240]	10800	7210	5970	7940	10500	9110
Chromium, total	7440-47-3	µg/L	0.9 B	0.9 B	< 0.9	< 0.91 [< 0.91]	NA	< 10 B	1.6 B	0.7 B	< 0.53	< 10 [< 10]	< 0.9	< 0.59	< 0.9	< 0.91	< 0.92	< 0.89
Cobalt, total	7440-48-4	µg/L	2 B	0.8 B	1.2 B	< 0.59 [< 0.59]	NA	4.2 J	< 0.83	< 0.51	< 0.51	< 0.4 [< 0.4]	< 1.6	< 0.65	< 0.3	< 0.59	< 0.48	< 0.83
Copper, total	7440-50-8	µg/L	< 1.6	< 2.5	< 0.85	< 1.3 [< 1.3]	NA	2.2 J	3.9 B	< 2.5 B	< 10	4.2 BJ [4.3 BJ]	4.9 B	3.2 B	1.7 B	< 10	5.2 J	4.0 B
Iron, total	7439-89-6	µg/L	13100	28200	53800	59000 [60800]	63800	43800	44700 J	67.4 B	< 7.4	< 100 [< 100]	< 100	< 100	31 J	51.7 J	64.7 B	33.5 B
Lead, total	7439-92-1	µg/L	< 1.7	< 1.9	1.2 B	< 1.7 [< 1.7]	NA	< 2.4	< 1.3	< 1.4	< 1.4	< 1.7 [< 1.7]	< 1.7	< 1.9	< 0.94	< 1.7	< 2.4	< 1.3
Magnesium, total	7439-95-4	µg/L	33200	34800	37600	37200 [38700]	35800	32700	38000	2510 B	3440 B	2700 B [2640 B]	3820 B	2580 B	2230 B	2970 B	4630 B	3480 B
Manganese, total	7439-96-5	µg/L	412	1160	1850 J	1850 [1910]	1850	1310	2250 J	1.9 B	< 15	2.5 BJ [2.6 BJ]	< 15	1.6 BJ	< 15 J	< 15	2.7 B	1.1 B
Mercury, total	7439-97-6	µg/L	< 0.082 J	< 0.082	< 0.088	< 0.075 [< 0.075]	NA	< 0.089	< 0.20 B	< 0.15	0.074 B	0.088 B [< 0.049]	< 0.082	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064
Nickel, total	7440-02-0	µg/L	1.8 B	1.7 B	1.4 J	< 0.94 [< 0.94]	NA	< 1.6	< 0.75	< 1.2	< 1.2	< 0.6 [< 10]	< 0.6	< 0.51	< 0.41	< 0.94	< 1.6	< 0.75
Potassium, total	7440-09-7	µg/L	2690 B	3350 B	3420 B	3530 B [3610 B]	3480 B	3140 B	3580 B	481 B	696 B	775 B [761 B]	730 B	557 BJ	491 B	600 B	832 B	737 B
Selenium, total	7782-49-2	µg/L	< 3.7	< 1.9	< 1.5	< 10 [< 10]	NA	6.7 B	< 3.6	< 1.6	< 1.6	< 3.7 [< 3.7]	< 3.7	< 1.9	< 1.5	< 2.4	< 2.4	< 3.6
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	28700	NA	NA	NA	NA	NA	NA	NA	NA	2710 B
Silver, total	7440-22-4	µg/L	< 1	0.7 B	2 J	4.6 B [4.5 B]	NA	4.0 B	< 10 B	< 1	< 1	< 1 [< 1]	< 1	< 0.53	< 0.72	< 0.85	< 1.5	< 1.2
Sodium, total	7440-23-5	µg/L	17200	21000 J	27600	28100 [28900]	28300	23100	30400	2060 B	2400 B	2720 B [2720 B]	3400 B	2300 BJ	2070 B	2680 B	3390 B	2730 B
Thallium, total	7440-28-0	µg/L	< 1.5	< 1.8	< 0.17	< 1.7 [< 1.7]	NA	< 1.3	< 1.8	< 1.3	< 1.3	< 1.5 [< 1.5]	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8
Vanadium, total	7440-62-2	µg/L	< 0.9	< 0.56	< 50	< 0.77 [< 50]	NA	< 0.72	< 0.87	0.7 B	< 0.43	< 0.9 [< 0.9]	< 0.9	< 0.56	< 0.43	< 0.77	< 0.72	< 0.87
Zinc, total	7440-66-6	µg/L	10.5 B	7.8 J	< 20	5.5 J [4.7 J]	NA	5.6 B	8.1 B	5 B	< 4	< 20 [< 20]	4 B	< 20	< 20	4 J	4.5 B	< 7.6
Other																		
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	< 10	< 10	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID			OB-13	OB-13	OB-13	OB-13	OB-13	OB-13	OB-13	OB-13	OB-13	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2
Sample ID			OB-13(080428)	OB-13(080910)	OB-13(070109)	OB-13(102109)	OB-13(052510)	OB-13(051711)	OB-13 (042012)	OB-13 (111313)	OB-13(090814)	RW-2 (103-133) (5/1/2008)	RW-2 (20-50) (5/1/2008)	RW-2 (442-472)	RW-2 (279-309) (9/11/2008)	RW-2 (20-50)	RW-2 (103-133)
Sample Date	CAS	Units	4/28/2008	9/10/2008	7/1/2009	10/21/2009	5/25/2010	5/17/2011	4/20/2012	11/13/2013	9/8/2014	5/1/2008	5/1/2008	5/5/2008	9/11/2008	9/16/2008	9/17/2008
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
1,1-Dichloroethane	75-34-3	µg/L	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29	< 0.16	< 0.19	< 0.26	< 0.35	< 0.16	< 0.16	< 0.16	< 0.24	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2	< 2.4	< 2.4	< 2.4	< 1.3	< 1.3	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23	< 0.17	< 0.17	< 0.17	< 0.18	< 0.18	< 0.18
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,2-Dichloroethane	107-06-2	µg/L	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.32	< 0.32	< 0.32	< 0.22	< 0.22	< 0.22
2-Butanone (MEK)	78-93-3	µg/L	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5	< 2.3	< 2.3	< 2.3	< 2.3	< 2.3	< 2.3
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1	< 1.9	< 1.9	< 1.9	< 1.3	< 1.3	< 1.3
Acetone	67-64-1	µg/L	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4	< 7.6	< 3.3	< 2.6	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1
Benzene	71-43-2	µg/L	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21	< 0.26	< 0.26	< 0.26	< 6	7.4	43.8
Bromodichloromethane	75-27-4	µg/L	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.18	< 0.18	< 0.18 J	< 0.18	< 0.18	< 0.18
Bromomethane	74-83-9	µg/L	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
Carbon disulfide	75-15-0	µg/L	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.15	< 0.15	< 0.15	< 0.16	< 0.16	< 0.16
Carbon tetrachloride	56-23-5	µg/L	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Chlorobenzene	108-90-7	µg/L	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27	< 0.14	< 0.14	< 0.14	< 0.19	< 0.19	< 0.19
Chloroethane	75-00-3	µg/L	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.25	< 0.37	< 0.39	< 0.56	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloroform	67-66-3	µg/L	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	1.7	1.9	< 0.16	2.2	3.4	3.1
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.19	< 0.19	< 0.19	< 0.25	< 0.25	< 0.25
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.15	< 0.15	< 0.15	< 0.18	< 0.18	< 0.18
Cyclohexane	110-82-7	µg/L	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85
Dibromochloromethane	124-48-1	µg/L	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.12	< 0.12	< 0.12	< 0.16	< 0.16	< 0.16
Dichlorodifluoromethane	75-71-8	µg/L	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73	< 0.88	< 0.88	< 0.88	< 0.88	< 0.88	< 0.88
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	0.66 J
Freon 113	76-13-1	µg/L	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.66	< 0.49	< 0.77	< 0.45	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Isopropylbenzene	98-82-8	µg/L	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26	< 0.15	< 0.15	< 0.15	< 0.19	< 0.19	< 0.19
Methyl acetate	79-20-9	µg/L	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1	< 2.5	< 2.5	< 2.5	< 1.7	< 1.7	< 1.7
Methyl tert butyl ether	1634-04-4	µg/L	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26	< 0.14	< 0.14	< 0.14	< 0.16	< 0.16	< 0.16
Methylcyclohexane	108-87-2	µg/L	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11
Methylene chloride	75-09-2	µg/L	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
o-Xylene	95-47-6	µg/L	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45
Styrene	100-42-5	µg/L	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.11	< 0.11	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	R	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
Toluene	108-88-3	µg/L	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22	72.4	28.5	12.5	< 45	8.2	51.8
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.11	< 0.11	< 0.11	< 0.15	< 0.15	< 0.15
Trichloroethene	79-01-6	µg/L	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Trichlorofluoromethane	75-69-4	µg/L	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Vinyl Chloride	75-01-4	µg/L	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21
Xylene, -m,p	179601-23-1	µg/L	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	0.95 J
Xylenes	1330-20-7	µg/L	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	0.95 J
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 0.25	< 0.58	< 0.45	< 0.47	< 0.42	< 0.42	< 0.32	< 0.34	< 0.29 J	< 0.23 J	< 0.24 J	< 0.25	< 0.59	< 0.56	< 0.55
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.2	< 2.1	< 1.4	< 1.5	< 1.3	< 1.3	< 1.6	< 1.7	< 1.8 J	< 1.1 J	< 1.2 J	< 1.2	< 2.1	< 2	< 2
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.1	< 1.7	< 1.3	< 1.4	< 1.2	< 1.2	< 1.4	< 1.4	< 1.6 J	< 1 J	< 1.1 J	< 1.1	< 1.7	< 1.6	< 1.6
2,4-Dichlorophenol	120-83-2	µg/L	< 1.6	< 2	< 1.3	< 1.4	< 1.2	< 1.2	< 1.2	< 1.3	< 1.7 J	< 1.4 J	< 1.5 J	< 1.6	< 2.1	< 2	< 1.9
2,4-Dimethylphenol	105-67-9	µg/L	< 1.8	< 2.1	< 1.8	< 1.8	< 1.7	< 1.7	< 1.6	< 1.7	< 1.9 J	< 1.7 J	< 1.8 J	< 1.8	< 2.1	< 2	< 2
2,4-Dinitrophenol	51-28-5	µg/L	< 1.2	< 4.4	< 0.78	< 0.82	< 0.74	< 0.74	< 17	< 18	< 6.9 J	< 1.1 J	< 1.2 J	< 1.2	< 4.4	< 4.3	< 4.2
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.6	< 0.48	< 0.23	< 0.24	< 0.22	< 0.22	< 0.45	< 0.47	< 0.34 J	< 0.56 J	< 0.58 J	< 0.6	< 0.48	< 0.46	< 0.45
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.56	< 0.63	< 0.35	< 0.36	< 0.33	< 0.33	< 0.49	< 0.51	< 0.27 J	< 0.51 J	< 0.54 J	< 0.56	< 0.64	< 0.61	< 0.6
2-Chloronaphthalene	91-58-7	µg/L	< 0.22	< 0.51	< 0.44	< 0.46	< 0.42	< 0.42	< 0.31	< 0.33	< 0.36 J	< 0.2 J	< 0.21 J	< 0.22	< 0.51	< 0.49	< 0.48
2-Chlorophenol	95-57-8	µg/L	< 0.97	< 1.5	< 1.1	< 1.2	< 1.1	< 1.1	< 1	< 1.1	< 1.3 J	< 0.89 J	< 0.94 J	< 0.97	< 1.5	< 1.5	< 1.5
2-Methylnaphthalene	91-57-6	µg/L	< 0.85	< 0.46	< 0.7	< 0.73	< 0.66	< 0.66	< 0.4	< 0.43	< 0.31 J	< 0.78 J	< 0.82 J	< 0.85	< 0.46	< 0.44	< 0.43
2-Methylphenol	95-48-7	µg/L	< 1.2	< 1.4	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3 J	< 1.1 J	< 1.1 J	< 1.2	< 1.5	< 1.4	< 1.4
2-Nitroaniline	88-74-4	µg/L	< 0.55	< 0.47	< 0.25	< 0.26	< 0.24	< 0.24	< 1.2	< 1.2	< 0.33 J	< 0.51 J	< 0.53 J	< 0.55	< 0.47	< 0.45	< 0.45
2-Nitrophenol	88-75-5	µg/L	< 1.7	< 2	< 1.3	< 1.4	< 1.2	< 1.2	< 1.6	< 1.7	< 1.9 J	< 1.5 J	< 1.6 J	< 1.7	< 2.1	< 2	< 1.9
3&4-Methylphenol	12-03-3	µg/L	< 1.2	< 1.5	< 1.1	< 1.2	< 1	< 1	< 0.97	< 1.0	< 1.1 J	< 1.1 J	< 1.2 J	< 1.2	< 1.6	< 1.5	< 1.5
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1	< 4.8	< 0.31	< 0.33	< 0.3	< 0.3	< 0.38	< 0.40	< 0.59 J	< 0.99 J	< 1 J	< 1.1	< 4.8	< 4.6	< 4.6
3-Nitroaniline	99-09-2	µg/L	< 0.36	< 0.47	< 0.31	< 0.32	< 0.29	< 0.29	< 1.3	< 1.4	< 0.28 J	< 0.33 J	< 0.35 J	< 0.36	< 0.48	< 0.46	< 0.45
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.5	< 1.2	< 0.55	< 0.57	< 0.51	< 0.51	< 1	< 1.1	< 1.4 J	< 2.3 J	< 2.4 J	< 2.5	< 1.2	< 1.2	< 1.2
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.41	< 0.43	< 0.37	< 0.39	< 0.35	< 0.35	< 0.38	< 0.40	< 0.26 J	< 0.38 J	< 0.4 J	< 0.41	< 0.44	< 0.42	< 0.41
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.3	< 2.4	< 1.1	< 1.2	< 1.1	< 1.1	< 1.9	< 2.0	< 1.4 J	< 1.2 J	< 1.3 J	< 1.3	< 2.4	< 2.3	< 2.3
Semi-Volatile Organic Compounds																	

Location ID Sample ID Sample Date	CAS	Units	OB-13 OB-13(080428) 4/28/2008	OB-13 OB-13(080910) 9/10/2008	OB-13 OB-13(070109) 7/1/2009	OB-13 OB-13(102109) 10/21/2009	OB-13 OB-13(052510) 5/25/2010	OB-13 OB-13(051711) 5/17/2011	OB-13 OB-13 (042012) 4/20/2012	OB-13 OB-13 (111313) 11/13/2013	OB-13 OB-13(090814) 9/8/2014	RW-2 RW-2 (103-133) (5/1/2008) 5/1/2008	RW-2 RW-2 (20-50) (5/1/2008) 5/1/2008	RW-2 RW-2 (442-472) 5/5/2008	RW-2 RW-2 (279-309) (9/11/2008) 9/11/2008	RW-2 RW-2 (20-50) 9/16/2008	RW-2 RW-2 (103-133) 9/17/2008
4-Chloroaniline	106-47-8	µg/L	< 0.39	< 0.35	< 0.27	< 0.28	< 0.25	< 0.25	< 0.56	< 0.59 J	< 0.32 J	< 0.36 J	< 0.37 J	NA	< 0.36	< 0.34	< 0.33
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.32	< 0.48	< 0.38	< 0.39	< 0.35	< 0.35	< 0.33	< 0.35	< 0.40 J	< 0.3 J	< 0.31 J	< 0.32	< 0.48	< 0.46	< 0.45
4-Nitroaniline	100-01-6	µg/L	< 0.66	< 0.48	< 0.19	< 0.2	< 0.18	< 0.18	< 1.7	< 1.8	< 0.32 J	< 0.6 J	< 0.63 J	< 0.66	< 0.48	< 0.46	< 0.45
4-Nitrophenol	100-02-7	µg/L	< 1.8	< 2.4	< 0.88	< 0.92	< 0.83	< 0.83	< 5.5	< 5.8	< 0.95 J	< 1.6 J	< 1.7 J	< 1.8	< 2.4	< 2.3	< 2.3
Acenaphthene	83-32-9	µg/L	< 0.018	< 0.017	< 0.017	< 0.032	< 0.029	< 0.014	< 0.014	< 0.023	< 0.021 J	< 0.016	< 0.017	< 0.016	< 0.017	< 0.016	< 0.016
Acenaphthylene	208-96-8	µg/L	< 0.0078	< 0.0074	< 0.0074	< 0.044	< 0.039	< 0.016	< 0.017	< 0.026	< 0.025 J	< 0.0071	< 0.0075	< 0.007	< 0.0074	< 0.0071	< 0.007
Acetophenone	98-86-2	µg/L	< 0.4	< 0.49	< 0.42	< 0.44	< 0.4	< 0.4	< 0.3	< 0.32	< 0.38 J	< 0.37 J	< 0.39 J	< 0.4	< 0.5	< 0.48	< 0.47
Anthracene	120-12-7	µg/L	< 0.023	< 0.022	< 0.022	< 0.028	< 0.026	< 0.01	< 0.011	< 0.023	< 0.021 J	< 0.021	< 0.023	< 0.021	< 0.022	< 0.021	< 0.021
Atrazine	1912-24-9	µg/L	< 0.31	< 0.65	< 0.42	< 0.43	< 0.39	< 0.39	< 0.51	< 0.54	< 0.45 J	< 0.29 J	< 0.3 J	< 0.31	< 0.66	< 0.63	< 0.62
Benzaldehyde	100-52-7	µg/L	< 0.85	< 1.7	< 0.43	< 0.45	< 0.4	< 0.4	< 3.4	< 3.6	< 0.71 J	< 0.78 J	< 0.82 J	< 0.85 J	< 1.7	< 1.6	NA
Benzo(a)anthracene	56-55-3	µg/L	< 0.037	< 0.035	< 0.036	< 0.026	< 0.024	< 0.015	< 0.016	< 0.013	< 0.012 J	< 0.034	< 0.036	< 0.034 J	< 0.036	< 0.034	< 0.034
Benzo(a)pyrene	50-32-8	µg/L	< 0.039	< 0.037	< 0.038	< 0.034	< 0.031	< 0.0049	< 0.0052	< 0.014	< 0.013 J	< 0.036	< 0.038	< 0.036	< 0.038	< 0.036	< 0.036
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.019	< 0.018	< 0.018	< 0.04	< 0.036	< 0.016	< 0.017	< 0.011	< 0.011 J	< 0.017	< 0.018	< 0.017	< 0.018	< 0.017	< 0.017
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.013	< 0.012	< 0.012	< 0.032	< 0.029	< 0.01	< 0.011	< 0.017	< 0.016 J	< 0.012	< 0.013	< 0.012	< 0.012	< 0.012	< 0.012
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.021	< 0.02	< 0.02	< 0.031	< 0.028	< 0.013	< 0.013	< 0.016	< 0.016 J	< 0.019	< 0.02	< 0.019	< 0.02	< 0.019	< 0.019
Benzyl butyl phthalate	85-68-7	µg/L	< 0.71	< 0.44	< 0.27	< 0.28	< 0.25	< 0.25	< 0.3	< 0.32	< 0.23 J	< 0.65 J	< 0.69 J	< 0.71	< 0.44	< 0.43	< 0.42
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.35	< 0.54	< 0.26	< 0.28	< 0.25	< 0.25	< 0.32	< 0.34	< 0.44 J	< 0.32 J	< 0.34 J	< 0.35	< 0.55	< 0.53	< 0.52
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.75	< 0.52	< 0.33	< 0.34	< 0.31	< 0.31	< 0.32	< 0.34	< 0.46 J	< 0.69 J	< 0.72 J	< 0.75	< 0.52	< 0.5	< 0.49
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.64	< 0.57	< 0.41	< 0.43	< 0.39	< 0.39	< 0.48	< 0.50	< 0.43 J	< 0.59 J	< 0.62 J	< 0.64	< 0.58	< 0.56	< 0.54
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.98	< 0.79	< 0.35	< 0.36	< 0.33	< 0.33	< 0.62	< 0.65	< 2.1 BJ	< 6.6 BJ	< 5 BJ	< 5.3 B	< 0.8	< 0.77	< 0.75
Caprolactam	105-60-2	µg/L	< 0.55	< 0.66	< 0.21	< 0.22	< 0.2	< 0.2	< 0.73	< 0.77	< 0.43 J	< 0.5 J	< 0.53 J	< 0.55	< 0.67	< 0.64	< 0.63
Carbazole	86-74-8	µg/L	< 0.44	< 0.47	< 0.18	< 0.18	< 0.17	< 0.17	< 0.38	< 0.40	< 0.18 J	< 0.41 J	< 0.43 J	< 0.44	< 0.48	< 0.46	< 0.45
Chrysene	218-01-9	µg/L	< 0.02	< 0.019	< 0.019	< 0.024	< 0.022	< 0.023	< 0.024	< 0.013	< 0.012 J	< 0.018	< 0.019	< 0.018	< 0.019	< 0.018	< 0.018
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.022	< 0.021	< 0.021	< 0.025	< 0.023	< 0.023	< 0.024	< 0.018	< 0.017 J	< 0.021	< 0.022	< 0.02	< 0.021	< 0.021	< 0.02
Dibenzofuran	132-64-9	µg/L	< 0.25	< 0.51	< 0.32	< 0.34	< 0.3	< 0.3	< 0.28	< 0.29	< 0.24 J	< 0.23 J	< 0.25 J	< 0.25	< 0.52	< 0.5	< 0.49
Diethyl phthalate	84-66-2	µg/L	< 0.38	< 0.38	< 0.18	< 0.18	< 0.17	< 0.17	< 0.34	< 0.36	< 0.25 J	< 0.35 J	< 0.37 J	< 0.38	< 0.38	< 0.37	< 0.36
Dimethyl phthalate	131-11-3	µg/L	< 0.37	< 0.38	< 0.24	< 0.25	< 0.23	< 0.23	< 0.3	< 0.31	< 0.28 J	< 0.34 J	< 0.36 J	< 0.37	< 0.38	< 0.37	< 0.36
di-n-butyl phthalate	84-74-2	µg/L	< 0.44	< 0.53	< 0.2	< 0.21	< 0.19	< 0.19	< 0.58	< 0.62	< 5.4 BJ	< 0.41 J	< 0.43 J	< 0.44	< 0.53	< 0.51	< 0.5
di-n-octylphthalate	117-84-0	µg/L	< 0.53	< 0.52	< 0.42	< 0.44	< 0.4	< 0.4	< 0.32	< 0.34	< 0.26 J	< 0.49 J	< 0.51 J	< 0.53	< 0.53	< 0.51	< 0.5
Fluoranthene	206-44-0	µg/L	< 0.011	< 0.01	< 0.01	< 0.027	< 0.024	< 0.0096	< 0.01	< 0.015	< 0.014 J	< 0.0098	< 0.01	< 0.0096	< 0.01	< 0.0098	< 0.0096
Fluorene	86-73-7	µg/L	< 0.022	< 0.021	< 0.021	< 0.03	< 0.027	< 0.015	< 0.016	< 0.019	< 0.018 J	< 0.02	< 0.021	< 0.02	< 0.021	< 0.02	< 0.02
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.01	< 0.011	< 0.011	< 0.0099	< 0.008	< 0.0084	< 0.018	< 0.017 J	< 0.01	< 0.011	< 0.0099	< 0.011	< 0.01	< 0.0099
Hexachlorobutadiene	87-68-3	µg/L	< 0.14	< 0.39	< 0.4	< 0.41	< 0.13	< 0.13	< 0.54	< 0.57	< 0.41 J	< 0.13 J	< 0.14 J	< 0.14	< 0.4	< 0.38	< 0.38
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.11	< 4.8	< 0.71	< 0.75	< 0.24	< 0.24	< 7.5	< 7.9	< 0.51 J	< 0.11 J	< 0.11 J	< 0.11	< 4.8	< 4.6	< 4.5
Hexachloroethane	67-72-1	µg/L	< 0.18	< 0.32	< 0.28	< 0.29	< 0.21	< 0.21	< 0.58	< 0.61	< 0.30 J	< 0.16 J	< 0.17 J	< 0.18	< 0.32	< 0.31	< 0.3
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.016	< 0.015	< 0.015	< 0.032	< 0.029	< 0.011	< 0.011	< 0.016	< 0.015 J	< 0.015	< 0.015	< 0.014	< 0.015	< 0.015	< 0.014
Isophorone	78-59-1	µg/L	< 0.54	< 0.73	< 0.26	< 0.28	< 0.25	< 0.25	< 0.29	< 0.30	< 0.36 J	< 0.5 J	< 0.53 J	< 0.54	< 0.74	< 0.71	< 0.69
Naphthalene	91-20-3	µg/L	< 0.015	< 0.015	< 0.015	< 0.021	< 0.019	< 0.016	< 0.017	< 0.039	< 0.037 J	< 0.014	< 0.015	< 0.249 B	< 0.015	< 0.014	< 0.014
Nitrobenzene	98-95-3	µg/L	< 0.78	< 0.69	< 0.27	< 0.28	< 0.25	< 0.25	< 0.44	< 0.47	< 0.55 J	< 0.72 J	< 0.76 J	< 0.78	< 0.7	< 0.67	< 0.66
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.42	< 0.41	< 0.47	< 0.49	< 0.44	< 0.44	< 0.32	< 0.34	< 0.40 J	< 0.39 J	< 0.41 J	< 0.42	< 0.42	< 0.4	< 0.39
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.46	< 0.64	< 0.23	< 0.24	< 0.22	< 0.22	< 0.32	< 0.34	< 0.22 J	< 0.42 J	< 0.45 J	< 0.46	< 0.65	< 0.62	< 0.61
Pentachlorophenol	87-86-5	µg/L	< 0.25	< 0.23	< 0.24	< 0.25	< 0.068	< 0.29	< 0.11 J	< 0.11	< 0.11 J	< 0.23	< 0.24	< 0.22	< 0.24	< 0.23 J	< 0.22
Phenanthrene	85-01-8	µg/L	< 0.019	< 0.018	< 0.018	< 0.04	< 0.036	< 0.016	< 0.017	< 0.023	< 0.022 J	< 0.017	< 0.018	< 0.017	< 0.018	< 0.017	< 0.017
Phenol	108-95-2	µg/L	< 0.76	< 1.4	< 0.61	< 0.64	< 0.58	< 0.58	< 1.3	< 1.4	< 0.58 J	< 0.7 J	< 0.73 J	< 0.76	< 1.4	< 1.4	< 1.4
Pyrene	129-00-0	µg/L	< 0.013	< 0.013	< 0.013	< 0.025	< 0.022	< 0.0081	< 0.0085	< 0.017	< 0.016 J	< 0.012	< 0.013	< 0.012	< 0.013	< 0.012	< 0.012
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	24.3 B	< 24	247 J	< 26	< 200	65.4 J	< 16	85.2 B	< 11	109 B	979	420	295 J	< 24	35.4 B
Antimony, total	7440-36-0	µg/L	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3	< 6	< 1.8	< 2.6	< 1.8	< 1.8	< 1.8	< 3.5	< 1.8	< 1.8
Arsenic, total	7440-38-2	µg/L	< 1.7	< 1.7	< 2.4	< 2.4	< 1.4	< 0.92	< 0.97	< 1.5	< 2.6	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	1.7 B
Barium, total	7440-39-3	µg/L	3.5 B	6.7 BJ	4.7 BJ	4.8 B	3.5 BJ	3.4 B	4.3 J	5.4 B	4.8 B	65.3 B	60.8 B	125 B	66 BJ	46.8 B	58.4 BJ
Beryllium, total	7440-41-7	µg/L	< 0.15	< 0.15	< 1	< 0.4	< 0.24	< 0.24	< 0.44	< 0.17	< 0.40	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Cadmium, total	7440-43-9	µg/L	< 0.28	< 0.28	< 0.4	< 0.4	< 0.35	< 0.17	< 0.24	< 3.0 B	< 0.70	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Calcium, total	7440-70-2	µg/L	5420	17400	7430	11800	5820	5130	9560	10000	6760	73000	60400	158000 J	79100 J	51200	57800
Chromium, total	7440-47-3	µg/L	< 0.53	< 0.53	13.9 J	< 0.9	< 0.59	< 0.9	< 0.91	< 0.92	< 0.89	2.2 B	3.1 B	< 20.8	< 2.7	< 0.53	2 B
Cobalt, total	7440-48-4	µg/L	< 0.51	< 0.51	< 0.4	< 1.6	< 0.65	< 0.3	< 0.59	< 0.48	< 0.83	1.3 B	1.4 B	4.1 B	1.8 BJ	< 0.51	1 B
Copper, total	7440-50-8	µg/L	< 2.5	< 0.7	< 1.6	< 1.6	< 2.5	< 0.85	< 1.3	1.7 B	< 1.2	11.6 B	6.1 B	21 B	12.1	4.3 B	5.1 B
Iron, total	7439-89-6	µg/L	40.4 B	20.1 B	< 100	79.4 BJ	< 100	73.9 J	< 24	574	56.8 J	655	2710	2150	1300 J	73.4 BJ	349
Lead, total	7439-92-1	µg/L	< 1.4	< 1.4	< 1.7	< 1.7	< 1.9	< 0.94	< 1.7	< 2.4	< 1.3	5.4	4.3	22.2	21.2	< 1.4	< 1.4
Magnesium, total	7439-95-4	µg/L	2270 B	6220	3000 B	4880 B	2330 B	2060 B	4030 B	3740 B	2640 B	25200	22300	45400	25200	17900	19600
Manganese, total	7439-96-5	µg/L	0.8 B	1.8 B	5.4 BJ	1.2 BJ	2.4 BJ	< 15 J	< 15	93.3	8.2 J	442	369	1570	980	199	215
Mercury, total	7439-97-6	µg/L	< 0.15	< 0.049	< 0.049	< 0.082 J	< 0.082	< 0.088	< 0.075	< 0.089	< 0.20 B	< 0.15	< 0.15	< 0.15	< 0.049	< 0.049	< 0.049
Nickel, total	7440-02-0	µg/L	< 1.2	1.2 B	20.5 J	< 0.6	< 10	< 0.41	< 0.94	< 1.6	< 0.75	4.7 B	4.6 B	< 40.9 B	< 6.1	2.2 B	5.2 B
Potassium, total	7440-09-7	µg/L	711 B	1330 B	1230 B	921 B	839 BJ	815 B	1030 B	1420 B	1040 B	2480 B	2490 B	4110 B	1850 B	2060 B	2340 B
Selenium, total	7782-49-2	µg/L	< 1.6	< 1.6	< 3.7	< 3.7	< 1.9	< 1.5	< 2.4	< 2.4	< 3.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	2600 B	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1	< 1	1 B	< 1	< 0.53	< 0.72	< 0.85	< 1.5	< 1.2	< 1	< 1	< 1	< 1	< 1	< 1
Sodium, total	7440-23-5	µg/L	2410 B	3370 BJ	3120 B	3240 B	2610 BJ	2550 B	3070 B	3640 B	2770 B	120000	120000	257000	79100	97800	85100 J
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8	< 1.3	< 1.3	1.8 B	< 1.3	< 1.3	< 1.3
Vanadium, total	7440-62-2	µg/L	< 0.43	0.7 B	< 0.9	< 0.9	< 0.56	< 0.43	< 0.77	< 50 B	< 0.87	0.6 B	5.2 B	3.3 B	1.7 B	< 0.43	< 0.43
Zinc, total	7440-66-6	µg/L	< 4	4.5 B	21.9 J	< 2.9	< 20	< 20	< 2.8	< 4.4	7.8 J	1700	499	10700	5670	329	2690 J
Other																	
Cyanide, total	57-12-5	µg/L	< 10	< 10	NA	NA	NA	NA	NA	NA	NA	< 10	< 10	NA	< 10	< 10	< 10
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-2 RW-2 (20-50) (7/10/2009) 7/10/2009	RW-2 RW-2 (102-133) (7/13/2009) 7/13/2009	RW-2 RW-2 (162-192) 7/13/2009	RW-2 RW-2 (279-309) (7/13/2009) 7/13/2009	RW-2 RW-2(441-472) (7/14/2009) 7/14/2009	RW-2 RW-2(20-50) 10/26/2009 10/26/2009	RW-2 RW-2 (103-133) 10/27/2009	RW-2 RW-2 (162-192) 10/27/2009	RW-2 RW-2 (279-309) 10/27/2009	RW-2 RW-2 (441-472) 10/28/2009	RW-2 RW-2 (279-289) 6/29/2010	RW-2 RW-2 (452-462) (6/29/2010) 6/29/2010	RW-2 RW-2 (279-289) (052411) 5/24/2011	RW-2 RW-2 (452-462) 6/3/2011
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 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	< 0.26	< 0.24	< 0.24
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 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	< 0.24	< 0.2	< 0.2
1,1,2-Trichloroethane	79-00-5	µg/L	< 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	< 0.23	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 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	< 0.29	< 0.19	< 0.19
1,1-Dichloroethene	75-35-4	µg/L	< 0.4 [< 0.4]	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4 [< 0.4 J]	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.28	< 0.28
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 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	< 0.56	< 0.15	< 0.15
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 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	< 1.1	< 1.3	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 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	< 0.39	< 0.21	< 0.21
1,2-Dichlorobenzene	95-50-1	µg/L	< 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	< 0.26	< 0.18	< 0.18
1,2-Dichloroethane	107-06-2	µg/L	< 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	< 0.33	< 0.18	< 0.18
1,2-Dichloropropane	78-87-5	µg/L	< 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	< 0.27	< 0.22	< 0.22
1,3-Dichlorobenzene	541-73-1	µg/L	< 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	< 0.25	< 0.29	< 0.29
1,4-Dichlorobenzene	106-46-7	µg/L	< 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	< 0.28	< 0.26	< 0.26
2-Butanone (MEK)	78-93-3	µg/L	< 1.6 [< 1.6]	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6 [< 1.6 J]	< 1.6	< 1.6	< 1.6	< 1.6	7.5 J	< 1.6	< 2.9	< 2.9
2-Hexanone	591-78-6	µg/L	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.4	< 1.4	2.1 J	< 1.4	< 3	< 3
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 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	< 0.86	< 1.2	< 1.2
Acetone	67-64-1	µg/L	< 2.9 [< 2.9]	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9 [< 2.9]	< 2.9	< 2.9	< 2.9	< 2.9	95	52.4	36.2	70.9
Benzene	71-43-2	µg/L	< 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	< 0.23	< 0.22	0.24 J
Bromodichloromethane	75-27-4	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	0.6 J [0.57 J]	0.37 J	0.39 J	< 0.22	< 0.22	< 0.22	< 0.22	< 0.23	< 0.23
Bromoform	75-25-2	µg/L	< 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	< 0.23	< 0.24	< 0.24
Bromomethane	74-83-9	µg/L	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3 [< 0.3]	< 0.3 J	< 0.3 J	< 0.3 J	< 0.3 J	< 0.3	< 0.3	< 0.31	< 0.31
Carbon disulfide	75-15-0	µg/L	< 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	< 0.74	< 0.18	< 0.18
Carbon tetrachloride	56-23-5	µg/L	< 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	< 0.26	< 0.19	< 0.19
Chlorobenzene	108-90-7	µg/L	< 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	< 0.39	< 0.22	< 0.22
Chloroethane	75-00-3	µg/L	< 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	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	7 [6.5]	5.1	4.9	4.8	2.8	16.1 J [15.5]	15.3	15.5	10.8	3.5	0.32 J	< 0.23	< 0.21	< 0.21
Chloromethane	74-87-3	µg/L	< 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	< 0.29	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 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	< 0.22	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 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	< 0.25	< 0.22	< 0.22
Cyclohexane	110-82-7	µg/L	< 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	< 1.9	< 0.29	< 0.29
Dibromochloromethane	124-48-1	µg/L	< 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	< 0.22	< 0.2	< 0.2
Dichlorodifluoromethane	75-71-8	µg/L	< 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	< 0.92	< 0.31	< 0.31
Ethylbenzene	100-41-4	µg/L	< 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	< 0.27	< 0.21	< 0.21
Freon 113	76-13-1	µg/L	< 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	< 0.38	< 0.49	< 0.49
Isopropylbenzene	98-82-8	µg/L	< 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	< 0.57	< 0.19	< 0.19
Methyl acetate	79-20-9	µg/L	< 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	< 1.5	< 2.9	< 2.9
Methyl tert butyl ether	1634-04-4	µg/L	< 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	< 0.23	< 0.18	< 0.18
Methylcyclohexane	108-87-2	µg/L	< 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	< 0.35	< 0.18	< 0.18
Methylene chloride	75-09-2	µg/L	< 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	< 0.3	< 0.2	< 0.2
o-Xylene	95-47-6	µg/L	< 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	NA	NA
Styrene	100-42-5	µg/L	< 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	< 0.58	< 0.23	< 0.23
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 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	< 0.27	< 0.32	< 0.32
Toluene	108-88-3	µg/L	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3 [< 0.3]	0.31 J	0.41 J	< 0.3	0.32 J	< 0.3	< 0.3	0.24 J	0.63 J
Trans-1,2-dichloroethene	156-60-5	µg/L	< 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	< 0.25	< 0.31	< 0.31
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 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	< 0.21	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 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	< 0.24	< 0.21	< 0.21
Trichlorofluoromethane	75-69-4	µg/L	< 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	< 0.54	< 0.35	< 0.35
Vinyl Chloride	75-01-4	µg/L	< 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	< 0.44	< 0.27	< 0.27
Xylene, -m,p	179601-23-1	µg/L	< 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	NA	NA
Xylenes	1330-20-7	µg/L	< 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	< 0.25	< 0.17	< 0.17
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.49 [< 0.49]	< 0.5	< 0.5	< 0.47	< 0.42	< 0.47 [< 0.47]	< 0.45	< 0.45	< 0.46	< 0.46	< 0.48	< 0.47	< 0.45	< 0.47
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.5 [< 1.5]	< 1.6	< 1.6	< 1.5	< 1.3	< 1.5 [< 1.5]	< 1.4	< 1.4	< 1.5	< 1.5	< 1.5	< 1.5	< 1.4	< 1.5
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.4	< 1.2	< 1.4 [< 1.4]	< 1.3	< 1.3	< 1.3	< 1.3	< 1.4	< 1.4	< 1.3	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.4	< 1.2	< 1.4 [< 1.4]	< 1.3	< 1.3	< 1.3	< 1.3	< 1.4	< 1.4	< 1.3	< 1.4
2,4-Dimethylphenol	105-67-9	µg/L	< 1.9 [< 1.9]	< 1.9	< 1.9	< 1.8	< 1.7	< 1.9 [< 1.8]	< 1.8	< 1.8	< 1.8	< 1.8	< 1.9	< 1.8	< 1.8	< 1.8
2,4-Dinitrophenol	51-28-5	µg/L	< 0.86 [< 0.86]	< 0.87	< 0.87	< 0.82	< 0.74	< 0.83 [< 0.82]	< 0.79 J	< 0.79 J	< 0.81 J	< 0.81	< 0.84	< 0.82	< 0.79	< 0.82
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.24	< 0.22	< 0.25 [< 0.24]	< 0.24 J	< 0.24 J	< 0.24 J	< 0.24 J	< 0.25	< 0.24	< 0.24	< 0.24
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.38 [< 0.38]	< 0.38	< 0.38	< 0.36	< 0.33	< 0.37 [< 0.36]	< 0.35	< 0.35	< 0.36	< 0.36	< 0.37	< 0.36	< 0.35	< 0.36
2-Chloronaphthalene	91-58-7	µg/L	< 0.48 [< 0.48]	< 0.49	< 0.49	< 0.46	< 0.42	< 0.47 [< 0.46]	< 0.45	< 0.45	< 0.46	< 0.46	< 0.47	< 0.46	< 0.45	< 0.46
2-Chlorophenol	95-57-8	µg/L	< 1.2 [< 1.2]	< 1.3	< 1.3	< 1.2	< 1.1	< 1.2 [< 1.2]	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
2-Methylnaphthalene	91-57-6	µg/L	< 0.77 [< 0.77]	< 0.77	< 0.77	< 0.73	< 0.66	< 0.74 [< 0.73]	< 0.71	< 0.71	< 0.72	< 0.72	< 0.75	< 0.73	< 0.71	< 0.73
2-Methylphenol	95-48-7	µg/L	< 1.3 [< 1.3]	< 1.3	< 1.3	< 1.2	< 1.1	< 1.3 [< 1.2]	< 1.2	< 1.2	< 1.2	< 1.2	< 1.3	< 1.2	< 1.2	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 0.27 [< 0.27]	< 0.28	< 0.28	< 0.26	< 0.24	< 0.26 [< 0.26]	< 0.25	< 0.25	< 0.26	< 0.26	< 0.27	< 0.26	< 0.25	< 0.26
2-Nitrophenol	88-75-5	µg/L	< 1.4 [< 1.4]	< 1.5	< 1.5	< 1.4	< 1.2	< 1.4 [< 1.4]	< 1.3	< 1.3	< 1.4	< 1.4	< 1.4	< 1.4	< 1.3	< 1.4
3&4-Methylphenol	12-03-3	µg/L	< 1.2 [< 1.2]	< 1.2	< 1.2	< 1.2	< 1	< 1.2 [< 1.2]	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2	< 1.2	< 1.1	< 1.2
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.34 [< 0.34]	< 0.35 J	< 0.35 J	< 0.33 J	< 0.3	< 0.33 [< 0.33]	< 0.32	< 0.32	< 0.32	< 0.32	< 0.34	< 0.33	< 0.32	< 0.33
3-Nitroaniline	99-09-2	µg/L	< 0.33 [< 0.33]	< 0.34 J	< 0.34 J	< 0.32 J	< 0.29	< 0.32 [< 0.32]	< 0.31	< 0.31	< 0.32	< 0.32	< 0.33	< 0.32	< 0.31	< 0.32
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.6 [< 0.6]	< 0.6	< 0.6	< 0.57	< 0.51	< 0.58 [< 0.57]	< 0.55	< 0.55	< 0.56	< 0.56	< 0.58	< 0.57	< 0.55	< 0.57
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.41 [< 0.41]	< 0.41	< 0.41	< 0.39	< 0.35	< 0.39 [< 0.39]	< 0.38	< 0.38	< 0.38	< 0.38	< 0.4	< 0.39	< 0.38	< 0.39
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.2 [< 1.2]	< 1.2	< 1.2	< 1.2	< 1.1	< 1.2 [< 1.2]	< 1.1	< 1.1	< 1.2	< 1.2	< 1.2	< 1.2	< 1.1	< 1.2
Semi-Volatile Organic Compounds																

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID			RW-2	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2	RW-2
Sample ID			RW-2 (20-50) (7/10/2009)	RW-2 (102-133) (7/13/2009)	RW-2 (162-192)	RW-2 (279-309) (7/13/2009)	RW-2(441-472) (7/14/2009)	RW-2(20-50) 10/26/2009	RW-2 (103-133)	RW-2 (162-192)	RW-2 (279-309)	RW-2 (441-472)	RW-2 (279-289)	RW-2 (452-462) (6/29/2010)	RW-2 (279-289) (052411)	RW-2 (452-462)
Sample Date	CAS	Units	7/10/2009	7/13/2009	7/13/2009	7/13/2009	7/14/2009	10/26/2009	10/27/2009	10/27/2009	10/27/2009	10/28/2009	6/29/2010	6/29/2010	5/24/2011	6/3/2011
4-Chloroaniline	106-47-8	µg/L	< 0.29 [< 0.29]	< 0.3	< 0.3	< 0.28	< 0.25	< 0.28 [< 0.28]	< 0.27	< 0.27	< 0.28	< 0.28	< 0.29	< 0.28	< 0.27	< 0.28
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.41 [< 0.41]	< 0.42	< 0.42	< 0.39	< 0.35	< 0.4 [< 0.39]	< 0.38	< 0.38	< 0.39	< 0.39	< 0.4	< 0.39	< 0.38	< 0.39
4-Nitroaniline	100-01-6	µg/L	< 0.21 [< 0.21]	< 0.21 J	< 0.21 J	< 0.2 J	< 0.18	< 0.2 [< 0.2]	< 0.19	< 0.19	< 0.2	< 0.2	< 0.2	< 0.2	< 0.19	< 0.2
4-Nitrophenol	100-02-7	µg/L	< 0.96 [< 0.96]	< 0.97	< 0.97	< 0.92	< 0.83	< 0.93 [< 0.92]	< 0.89	< 0.89	< 0.91	< 0.91	< 0.94	< 0.92	< 0.89	< 0.92
Acenaphthene	83-32-9	µg/L	< 0.019 [< 0.019]	< 0.034	< 0.034	< 0.032	< 0.016	< 0.033 [< 0.032]	< 0.031	< 0.031	< 0.032	< 0.032	< 0.033	< 0.032	< 0.015	< 0.015
Acenaphthylene	208-96-8	µg/L	< 0.0081 [< 0.0081]	< 0.046	< 0.046	< 0.044	< 0.007	< 0.044 [< 0.044]	< 0.042	< 0.042	< 0.043	< 0.043	< 0.045	< 0.044	< 0.017	< 0.018
Acetophenone	98-86-2	µg/L	< 0.46 [< 0.46]	< 0.47	< 0.47	< 0.44	< 0.4	< 0.45 [< 0.44]	< 0.43	< 0.43	< 0.44	< 0.44	3	3.4	< 2.2	1.1 J
Anthracene	120-12-7	µg/L	< 0.024 [< 0.024]	< 0.03	< 0.03	< 0.028	< 0.021	< 0.029 [< 0.028]	< 0.028	< 0.028	< 0.028	< 0.028	< 0.029	< 0.028	< 0.011	< 0.011
Atrazine	1912-24-9	µg/L	< 0.45 [< 0.45]	< 0.46	< 0.46	< 0.43	< 0.39	< 0.44 [< 0.43]	< 0.42 J	< 0.42 J	< 0.43 J	< 0.43	< 0.44	< 0.43	< 0.42	< 0.43
Benzaldehyde	100-52-7	µg/L	< 0.47 [< 0.47]	< 0.48	< 0.48	< 0.45	< 0.4	< 0.45 [< 0.45]	< 0.43	< 0.43	< 0.44	< 0.44	< 0.46	< 0.45	< 0.43	< 0.45
Benzo(a)anthracene	56-55-3	µg/L	< 0.039 [< 0.039]	< 0.028	< 0.028	< 0.026	< 0.034	< 0.027 [< 0.026]	< 0.025	< 0.025	< 0.026	< 0.026	< 0.027	< 0.026	< 0.016	< 0.017
Benzo(a)pyrene	50-32-8	µg/L	< 0.041 [< 0.041]	< 0.036	< 0.036	< 0.034	< 0.036	< 0.035 [< 0.034]	< 0.033	< 0.033	< 0.034	< 0.034	< 0.035	< 0.034	< 0.0053	< 0.0054
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.02 [< 0.02]	< 0.042	< 0.042	< 0.04	< 0.017	< 0.04 [< 0.04]	< 0.038	< 0.038	< 0.039	< 0.039	< 0.041	< 0.04	< 0.018	< 0.018
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.014 [< 0.014]	< 0.034	< 0.034	< 0.032	< 0.012	< 0.032 [< 0.032]	< 0.031	< 0.031	< 0.032	< 0.032	< 0.033	< 0.032	< 0.011	< 0.011
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.022 [< 0.022]	< 0.033	< 0.033	< 0.031	< 0.019	< 0.032 [< 0.031]	< 0.03	< 0.03	< 0.031	< 0.031	< 0.032 J	< 0.031	< 0.013	< 0.014
Benzyl butyl phthalate	85-68-7	µg/L	< 0.29 [< 0.29]	< 0.3	< 0.3	< 0.28	< 0.25	< 0.28 [< 0.28]	< 0.27	< 0.27	< 0.28	< 0.28	< 0.29	< 0.28	< 0.27	< 0.28
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.29 [< 0.29]	< 0.29	< 0.29	< 0.28	< 0.25	< 0.28 [< 0.28]	< 0.27	< 0.27	< 0.27	< 0.27	< 0.28	< 0.28	< 0.27	< 0.28
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.36 [< 0.36]	< 0.36	< 0.36	< 0.34	< 0.31	< 0.35 [< 0.34]	< 0.33	< 0.33	< 0.34	< 0.34	< 0.35	< 0.34	< 0.33	< 0.34
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.45 [< 0.45]	< 0.46	< 0.46	< 0.43	< 0.39	< 0.44 [< 0.43]	< 0.42	< 0.42	< 0.43	< 0.43	< 0.44	< 0.43	< 0.42	< 0.43
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.38 [< 0.38]	< 0.38	< 0.38	< 0.36	< 0.33	< 0.37 [< 0.36]	< 0.35	< 0.35	< 0.36	< 2.2 J	< 0.37	< 0.36	< 0.35	< 0.36
Caprolactam	105-60-2	µg/L	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.22	< 0.2	< 0.22 [< 0.22]	< 0.21	< 0.21	< 0.21	< 0.21	< 0.22	< 0.22	< 0.21	< 0.22
Carbazole	86-74-8	µg/L	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.18	< 0.17	< 0.19 [< 0.18]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.19	< 0.18	< 0.18	< 0.18
Chrysene	218-01-9	µg/L	< 0.02 [< 0.02]	< 0.026	< 0.026	< 0.024	< 0.018	< 0.025 [< 0.024]	< 0.024	< 0.024	< 0.024	< 0.024	< 0.025	< 0.024	< 0.025	< 0.026
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023 [< 0.023]	< 0.026	< 0.026	< 0.025	< 0.02	< 0.025 [< 0.025]	< 0.024	< 0.024	< 0.025	< 0.025	< 0.026	< 0.025	< 0.024	< 0.025
Dibenzofuran	132-64-9	µg/L	< 0.35 [< 0.35]	< 0.36	< 0.36	< 0.34	< 0.3	< 0.34 [< 0.34]	< 0.33	< 0.33	< 0.33	< 0.33	< 0.35	< 0.34	< 0.33	< 0.34
Diethyl phthalate	84-66-2	µg/L	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.18	< 0.17	< 0.19 [< 0.18]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.19	< 0.18	< 0.18	< 0.18
Dimethyl phthalate	131-11-3	µg/L	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.25	< 0.23	< 0.25 [< 0.25]	< 0.24	< 0.24	< 0.25	< 0.25	< 0.26	< 0.25	< 0.24	< 0.25
di-n-butyl phthalate	84-74-2	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.21	< 0.19	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.21	< 0.21	< 0.22	< 0.21	< 0.21	< 0.21
di-n-octylphthalate	117-84-0	µg/L	< 0.46 [< 0.46]	< 0.46	< 0.46	< 0.44	< 0.4	< 0.44 [< 0.44]	< 0.42	< 0.42	< 0.43	< 0.43	< 0.45	< 0.44	< 0.42	< 0.44
Fluoranthene	206-44-0	µg/L	< 0.011 [< 0.011]	< 0.029	< 0.029	< 0.027	< 0.0096	< 0.027 [< 0.027]	< 0.026	< 0.026	< 0.027	< 0.027	< 0.028	< 0.027	< 0.01	< 0.011
Fluorene	86-73-7	µg/L	< 0.023 [< 0.023]	< 0.032	< 0.032	< 0.03	< 0.02	< 0.03 [< 0.03]	< 0.029	< 0.029	< 0.03	< 0.03	< 0.031	0.182	< 0.016	< 0.017
Hexachlorobenzene	118-74-1	µg/L	< 0.012 [< 0.012]	< 0.012	< 0.012	< 0.011	< 0.0099	< 0.011 [< 0.011]	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.0086	< 0.0089
Hexachlorobutadiene	87-68-3	µg/L	< 0.43 [< 0.43]	< 0.44	< 0.44	< 0.41	< 0.37	< 0.42 J [< 0.41 J]	< 0.4	< 0.4	< 0.41	< 0.41 J	< 0.14	< 0.14	< 0.14	< 0.14
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.78 [< 0.78]	< 0.79	< 0.79	< 0.75	< 0.67	< 0.76 [< 0.75]	< 0.72	< 0.72	< 0.74	< 0.74	< 0.28	< 0.27	< 0.26	< 0.27
Hexachloroethane	67-72-1	µg/L	< 0.31 [< 0.31]	< 0.31	< 0.31	< 0.29	< 0.26	< 0.3 [< 0.29]	< 0.28	< 0.28	< 0.29	< 0.29	< 0.24	< 0.23	< 0.22	< 0.23
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.017 [< 0.017]	< 0.034	< 0.034	< 0.032	< 0.014	< 0.033 [< 0.032]	< 0.031	< 0.031	< 0.032	< 0.032	< 0.033	< 0.032	< 0.011	< 0.012
Isophorone	78-59-1	µg/L	< 0.29 [< 0.29]	< 0.29	< 0.29	< 0.28	< 0.25	< 0.28 [< 0.28]	< 0.27	< 0.27	< 0.27	< 0.27	< 0.28	1.8 J	< 0.27	< 0.28
Naphthalene	91-20-3	µg/L	< 0.016 [< 0.016]	< 0.022	< 0.022	< 0.021	< 0.014	< 0.021 [< 0.021]	< 0.02	< 0.02	< 0.02	< 0.02	< 0.021	< 0.021	< 0.017	< 0.018
Nitrobenzene	98-95-3	µg/L	< 0.29 [< 0.29]	< 0.3	< 0.3	< 0.28	< 0.25	< 0.28 [< 0.28]	< 0.27	< 0.27	< 0.28	< 0.28	< 0.29	< 0.28	< 0.27	< 0.28
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.51 [< 0.51]	< 0.52	< 0.52	< 0.49	< 0.44	< 0.49 [< 0.49]	< 0.47	< 0.47	< 0.48	< 0.48	< 0.5	< 0.49	< 0.47	< 0.49
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.24	< 0.22	< 0.24 [< 0.24]	< 0.23	< 0.23	< 0.24	< 0.24	< 0.24	< 0.24	< 0.23	< 0.24
Pentachlorophenol	87-86-5	µg/L	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.25	< 0.22	< 0.25 [< 0.25]	< 0.24	< 0.24	< 0.25	< 0.25 J	< 0.077	< 0.076	< 0.31	< 0.32
Phenanthrene	85-01-8	µg/L	< 0.02 [< 0.02]	< 0.042	< 0.042	< 0.04	< 0.017	< 0.041 [< 0.04]	< 0.039	< 0.039	< 0.04	< 0.04	0.262	0.904 J	0.616	0.369
Phenol	108-95-2	µg/L	< 0.67 [< 0.67]	< 0.68	< 0.68	< 0.64	< 0.58	< 0.65 [< 0.64]	< 0.62	< 0.62	< 0.63	< 0.63	< 0.66	< 0.64	< 0.62	5.1
Pyrene	129-00-0	µg/L	< 0.014 [< 0.014]	< 0.026	< 0.026	< 0.025	< 0.012	< 0.025 [< 0.025]	< 0.024	< 0.024	< 0.024	< 0.024	< 0.025	< 0.025	< 0.0087	< 0.009
Metals - Total																
Aluminum, total	7429-90-5	µg/L	835 J [1110 J]	616 J	650	< 200	< 26	346 [366]	134 J	301 J	88.5 J	363	< 200	NA	674	216 J
Antimony, total	7440-36-0	µg/L	< 4 [< 4]	< 4	< 4	< 4	< 4	< 2.9 [< 2.9]	< 2.9	< 2.9	< 2.9	< 2.9	< 2.2	NA	< 1.3	< 1.3
Arsenic, total	7440-38-2	µg/L	< 2.4 [< 2.4]	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4 [< 2.4]	< 2.4	< 2.4	< 2.4	< 2.4	3	NA	< 0.92	< 3
Barium, total	7440-39-3	µg/L	42.3 B [42.3 B]	55.6 B	55.4 B	50.6 B	122 B	20.5 B [21.1 B]	22.8 B	23.8 B	26.5 B	132 B	114 B	NA	77.4 B	86.8 B
Beryllium, total	7440-41-7	µg/L	< 0.4 [< 0.4]	< 0.4	< 1	< 0.4	< 0.4	< 0.4 [< 0.4]	< 0.4	< 0.4	< 0.4	< 0.4	< 0.24	NA	< 0.24	< 0.24
Cadmium, total	7440-43-9	µg/L	< 3 [< 3]	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4 [< 0.4]	< 0.4	< 0.4	< 0.4	< 0.4	< 0.35	NA	< 0.17	< 0.17
Calcium, total	7440-70-2	µg/L	53400 [53800]	73900	81300	83000	166000	28300 [28900]	30700	33200	38200	177000	179000	NA	175000	214000
Chromium, total	7440-47-3	µg/L	< 0.9 [< 10]	< 10	< 10	< 0.9	< 10	< 0.9 [< 0.9]	1.3 B	1.4 B	1 B	< 10	60.5	NA	8.1 B	73.5
Cobalt, total	7440-48-4	µg/L	< 0.4 [< 0.4]	< 50	< 50	< 50	< 50	< 1.6 [< 1.6]	< 1.6	< 1.6	< 1.6	< 1.6	< 0.65	NA	< 0.3	< 0.3
Copper, total	7440-50-8	µg/L	< 10 [4.7 BJ]	4.2 B	5.9 BJ	4.5 BJ	5.7 BJ	3.7 B [3.9 B]	3.4 J	5.9 J	5.8 J	14	9 B	NA	< 10	< 10
Iron, total	7439-89-6	µg/L	3520 [3810]	4160	4120	1390	930	2230 [2290]	1330	2700	1660	2990 J	186 J	NA	163	625
Lead, total	7439-92-1	µg/L	< 1.7 [< 1.7]	< 3	< 3	< 1.7	< 1.7	< 1.7 [< 1.7]	< 1.7	< 1.7	< 1.7	< 1.7	< 1.9	NA	< 0.94	< 3
Magnesium, total	7439-95-4	µg/L	19800 [20300]	25800	27200	26900	47900	8960 [9130]	8800	9010	10300	46100	< 5000	NA	< 5000	63.3 B
Manganese, total	7439-96-5	µg/L	215 J [239]	165	303	198	334	101 [108]	79.8 J	240 J	193 J	962	12.4 J	NA	< 0.18	< 15
Mercury, total	7439-97-6	µg/L	< 0.049 [< 0.049]	< 0.049	< 0.049	< 0.049	< 0.049	< 0.082 [< 0.082]	< 0.082	< 0.082	< 0.082	< 0.082	< 0.082 J	NA	< 0.088	< 0.088
Nickel, total	7440-02-0	µg/L	< 10 [4.3 BJ]	< 10	< 10	< 10	< 4.1	1.5 B [1.5 B]	1.8 J	2.4 J	2.2 J	5.1 B	8.4 B	NA	12.5	11.9
Potassium, total	7440-09-7	µg/L	2830 B [2920 B]	2360 B	2340 B	2130 B	4480 B	2150 B [2220 B]	1810 B	1830 B	1860 B	4330 J	222000	NA	77100	291000
Selenium, total	7782-49-2	µg/L	< 3.7 [< 3.7]	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7 [< 3.7]	< 3.7	< 3.7	< 3.7	< 3.7	6.8 B	NA	< 10	5.8 B
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1 [< 10]	< 1	1.1 B	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 0.53	NA	< 0.72	< 0.72
Sodium, total	7440-23-5	µg/L	132000 [134000]	121000	112000	109000	288000	86600 [90000]	89200	86500	90300	271000	311000	NA	152000	406000
Thallium, total	7440-28-0	µg/L	< 2 [< 1.5]	< 1.5	1.8 B	< 1.5	< 1.5	< 1.5 [< 1.5]	< 1.5	< 1.5	< 1.5	< 1.5	< 1.8	NA	< 0.17	< 2
Vanadium, total	7440-62-2	µg/L	< 50 [9.9 BJ]	< 50	4 BJ	< 0.9	< 0.9	2.2 B [2.1 B]	1.3 B	2.3 B	< 0.9	2.1 B	5 B	NA	11.4 J	28.8 B
Zinc, total	7440-66-6	µg/L	1110 [918]	2970 J	1520 J	680 J	2060	1060 [1060]	4730	1870	1170	1870	< 20	NA	8.3 J	< 20
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-2 RW-2(279-289) (050812) 5/8/2012	RW-2 RW-2(452-462) (051012) 5/10/2012	RW-2 RW-2(452-462) (051612) 5/16/2012	RW-2 RW-2 (279-289) (111913) 11/19/2013	RW-2 RW-2 (452-462) (111913) 11/19/2013	RW-2 RW-2(279-289)(092614) 9/26/2014	RW-2 RW-2(452-462)(092614) 9/26/2014	RW-3 RW-3 (62-98) (4/30/2009) 4/30/2008	RW-3 RW3 (62-98) 9/8/2008	RW-3 RW-3 (62-98) (7/6/2009) 7/6/2009	RW-3 RW-3 (62-98) 10/19/2009	RW-3 RW-3 (77-87) 6/28/2010	RW-3 RW-3(052511) 5/25/2011	RW-3 RW-3 (77-87) (042612) 4/27/2012
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.24	NA	< 0.25	< 0.25	< 0.32	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.24	< 0.24
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.2	< 0.2	NA	< 0.20	< 0.20	< 0.39	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.2	< 0.2
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23	NA	< 0.21	< 0.21	< 0.28	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.19	< 0.19	NA	< 0.26	< 0.26	< 0.35	< 0.35	0.45 J	0.39 J	0.35 J	< 0.29	< 0.29	0.36 J	0.29 J
1,1-Dichloroethene	75-35-4	µg/L	< 0.28	< 0.28	NA	< 0.34	< 0.34	< 0.50	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.28	< 0.28
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.15	< 0.15	NA	< 0.22	< 0.22	< 0.22	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.15	< 0.15
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3*	< 1.3*	NA	< 1.3	< 1.3	< 1.2	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.3	< 1.3*
1,2-Dibromoethane	106-93-4	µg/L	< 0.21*	< 0.21*	NA	< 0.16	< 0.16	< 0.23	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.21	< 0.21*
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.18	NA	< 0.20	< 0.20	< 0.16	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.18	< 0.18
1,2-Dichloroethane	107-06-2	µg/L	< 0.18	< 0.18	NA	< 0.22	< 0.22	< 0.30	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.18	< 0.18
1,2-Dichloropropane	78-87-5	µg/L	< 0.22	< 0.22	NA	< 0.28	< 0.28	< 0.43	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.22	< 0.22
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.29	< 0.29	NA	< 0.31	< 0.31	< 0.26	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.29	< 0.29
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.26	< 0.26	NA	< 0.30	< 0.30	0.25 J	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.26	< 0.26
2-Butanone (MEK)	78-93-3	µg/L	< 2.9	< 2.9	NA	< 3.2	< 3.2	< 2.5	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 2.9	< 2.9
2-Hexanone	591-78-6	µg/L	< 3	< 3	NA	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 3 J	< 3
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.2	< 1.2	NA	< 1.5	< 1.5	< 1.1	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 1.2	< 1.2
Acetone	67-64-1	µg/L	12.2	36.1	NA	11.9	< 3.3	9.7 J	21.9	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 7.6	< 5
Benzene	71-43-2	µg/L	< 0.22	0.23 J	NA	< 0.28	< 0.28	< 0.21	< 0.21	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.22	< 0.22
Bromodichloromethane	75-27-4	µg/L	< 0.23	< 0.23	NA	< 0.21	< 0.21	< 0.28	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.23	< 0.23
Bromoform	75-25-2	µg/L	< 0.24	< 0.24	NA	< 0.30	< 0.30	< 0.31	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.24	< 0.24
Bromomethane	74-83-9	µg/L	< 0.31	< 0.31	NA	< 0.56	< 0.56	< 0.39	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.31	< 0.31
Carbon disulfide	75-15-0	µg/L	0.49 J	< 0.18	NA	< 0.18	1.1 J	< 0.50	1.7 J	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.18	< 0.18
Carbon tetrachloride	56-23-5	µg/L	< 0.19	< 0.19	NA	< 0.23	< 0.23	< 0.24	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.19	< 0.19
Chlorobenzene	108-90-7	µg/L	1.7	< 0.22	NA	1.9	< 0.35	2.3	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.22	< 0.22
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	NA	< 0.39	< 0.39	< 0.56	< 0.56	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.21	< 0.21	NA	< 0.25	< 0.25	< 0.20	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22	NA	< 0.36	< 0.36	0.39 J	0.37 J	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22	NA	< 0.24	< 0.24	< 0.33	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.22	< 0.22	NA	< 0.15	< 0.15	< 0.28	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.22	< 0.22
Cyclohexane	110-82-7	µg/L	< 0.29	< 0.29	NA	< 0.18	< 0.18	< 0.37	< 0.37	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.29	< 0.29
Dibromochloromethane	124-48-1	µg/L	< 0.2	< 0.2	NA	< 0.19	< 0.19	< 0.25	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.2	< 0.2
Dichlorodifluoromethane	75-71-8	µg/L	< 0.31	< 0.31	NA	< 0.63	< 0.63	< 0.73	< 0.73	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.31	< 0.31
Ethylbenzene	100-41-4	µg/L	< 0.21	< 0.21	NA	< 0.21	< 0.21	< 0.40	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.21	< 0.21
Freon 113	76-13-1	µg/L	< 0.49	< 0.49	NA	< 0.77	< 0.77	< 0.45	< 0.45	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.49	< 0.49
Isopropylbenzene	98-82-8	µg/L	< 0.19	< 0.19	NA	< 0.22	< 0.22	< 0.26	< 0.26	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.19	< 0.19
Methyl acetate	79-20-9	µg/L	< 2.9	< 2.9	NA	< 1.5	< 1.5	< 3.1	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 2.9	< 2.9
Methyl tert butyl ether	1634-04-4	µg/L	< 0.18	< 0.18	NA	0.34 J	0.33 J	0.30 J	< 0.26	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.18	< 0.18
Methylcyclohexane	108-87-2	µg/L	< 0.18	< 0.18	NA	< 0.15	< 0.15	< 0.22	< 0.22	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.18	< 0.18
Methylene chloride	75-09-2	µg/L	< 0.2	< 0.2	NA	< 0.86	< 0.86	< 0.81	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2
o-Xylene	95-47-6	µg/L	NA	NA	NA	< 0.30	< 0.30	NA	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.23	< 0.23	NA	NA	NA	< 0.26	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.23	< 0.23
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.32	< 0.32	NA	0.73 J	0.73 J	< 0.35	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.32	< 0.32
Toluene	108-88-3	µg/L	< 0.15	0.49 J	NA	< 0.38	< 0.38	0.76 J	0.65 J	3.1	20.6	< 0.3	< 0.3	< 0.3	< 0.15	< 0.15
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.31	< 0.31	NA	< 0.21	< 0.21	< 0.51	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.31	< 0.31
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	NA	< 0.50	< 0.50	< 0.32	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.21	< 0.21	NA	< 0.33 J	< 0.33 J	< 0.25	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.21	< 0.21
Trichlorofluoromethane	75-69-4	µg/L	< 0.35	< 0.35	NA	< 0.41	< 0.41	< 0.28	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.35	< 0.35
Vinyl Chloride	75-01-4	µg/L	< 0.27	< 0.27	NA	NA	NA	< 0.17	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.27	< 0.27
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.17	< 0.17	NA	< 0.19	< 0.19	< 0.20	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.17	< 0.17
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.32	< 0.34	NA	< 0.34	< 0.33	< 0.30	< 0.31	< 0.22	< 0.59	< 0.47	< 0.45	< 0.5	< 0.45	< 0.34
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.7	< 1.7	NA	< 1.8	< 1.7	< 1.9	< 2.0	< 1.1	< 2.1	< 1.5	< 1.4	< 1.6	< 1.4	< 1.8
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4	< 1.4	NA	< 1.5	< 1.4	< 1.7	< 1.8	< 1	< 1.7	< 1.4	< 1.3	< 1.5	< 1.3	< 1.5
2,4-Dichlorophenol	120-83-2	µg/L	< 1.2	< 1.3	NA	< 1.3	< 1.3	< 1.8	< 1.9	< 1.4	< 2.1	< 1.4	< 1.3	< 1.5	< 1.3	< 1.3
2,4-Dimethylphenol	105-67-9	µg/L	< 1.6	< 1.7	NA	< 1.7	< 1.7	< 2.0	< 2.1	< 1.7	< 2.1	< 1.8	< 1.8	< 2	< 1.8	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	< 18	< 18	NA	< 19	< 18	< 7.2	< 7.5	< 1.1	< 4.4	< 0.82	< 0.79	< 0.88	< 0.79	< 19
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.45	< 0.47	NA	< 0.48 J	< 0.46 J	< 0.36	< 0.37	< 0.54	< 0.48	< 0.24	< 0.24	< 0.26	< 0.24	< 0.48
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.49	< 0.51	NA	< 0.52 J	< 0.50 J	< 0.28	< 0.29	< 0.5	< 0.64	< 0.36	< 0.35	< 0.39	< 0.35	< 0.52
2-Chloronaphthalene	91-58-7	µg/L	< 0.32	< 0.33	NA	< 0.34	< 0.32	< 0.38	< 0.39	< 0.2	< 0.51	< 0.46	< 0.45	< 0.5	< 0.45	< 0.34
2-Chlorophenol	95-57-8	µg/L	< 1	< 1.1	NA	< 1.1	< 1.1	< 1.4	< 1.4	< 0.87	< 1.5	< 1.2	< 1.2	< 1.3	< 1.2	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	< 0.41	< 0.43	NA	< 0.44	< 0.42	< 0.32	< 0.33	< 0.76	< 0.46	< 0.73	< 0.71	< 0.78	< 0.71	< 0.43
2-Methylphenol	95-48-7	µg/L	< 1.1	< 1.2	NA	< 1.2	< 1.1	< 1.4	< 1.5	< 1	< 1.5	< 1.2	< 1.2	< 1.3	< 1.2	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 1.2	< 1.2	NA	< 1.3	< 1.2	< 0.35	< 0.36	< 0.5	< 0.47	< 0.26	< 0.25	< 0.28	< 0.25	< 1.3
2-Nitrophenol	88-75-5	µg/L	< 1.6	< 1.7	NA	< 1.7	< 1.6	< 2.1	< 2.1	< 1.5	< 2.1	< 1.4	< 1.3	< 1.5	< 1.3	< 1.7
3&4-Methylphenol	12-03-3	µg/L	< 0.98	< 1	NA	< 1.1	< 1.0	< 1.2	< 1.2	< 1.1	< 1.6	< 1.2	< 1.1	< 1.2	< 1.1	< 1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.38	< 0.4	NA	< 0.41	< 0.39	< 0.62	< 0.64	< 0.97	< 4.8	< 0.33	< 0.32	< 0.35	< 0.32	< 0.41
3-Nitroaniline	99-09-2	µg/L	< 1.3	< 1.4	NA	< 1.4	< 1.4	< 0.29	< 0.30	< 0.32	< 0.48	< 0.32	< 0.31	< 0.34	< 0.31	< 1.4
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.1	< 1.1	NA	< 1.1	< 1.1	< 1.5	< 1.5	< 2.2	< 1.2	< 0.57	< 0.55	< 0.61	< 0.55	< 1.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.38	< 0.4	NA	< 0.41	< 0.39	< 0.28	< 0.29	< 0.37	< 0.44	< 0.39	< 0.38	< 0.42	< 0.38	< 0.4
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.9	< 2	NA	< 2.1	< 2.0	< 1.4	< 1.5	< 1.2	< 2.4	< 1.2	< 1.1	< 1.3	< 1.1	< 2.1
Semi-Volatile Organic Compounds																

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-2 RW-2(279-289) (050812) 5/8/2012	RW-2 RW-2(452-462) (051012) 5/10/2012	RW-2 RW-2(452-462) (051612) 5/16/2012	RW-2 RW-2 (279-289) (111913) 11/19/2013	RW-2 RW-2 (452-462) (111913) 11/19/2013	RW-2 RW-2(279-289)(092614) 9/26/2014	RW-2 RW-2(452-462)(092614) 9/26/2014	RW-3 RW-3 (62-98) (4/30/2009) 4/30/2008	RW-3 RW3 (62-98) 9/8/2008	RW-3 RW-3 (62-98) (7/6/2009) 7/6/2009	RW-3 RW-3 (62-98) 10/19/2009	RW-3 RW-3 (77-87) 6/28/2010	RW-3 RW-3(052511) 5/25/2011	RW-3 RW-3 (77-87) (042612) 4/27/2012
4-Chloroaniline	106-47-8	µg/L	< 0.56	< 0.59	NA	< 0.60	< 0.57	< 0.33	< 0.34	< 0.35	< 0.36	< 0.28	< 0.27	< 0.3	< 0.27	< 0.6
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.33	< 0.35	NA	< 0.35	< 0.34	< 0.42	< 0.44	< 0.29	< 0.48	< 0.39	< 0.38	< 0.42	< 0.38	< 0.35
4-Nitroaniline	100-01-6	µg/L	< 1.8	< 1.8	NA	< 1.9	< 1.8	< 0.33	< 0.35	< 0.59	< 0.48	< 0.2	< 0.19	< 0.21	< 0.19	< 1.9
4-Nitrophenol	100-02-7	µg/L	< 5.5	< 5.8	NA	< 5.9	< 5.7	< 1.0	< 1.0	< 1.6	< 2.4	< 0.92	< 0.89	< 0.99	< 0.89	< 5.9
Acenaphthene	83-32-9	µg/L	< 0.015	< 0.015	NA	< 0.023	< 0.022	< 0.023	< 0.023	< 0.016	< 0.017	< 0.018	< 0.031	< 0.035	< 0.015	< 0.015
Acenaphthylene	208-96-8	µg/L	< 0.017	< 0.018	NA	< 0.027	< 0.026	< 0.026	< 0.027	< 0.007	< 0.0074	< 0.0078	< 0.042	< 0.047	< 0.017	< 0.018
Acetophenone	98-86-2	µg/L	< 0.3	1.1 J	NA	0.67 J	1.6 J	< 0.40	1.6 J	< 0.36	< 0.5	< 0.44	< 0.43	< 0.48	< 1.9	< 0.32
Anthracene	120-12-7	µg/L	< 0.011	< 0.011	NA	< 0.023	< 0.022	< 0.023	< 0.023	< 0.021	< 0.022	< 0.023	< 0.028	< 0.03	< 0.011	< 0.011
Atrazine	1912-24-9	µg/L	< 0.52	< 0.54	NA	< 0.55	< 0.53	< 0.47	< 0.49	< 0.28	< 0.66	< 0.43	< 0.42	< 0.47	< 0.42	< 0.55
Benzaldehyde	100-52-7	µg/L	< 3.5	< 3.6	NA	< 3.7	< 3.5	< 0.75 J	< 0.77 J	< 0.76	< 1.7	< 0.45	< 0.43	< 0.48	< 0.43	< 3.7
Benzo(a)anthracene	56-55-3	µg/L	< 0.016	< 0.017	NA	< 0.013	< 0.013	< 0.013	< 0.013	< 0.034	< 0.036	< 0.037	< 0.025	< 0.028	< 0.016	< 0.017
Benzo(a)pyrene	50-32-8	µg/L	< 0.0052	< 0.0054	NA	< 0.014	< 0.013	< 0.014 J	< 0.014	< 0.036	< 0.038	< 0.039	< 0.033	< 0.037	< 0.0053	< 0.0055
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.017	< 0.018	NA	< 0.011	< 0.011	< 0.011	< 0.012	< 0.017	< 0.018	< 0.019	< 0.038	< 0.043	< 0.018	< 0.018
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.011	< 0.011	NA	< 0.018	< 0.017	< 0.017 J	< 0.018	< 0.012	< 0.012	< 0.013	< 0.031	< 0.034	< 0.011	< 0.012
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.013	< 0.014	NA	< 0.017	< 0.016	< 0.016	< 0.017	< 0.019	< 0.02	< 0.021	< 0.03	< 0.034	< 0.013	< 0.014
Benzyl butyl phthalate	85-68-7	µg/L	< 0.31	< 0.32	NA	< 0.33	< 0.31	< 0.25	< 0.26	< 0.64	< 0.44	< 0.28	< 0.27	< 0.3	< 0.27	< 0.33
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.33	< 0.34	NA	< 0.35	< 0.33	< 0.47	< 0.48	< 0.32	< 0.55	< 0.28	< 0.27	< 0.3	< 0.27	< 0.35
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.33	< 0.34	NA	< 0.35	< 0.33	< 0.48	< 0.50	< 0.67	< 0.52	< 0.34	< 0.33	< 0.37	< 0.33	< 0.35
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.48	< 0.5	NA	< 0.52	< 0.49	< 0.45	< 0.47	< 0.58	< 0.58	< 0.43	< 0.42	< 0.46	< 0.42	< 0.51
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.62	< 0.65	NA	< 0.67	< 0.64	< 0.62	< 0.64	< 0.88	8.5	< 0.36	< 0.35	< 0.39	< 0.35	< 0.66
Caprolactam	105-60-2	µg/L	< 0.73	< 0.77	NA	< 0.78	< 0.75	< 0.45	< 0.47	< 0.49	< 0.67	< 0.22	< 0.21	< 0.23	< 0.21	< 0.78
Carbazole	86-74-8	µg/L	< 0.38	< 0.4	NA	< 0.41	< 0.39	< 0.19	< 0.19	< 0.4	< 0.48	< 0.18	< 0.18	< 0.2	< 0.18	< 0.41
Chrysene	218-01-9	µg/L	< 0.025	< 0.026	NA	< 0.013	< 0.013	< 0.013	< 0.014	< 0.018	< 0.019	< 0.02	< 0.024	< 0.026	< 0.025	< 0.026
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.024	< 0.025	NA	< 0.019	< 0.018	< 0.018	< 0.019	< 0.02	< 0.021	< 0.022	< 0.024	< 0.027	< 0.024	< 0.025
Dibenzofuran	132-64-9	µg/L	< 0.28	< 0.29	NA	< 0.30	< 0.29	< 0.25	< 0.26	< 0.23	< 0.52	< 0.34	< 0.33	< 0.36	< 0.33	< 0.3
Diethyl phthalate	84-66-2	µg/L	< 0.35	< 0.36	NA	< 0.37	< 0.36	< 0.26	< 0.27	< 0.34	< 0.38	< 0.18	< 0.18	< 0.2	< 0.18	< 0.37
Dimethyl phthalate	131-11-3	µg/L	< 0.3	< 0.31	NA	< 0.32	< 0.31	< 0.29	< 0.30	< 0.34	< 0.38	< 0.25	< 0.24	< 0.27	< 0.24	< 0.32
di-n-butyl phthalate	84-74-2	µg/L	< 0.59	< 0.62	NA	< 0.63	< 0.60	< 5.7 B	< 0.67	< 0.4	< 0.53	< 0.21	< 0.21	< 0.23	4	< 0.63
di-n-octylphthalate	117-84-0	µg/L	< 0.33	< 0.34	NA	< 0.35	< 0.33	< 0.28	< 0.29	< 0.48	< 0.53	< 0.44	< 0.42	< 0.47	< 0.42	< 0.35
Fluoranthene	206-44-0	µg/L	< 0.01	< 0.011	NA	< 0.015	< 0.014	< 0.015	< 0.015	< 0.0096	< 0.01	< 0.011	< 0.026	< 0.029	< 0.01	< 0.011
Fluorene	86-73-7	µg/L	< 0.016	< 0.017	NA	< 0.019	< 0.018	< 0.019	< 0.020	< 0.02	< 0.021	< 0.022	< 0.029	< 0.032	< 0.016	< 0.017
Hexachlorobenzene	118-74-1	µg/L	< 0.0085	< 0.0089	NA	< 0.019	< 0.018	< 0.018	< 0.019	< 0.0099 J	< 0.011	< 0.011	< 0.011	< 0.012	< 0.0086	< 0.009
Hexachlorobutadiene	87-68-3	µg/L	< 0.54	< 0.57	NA	< 0.58 J	< 0.56 J	< 0.43	< 0.45	< 0.13	< 0.4	< 0.41	< 0.4	< 0.15	< 0.14	< 0.58
Hexachlorocyclopentadiene	77-47-4	µg/L	< 7.6	< 7.9	NA	< 8.1	< 7.7	< 0.54	< 0.55	< 0.1	< 4.8	< 0.75	< 0.72	< 0.29	< 0.26	< 8
Hexachloroethane	67-72-1	µg/L	< 0.59	< 0.61	NA	< 0.62	< 0.60	< 0.32	< 0.33	< 0.16	< 0.32	< 0.29	< 0.28	< 0.25	< 0.22	< 0.62
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.011	< 0.012	NA	< 0.016	< 0.016	< 0.016	< 0.017	< 0.014	< 0.015	< 0.016	< 0.031	< 0.035	< 0.011	< 0.012
Isophorone	78-59-1	µg/L	< 0.29	< 0.3	NA	< 0.31	< 0.30	< 0.38	< 0.39	< 0.49	< 0.74	< 0.28	< 0.27	< 0.3	< 0.27	< 0.31
Naphthalene	91-20-3	µg/L	0.156	< 0.018	NA	< 0.040	< 0.039	< 0.039 J	< 0.041	< 0.014	< 0.015	< 0.015	< 0.02	< 0.022	< 1.22	< 0.018
Nitrobenzene	98-95-3	µg/L	< 0.45	< 0.47	NA	< 0.48	< 0.46	< 0.58	< 0.60	< 0.71	< 0.7	< 0.28	< 0.27	< 0.3	< 0.27	< 0.47
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.32	< 0.34	NA	< 0.34	< 0.33	< 0.42	< 0.43	< 0.38	< 0.42	< 0.49	< 0.47	< 0.52	< 0.47	< 0.34
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.32	< 0.34	NA	< 0.35	< 0.33	< 0.23	< 0.24	< 0.41	< 0.65	< 0.24	< 0.23	< 0.26	< 0.23	< 0.34
Pentachlorophenol	87-86-5	µg/L	< 0.11 J	< 0.11	NA	< 0.11	< 0.11	< 0.11 J	< 0.11	< 0.22 J	< 0.24	< 0.25	< 0.24	NA	< 0.31	< 0.11 J
Phenanthrene	85-01-8	µg/L	0.588	0.154	NA	0.281	0.471	0.274	0.335	< 0.017	< 0.018	< 0.019	< 0.039	< 0.043	< 0.017	< 0.018
Phenol	108-95-2	µg/L	< 1.4	8.6	NA	< 1.5	10.8	< 0.61	15.1	< 0.68	< 1.4	< 0.64	< 0.62	< 0.69	< 0.62	< 1.4
Pyrene	129-00-0	µg/L	< 0.0086	< 0.009	NA	< 0.017	< 0.016	< 0.017	< 0.017	< 0.012	< 0.013	< 0.013	< 0.024	< 0.026	< 0.0087	< 0.0092
Metals - Total																
Aluminum, total	7429-90-5	µg/L	367	174 B	NA	212	422	344	169 B	280	< 24	< 26	< 26	< 7.8	47.5 J	< 16
Antimony, total	7440-36-0	µg/L	< 1.4	< 1.4	NA	< 1.8	< 1.8	< 2.6	< 2.6	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3	< 1.4
Arsenic, total	7440-38-2	µg/L	< 0.97	2.5 B	NA	3.8	< 1.5	5.2	8.3	< 1.7	< 1.7	< 2.4	< 2.4	< 1.4	< 0.92	< 0.97
Barium, total	7440-39-3	µg/L	55.9 B	77.1 B	NA	42.5 B	48.1 B	41.7 B	50.2 B	42.9 B	44.9 B	36.8 B	46.2 J	34.1 B	31 B	40.5 B
Beryllium, total	7440-41-7	µg/L	< 0.44	< 0.44	NA	< 0.17	< 0.17	< 0.40	< 0.40	< 0.15	< 0.15	< 1	< 0.4	< 0.24	< 0.24	< 0.44
Cadmium, total	7440-43-9	µg/L	< 0.24	< 0.24	NA	0.30 B	0.40 B	< 0.70	< 0.70	< 0.28	< 0.28	< 0.4	< 0.4	< 0.35	< 0.17	< 0.24
Calcium, total	7440-70-2	µg/L	169000	189000	NA	109000 J	150000	131000	112000	50300 J	56500	46300	47300	42000	40100	45600
Chromium, total	7440-47-3	µg/L	< 0.91	55.8	NA	< 0.92	2.2 B	1.4 B	< 0.89	1.9 B	< 0.53	< 10	< 0.9	< 0.59	< 0.9	< 0.91
Cobalt, total	7440-48-4	µg/L	< 0.59	0.6 B	NA	< 0.48	< 0.48	< 0.83	< 0.83	0.7 B	< 0.51	< 0.4	< 1.6	< 0.65	< 0.3	< 0.59
Copper, total	7440-50-8	µg/L	< 10	6.4 B	NA	< 10 B	< 10 B	< 10 B	307	11.3 B	4.1 B	3.4 BJ	2.1 B	< 2.5	< 0.85	< 10
Iron, total	7439-89-6	µg/L	< 100	187	NA	52.7 B	24.5 B	< 12	40.0 B	1520	253	1830	904	134 J	37.9 J	< 24
Lead, total	7439-92-1	µg/L	< 1.7	< 1.7	NA	< 2.4	< 2.4	< 1.3	5.8	4.7	1.6 B	< 1.7	< 1.7	< 1.9	< 0.94	< 1.7
Magnesium, total	7439-95-4	µg/L	< 5000	60.4 B	NA	46.0 B	35.5 B	< 41	< 41	14900 J	16600	13200	12800	11900	11200	12400
Manganese, total	7439-96-5	µg/L	< 15	5.3 B	NA	< 15 B	< 15 B	< 0.48	< 0.48	149 J	167	275	238	146	109	64.4
Mercury, total	7439-97-6	µg/L	< 0.075	0.076 B	NA	< 0.089	< 0.089	< 0.064	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	< 0.088	< 0.075
Nickel, total	7440-02-0	µg/L	6.3 B	12.4 J	NA	10	3.9 B	3.5 J	10	2 B	< 1.2	< 10	< 10	< 0.51	1.3 J	< 10
Potassium, total	7440-09-7	µg/L	30300	249000 J	NA	116000	R	36700	89900	2070 B	1930 B	< 10000	< 10000	1660 B	1640 B	2440 B
Selenium, total	7782-49-2	µg/L	< 10	7.4 B	NA	< 2.4	< 2.4	< 3.6	5.2 J	< 1.6	< 1.6	< 3.7	< 3.7	< 1.9	< 1.5	< 2.4
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	129000	342000	NA	NA	NA	NA	NA	NA	9510 J
Silver, total	7440-22-4	µg/L	< 0.85	< 0.85	NA	< 1.5	< 1.5	1.7 B	3.4 B	< 1	< 1	1.5 BJ	< 1	0.7 B	< 0.72	< 0.85
Sodium, total	7440-23-5	µg/L	122000	373000	NA	300000	R	130000	338000	7020 B	8130 BJ	6600 BJ	7240 B	6070 B	5860 B	7670 B
Thallium, total	7440-28-0	µg/L	< 1.7	< 1.7	NA	< 1.3	1.9 B	< 1.8	< 1.8	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7
Vanadium, total	7440-62-2	µg/L	13.7 B	31.1 B	NA	39.5 B	13.9 B	15.6 B	38.6 B	1.4 B	< 0.43	< 50	< 0.9	< 0.56	< 50	1 J
Zinc, total	7440-66-6	µg/L	< 20	< 20	NA	< 4.4	< 4.4	< 20 B	156	172	220	188	276	< 20	< 20	< 2.8
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	< 10 J	< 10	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID			RW-3	RW-3	RW-3D	RW-3D	RW-3D	RW-3D	RW-3DD	RW-3DD	RW-3DD	RW-3DS	RW-3DS	RW-3DS
Sample ID			RW-3(77-87) (111113)	RW-3(77-87)(091514)	RW-3D (140-165)	RW-3D (170-181)	RW-3D (140-165) (052411)	RW-3D (170-181) (052411)	RW-3DD (175-180) (043012)	RW-3DD (175-180) (111213)	RW-3DD (175-180)(091214)	RW-3DS (155-160) (043012)	RW-3DS (155-160) (111213)	RW-3DS (155-160)(091114)
Sample Date	CAS	Units	11/11/2013	9/15/2014	6/9/2010	6/9/2010	5/24/2011	5/24/2011	4/30/2012	11/12/2013	9/12/2014	4/30/2012	11/12/2013	9/11/2014
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.25	< 0.32	< 0.26 [< 0.26]	< 0.26	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.25	< 0.32	< 0.24	< 0.25	< 0.32
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.20	< 0.39	< 0.24 [< 0.24]	< 0.24	< 0.2	< 0.2 [< 0.2]	< 0.2	< 0.20	< 0.39	< 0.2	< 0.20	< 0.39
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.21	< 0.28	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.23 [< 0.23]	< 0.23	< 0.21	< 0.28	< 0.23	< 0.21	< 0.28
1,1-Dichloroethane	75-34-3	µg/L	< 0.26	< 0.35	0.73 J [0.72 J]	0.77 J	0.82 J	0.82 J [0.81 J]	1.1	1.6	1.4	0.94 J	0.28 J	1
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.50	< 0.4 [< 0.4]	< 0.4	< 0.28	< 0.28 [< 0.28]	< 0.28	< 0.34	< 0.50	< 0.28	< 0.34	< 0.50
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.22	< 0.22	< 0.56 [< 0.56]	< 0.56	< 0.15	< 0.15 [< 0.15]	< 0.15	< 0.22	< 0.22	< 0.15	< 0.22	< 0.22
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3	< 1.2	< 1.1 [< 1.1]	< 1.1	< 1.3	< 1.3 [< 1.3]	< 1.3*	< 1.3	< 1.2	< 1.3*	< 1.3	< 1.2
1,2-Dibromoethane	106-93-4	µg/L	< 0.16	< 0.23	< 0.39 [< 0.39]	< 0.39	< 0.21	< 0.21 [< 0.21]	< 0.21*	< 0.16	< 0.23	< 0.21*	< 0.16	< 0.23
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.20	< 0.16	< 0.26 [< 0.26]	< 0.26	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.20	< 0.16	< 0.18	< 0.20	< 0.16
1,2-Dichloroethane	107-06-2	µg/L	< 0.22	< 0.30	< 0.33 [< 0.33]	< 0.33	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.22	< 0.30	< 0.18	< 0.22	< 0.30
1,2-Dichloropropane	78-87-5	µg/L	< 0.28	< 0.43	< 0.27 [< 0.27]	< 0.27	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.28	< 0.43	< 0.22	< 0.28	< 0.43
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.31	< 0.26	< 0.25 [< 0.25]	< 0.25	< 0.29	< 0.29 [< 0.29]	< 0.29	< 0.31	< 0.26	< 0.29	< 0.31	< 0.26
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.30	< 0.24	< 0.28 [< 0.28]	< 0.28	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.30	< 0.24	< 0.26	< 0.30	< 0.24
2-Butanone (MEK)	78-93-3	µg/L	< 3.2	< 2.5	< 1.6 [< 1.6]	< 1.6	< 2.9	< 2.9 [< 2.9]	< 2.9	< 3.2	9.0 J	< 2.9	< 3.2	< 2.5
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.7	< 1.4 [< 1.4]	< 1.4	< 3	< 3 [< 3]	< 3	< 1.7	< 1.7	< 3	< 1.7	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.5	< 1.1	< 0.86 [< 0.86]	< 0.86	< 1.2	< 1.2 [< 1.2]	< 1.2	< 1.5	< 1.1	< 1.2	< 1.5	< 1.1
Acetone	67-64-1	µg/L	< 3.3	< 2.6	< 2.9 [< 2.9]	< 2.9	< 7.6	< 7.6 [< 7.6]	52	20.8	9.0 J	41.8	7.6 J	26.8
Benzene	71-43-2	µg/L	< 0.28	< 0.21	< 0.23 [< 0.23]	< 0.23	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.28	1.1	< 0.22	< 0.28	< 0.21
Bromodichloromethane	75-27-4	µg/L	< 0.21	< 0.28	< 0.22 [< 0.22]	< 0.22	< 0.23	< 0.23 [< 0.23]	< 0.23	< 0.21	< 0.28	< 0.23	< 0.21	< 0.28
Bromoform	75-25-2	µg/L	< 0.30	< 0.31	< 0.23 [< 0.23]	< 0.23	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.30	< 0.31	< 0.24	< 0.30	< 0.31
Bromomethane	74-83-9	µg/L	< 0.56	< 0.39	< 0.3 [< 0.3]	< 0.3	< 0.31	< 0.31 [< 0.31]	< 0.31	< 0.56	< 0.39	< 0.31	< 0.56	< 0.39
Carbon disulfide	75-15-0	µg/L	< 0.18	< 0.50	< 0.74 [< 0.74]	< 0.74	< 0.18	< 0.18 [< 0.18]	4.8	8.2	7.1	3.8	55.7	23.8
Carbon tetrachloride	56-23-5	µg/L	< 0.23	< 0.24	< 0.26 [< 0.26]	< 0.26	< 0.19	< 0.19 [< 0.19]	< 0.19	< 0.23	< 0.24	< 0.19	< 0.23	< 0.24
Chlorobenzene	108-90-7	µg/L	< 0.35	< 0.27	< 0.39 [< 0.39]	< 0.39	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.35	< 0.27	< 0.22	< 0.35	< 0.27
Chloroethane	75-00-3	µg/L	< 0.39	< 0.56	< 0.37 [< 0.37]	< 0.37	2.9	2.7 [2.9]	< 0.37	< 0.39	< 0.56	< 0.37	< 0.39	< 0.56
Chloroform	67-66-3	µg/L	< 0.25	< 0.20	< 0.23 [< 0.23]	< 0.23	< 0.21	< 0.21 [< 0.21]	< 0.21	< 0.25	< 0.20	< 0.21	< 0.25	< 0.20
Chloromethane	74-87-3	µg/L	< 0.36	< 0.33	< 0.29 [< 0.29]	< 0.29	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.36	< 0.33	< 0.22	0.36 J	< 0.33
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.24	< 0.33	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.24	< 0.33	< 0.22	< 0.24	< 0.33
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15	< 0.28	< 0.25 [< 0.25]	< 0.25	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.15	< 0.28	< 0.22	< 0.15	< 0.28
Cyclohexane	110-82-7	µg/L	< 0.18	< 0.37	< 1.9 [< 1.9]	< 1.9	< 0.29	< 0.29 [< 0.29]	< 0.29	< 0.18	< 0.37	< 0.29	< 0.18	< 0.37
Dibromochloromethane	124-48-1	µg/L	< 0.19	< 0.25	< 0.22 [< 0.22]	< 0.22	< 0.2	< 0.2 [< 0.2]	< 0.2	< 0.19	< 0.25	< 0.2	< 0.19	< 0.25
Dichlorodifluoromethane	75-71-8	µg/L	< 0.63	< 0.73	< 0.92 [< 0.92]	< 0.92	< 0.31	< 0.31 [< 0.31]	< 0.31	< 0.63	< 0.73	< 0.31	< 0.63	< 0.73
Ethylbenzene	100-41-4	µg/L	< 0.21	< 0.40	< 0.27 [< 0.27]	< 0.27	< 0.21	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.40	< 0.21	< 0.21	0.50 J
Freon 113	76-13-1	µg/L	< 0.77	< 0.45	< 0.38 [< 0.38]	< 0.38	< 0.49	< 0.49 [< 0.49]	< 0.49	< 0.77	< 0.45	< 0.49	< 0.77	< 0.45
Isopropylbenzene	98-82-8	µg/L	< 0.22	< 0.26	< 0.57 [< 0.57]	< 0.57	< 0.19	< 0.19 [< 0.19]	< 0.19	< 0.22	< 0.26	< 0.19	< 0.22	< 0.26
Methyl acetate	79-20-9	µg/L	< 1.5	< 3.1	< 1.5 [< 1.5]	< 1.5	< 2.9	< 2.9 [< 2.9]	< 2.9	< 1.5	< 3.1	< 2.9	< 1.5	< 3.1
Methyl tert butyl ether	1634-04-4	µg/L	< 0.29	< 0.26	< 0.23 [< 0.23]	< 0.23	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.29	< 0.26	< 0.18	< 0.29	< 0.26
Methylcyclohexane	108-87-2	µg/L	< 0.15	< 0.22	< 0.35 [< 0.35]	< 0.35	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.15	< 0.22	< 0.18	< 0.15	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.86	< 0.81	< 0.3 [< 0.3]	< 0.3	< 0.2	< 0.2 [< 0.2]	< 0.2	< 0.86	< 0.81	< 0.2	< 0.86	< 0.81
o-Xylene	95-47-6	µg/L	< 0.30	NA	NA	NA	NA	NA	NA	< 0.30	NA	NA	< 0.30	NA
Styrene	100-42-5	µg/L	NA	< 0.26	< 0.58 [< 0.58]	< 0.58	< 0.23	< 0.23 [< 0.23]	< 0.23	NA	< 0.26	< 0.23	NA	< 0.26
Tertiary Butyl Alcohol	75-65-0	µg/L	< 0.25	NA	NA	NA	NA	NA	NA	< 0.25	NA	NA	< 0.25	NA
Tetrachloroethene	127-18-4	µg/L	< 0.44	< 0.35	< 0.27 [< 0.27]	< 0.27	< 0.32	< 0.32 [< 0.32]	< 0.32	< 0.44	< 0.35	< 0.32	0.69 J	< 0.35
Toluene	108-88-3	µg/L	< 0.38	< 0.22	0.34 J [0.34 J]	0.44 J	0.98 J	1.6 [2]	< 0.15	< 0.38	< 0.22	< 0.15	< 0.38	1
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.21	< 0.51	< 0.25 [< 0.25]	< 0.25	< 0.31	< 0.31 [< 0.31]	< 0.31	< 0.21	< 0.51	< 0.31	< 0.21	< 0.51
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.50	< 0.32	< 0.21 [< 0.21]	< 0.21	< 0.19	< 0.19 [< 0.19]	< 0.19	< 0.50	< 0.32	< 0.19	< 0.50	< 0.32
Trichloroethene	79-01-6	µg/L	< 0.33	< 0.25	< 0.24 [< 0.24]	< 0.24	< 0.21	< 0.21 [< 0.21]	< 0.21	< 0.33	< 0.25	< 0.21	< 0.33	< 0.25
Trichlorofluoromethane	75-69-4	µg/L	< 0.41	< 0.28	< 0.54 [< 0.54]	< 0.54	< 0.35	< 0.35 [< 0.35]	< 0.35	< 0.41	< 0.28	< 0.35	< 0.41	< 0.28
Vinyl Chloride	75-01-4	µg/L	NA	< 0.17	< 0.44 [< 0.44]	< 0.44	< 0.27	< 0.27 [< 0.27]	< 0.27	NA	< 0.17	< 0.27	NA	< 0.17
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.19	< 0.20	< 0.25 [< 0.25]	< 0.25	0.28 J	0.45 J [0.63 J]	< 0.17	< 0.19	< 0.20	< 0.17	0.36 J	1.2
Semi-Volatile Organic Compounds														
1,1'-Biphenyl	92-52-4	µg/L	< 0.32	< 0.27 J	< 0.48 [< 0.48]	< 0.47	< 0.5	< 0.48 [< 0.48]	< 0.35	< 0.30	< 0.30	< 0.34	< 0.32	< 0.29
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.6	< 1.7 J	< 1.5 [< 1.5]	< 1.5	< 1.6	< 1.5 [< 1.5]	< 1.8	< 1.6	< 1.9	< 1.8	< 1.7	< 1.8
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.3	< 1.5 J	< 1.4 [< 1.4]	< 1.3	< 1.5	< 1.4 [< 1.4]	< 1.5	< 1.3	< 1.7	< 1.4	< 1.4	< 1.6
2,4-Dichlorophenol	120-83-2	µg/L	< 1.2	< 1.6 J	< 1.4 [< 1.4]	< 1.3	< 1.5	< 1.4 [< 1.4]	< 1.3	< 1.2	< 1.8	< 1.3	< 1.2	< 1.7
2,4-Dimethylphenol	105-67-9	µg/L	< 1.6	< 1.8 J	< 1.9 [< 1.9]	< 1.8	< 2	< 1.9 [< 1.9]	< 1.8	< 1.5	< 2.0	< 1.7	< 1.6	< 1.9
2,4-Dinitrophenol	51-28-5	µg/L	< 17	< 6.5 J	< 0.84 [< 0.85]	< 0.81	< 0.88	< 0.84 [< 0.85]	< 19	< 17	< 7.2	< 19	< 18	< 6.9
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.44	< 0.32 J	< 0.25 [< 0.25]	< 0.24	< 0.26	< 0.25 [< 0.25]	< 0.49	< 0.43	< 0.36	< 0.48	< 0.45	< 0.34
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.48	< 0.26 J	< 0.37 [< 0.37]	< 0.36	< 0.39	< 0.37 [< 0.37]	< 0.53	< 0.46	< 0.28	< 0.52	< 0.49	< 0.27
2-Chloronaphthalene	91-58-7	µg/L	< 0.31	< 0.34 J	< 0.48 [< 0.48]	< 0.46	< 0.5	< 0.47 [< 0.48]	< 0.34	< 0.30	< 0.38	< 0.33	< 0.32	< 0.36
2-Chlorophenol	95-57-8	µg/L	< 1.0	< 1.3 J	< 1.2 [< 1.2]	< 1.2	< 1.3	< 1.2 [< 1.2]	< 1.1	< 0.97	< 1.4	< 1.1	< 1.0	< 1.3
2-Methylnaphthalene	91-57-6	µg/L	< 0.40	< 0.29 J	< 0.75 [< 0.76]	< 0.73	< 0.78	< 0.75 [< 0.76]	< 0.44	< 0.38	< 0.32	< 0.43	0.43 J	< 0.31
2-Methylphenol	95-48-7	µg/L	< 1.1	< 1.3 J	< 1.3 [< 1.3]	< 1.2	< 1.3	< 1.3 [< 1.3]	< 1.2	< 1.0	< 1.4	< 1.2	< 1.1	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 1.2	< 0.32 J	< 0.27 [< 0.27]	< 0.26	< 0.28	< 0.27 [< 0.27]	< 1.3	< 1.1	< 0.35	< 1.2	< 1.2	< 0.33
2-Nitrophenol	88-75-5	µg/L	< 1.6	< 1.9 J	< 1.4 [< 1.4]	< 1.4	< 1.5	< 1.4 [< 1.4]	< 1.7	< 1.5	< 2.1	< 1.7	< 1.6	< 1.9
3&4-Methylphenol	12-03-3	µg/L	< 0.96	< 1.1 J	< 1.2 [< 1.2]	< 1.1	< 1.2	< 1.2 [< 1.2]	< 1.1	< 0.93	< 1.2	< 1	< 0.98	< 1.1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.38	< 0.56 J	< 0.34 [< 0.34]	< 0.33	< 0.35	< 0.34 [< 0.34]	< 0.41	< 0.36	< 0.62	< 0.4	< 0.38	< 0.59
3-Nitroaniline	99-09-2	µg/L	< 1.3	< 0.26 J	< 0.33 [< 0.33]	< 0.32	< 0.34	< 0.33 [< 0.33]	< 1.4	< 1.3	< 0.29	< 1.4	< 1.3	< 0.28
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.0	< 1.3 J	< 0.59 [< 0.59]	< 0.57	< 0.61	< 0.58 [< 0.59]	< 1.1	< 0.99	< 1.5	< 1.1	< 1.1	< 1.4
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.37	< 0.25 J	< 0.4 [< 0.4]	< 0.39	< 0.42	< 0.4 [< 0.4]	< 0.41	< 0.36	< 0.28	< 0.4	< 0.38	< 0.26
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.9	< 1.3 J	< 1.2 [< 1.2]	< 1.2	< 1.3	< 1.2 [< 1.2]	< 2.1	< 1.8	< 1.4	< 2	< 1.9	< 1.4
Semi-Volatile Organic Compounds														

Location ID			RW-3	RW-3	RW-3D	RW-3D	RW-3D	RW-3D	RW-3DD	RW-3DD	RW-3DD	RW-3DS	RW-3DS	RW-3DS
Sample ID			RW-3(77-87) (111113)	RW-3(77-87)(091514)	RW-3D (140-165)	RW-3D (170-181)	RW-3D (140-165) (052411)	RW-3D (170-181) (052411)	RW-3DD (175-180) (043012)	RW-3DD (175-180) (111213)	RW-3DD (175-180)(091214)	RW-3DS (155-160) (043012)	RW-3DS (155-160) (111213)	RW-3DS (155-160)(091114)
Sample Date	CAS	Units	11/11/2013	9/15/2014	6/9/2010	6/9/2010	5/24/2011	5/24/2011	4/30/2012	11/12/2013	9/12/2014	4/30/2012	11/12/2013	9/11/2014
4-Chloroaniline	106-47-8	µg/L	< 0.55	< 0.30 J	< 0.29 [< 0.29]	< 0.28	< 0.3	< 0.29 [< 0.29]	< 0.61	< 0.53	< 0.33	< 0.59	< 0.56	< 0.32
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.33	< 0.38 J	< 0.4 [< 0.41]	< 0.39	< 0.42	< 0.4 [< 0.41]	< 0.36	< 0.31	< 0.42	< 0.35	< 0.33	< 0.40
4-Nitroaniline	100-01-6	µg/L	< 1.7	< 0.30 J	< 0.2 [< 0.2]	< 0.2	< 0.21	< 0.2 [< 0.2]	< 1.9	< 1.7	< 0.33	< 1.9	< 1.8	< 0.32
4-Nitrophenol	100-02-7	µg/L	< 5.4	< 0.91 J	< 0.95 [< 0.95]	< 0.91	< 0.99	< 0.94 [< 0.95]	< 6	< 5.2	< 1.0	< 5.8	< 5.5	< 0.95
Acenaphthene	83-32-9	µg/L	< 0.021	< 0.020 J	< 0.033 [< 0.033]	< 0.032	< 0.016	< 0.016 [< 0.016]	< 0.016	< 0.021	< 0.023	< 0.015	< 0.022	< 0.021
Acenaphthylene	208-96-8	µg/L	< 0.025	< 0.024 J	< 0.045 [< 0.045]	< 0.043	< 0.019	< 0.018 [< 0.019]	< 0.019	< 0.024	< 0.026	< 0.018	< 0.026	< 0.025
Acetophenone	98-86-2	µg/L	< 0.30	< 0.36 J	< 0.46 [< 0.46]	< 0.44	< 0.48	< 0.45 [< 0.46]	< 0.33	< 0.29	< 0.40	< 0.32	1.5 J	0.83 J
Anthracene	120-12-7	µg/L	< 0.021	< 0.020 J	< 0.029 [< 0.029]	< 0.028	< 0.012	< 0.011 [< 0.011]	< 0.011	< 0.021	< 0.023	< 0.011	< 0.022	< 0.021
Atrazine	1912-24-9	µg/L	< 0.51	< 0.42 J	< 0.45 [< 0.45]	< 0.43	< 0.47	< 0.44 [< 0.45]	< 0.56	< 0.49	< 0.47	< 0.55	< 0.52	< 0.45
Benzaldehyde	100-52-7	µg/L	< 3.4	< 0.67 J	< 0.46 [< 0.46]	< 0.45	< 0.48	< 0.46 [< 0.46]	< 3.7	< 3.3	< 0.75	< 3.7	< 3.5	< 0.71
Benzo(a)anthracene	56-55-3	µg/L	< 0.012	< 0.012 J	< 0.027 [< 0.027]	< 0.026	< 0.018	< 0.017 [< 0.017]	< 0.017	< 0.012	< 0.013	< 0.017	< 0.013	< 0.012
Benzo(a)pyrene	50-32-8	µg/L	< 0.013	< 0.012 J	< 0.035 [< 0.035]	< 0.034	< 0.0058	< 0.0056 [< 0.0056]	< 0.0056	< 0.013	< 0.014	< 0.0055	< 0.014	< 0.013
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.011	< 0.010 J	< 0.041 [< 0.041]	< 0.04	< 0.019	< 0.019 [< 0.019]	< 0.019	< 0.010	< 0.011	< 0.018	< 0.011	< 0.011
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.016	< 0.016 J	< 0.033 [< 0.033]	< 0.032	< 0.012	< 0.012 [< 0.012]	< 0.012	< 0.016	< 0.017 J	< 0.012	< 0.017	< 0.016 J
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.015	< 0.015 J	< 0.032 [< 0.032]	< 0.031	< 0.015	< 0.014 [< 0.014]	< 0.014	< 0.015	< 0.016	< 0.014	< 0.016	< 0.016
Benzyl butyl phthalate	85-68-7	µg/L	< 0.30	< 0.22 J	< 0.29 [< 0.29]	< 0.28	< 0.3	< 0.29 [< 0.29]	< 0.33	< 0.29	< 0.25	< 0.32	< 0.31	< 0.23
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.32	< 0.42 J	< 0.28 [< 0.29]	< 0.27	< 0.3	< 0.28 [< 0.29]	< 0.35	< 0.31	< 0.47	< 0.34	< 0.33	< 0.44
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.32	< 0.43 J	< 0.35 [< 0.36]	< 0.34	< 0.37	< 0.35 [< 0.36]	< 0.35	< 0.31	< 0.48	< 0.35	< 0.33	< 0.46
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.47	< 0.41 J	< 0.45 [< 0.45]	< 0.43	< 0.46	< 0.44 [< 0.45]	< 0.52	< 0.45	< 0.45	< 0.51	< 0.48	< 0.43
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.61	< 6.0 BJ	< 0.37 [< 0.38]	< 0.36	2.4	1.5 J [1.9 J]	3.3	< 0.59	< 3.5 B	< 0.66	< 0.62	< 3.2 B
Caprolactam	105-60-2	µg/L	< 0.72	< 0.41 J	< 0.22 [< 0.22]	< 0.22	< 0.23	< 0.22 [< 0.22]	< 0.79	< 0.69	< 0.45	< 0.77	< 0.73	< 0.43
Carbazole	86-74-8	µg/L	< 0.38	< 0.17 J	< 0.19 [< 0.19]	< 0.18	< 0.2	< 0.19 [< 0.19]	< 0.41	< 0.36	< 0.19	< 0.4	< 0.38	< 0.18
Chrysene	218-01-9	µg/L	< 0.012	< 0.012 J	< 0.025 [< 0.025]	< 0.024	< 0.028	< 0.026 [< 0.027]	< 0.027	< 0.012	< 0.013	< 0.026	< 0.013	< 0.012
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.017	< 0.017 J	< 0.026 J [< 0.026 J]	< 0.025	< 0.027	< 0.026 [< 0.026]	< 0.026	< 0.017	< 0.018 J	< 0.025	< 0.018	< 0.017 J
Dibenzofuran	132-64-9	µg/L	< 0.28	< 0.23 J	< 0.35 [< 0.35]	< 0.34	< 0.36	< 0.35 [< 0.35]	< 0.3	< 0.27	< 0.25	< 0.3	< 0.28	< 0.24
Diethyl phthalate	84-66-2	µg/L	< 0.34	< 0.23 J	< 0.19 [< 0.19]	< 0.18	< 0.2	< 0.19 [< 0.19]	< 0.38	< 0.33	< 0.26	< 0.37	< 0.35	< 0.25
Dimethyl phthalate	131-11-3	µg/L	< 0.29	< 0.26 J	< 0.26 [< 0.26]	< 0.25	< 0.27	< 0.26 [< 0.26]	< 0.33	< 0.28	< 0.29	< 0.32	< 0.30	< 0.28
di-n-butyl phthalate	84-74-2	µg/L	< 0.58	< 0.58 J	< 0.22 [< 0.22]	< 0.21	< 0.23	< 0.22 [< 0.22]	< 0.64	< 0.56	< 5.0 B	< 0.62	< 0.59	< 3.6 B
di-n-octylphthalate	117-84-0	µg/L	< 0.32	< 0.25 J	< 0.45 [< 0.45]	< 0.44	< 0.47	< 0.45 [< 0.45]	< 0.35	< 0.31	< 0.28	< 0.35	< 0.33	< 0.26
Fluoranthene	206-44-0	µg/L	< 0.014	< 0.013 J	< 0.028 [< 0.028]	< 0.027	< 0.011	< 0.011 [< 0.011]	< 0.011	< 0.014	< 0.015	< 0.011	< 0.015	< 0.014
Fluorene	86-73-7	µg/L	< 0.018	< 0.017 J	< 0.031 [< 0.031]	< 0.03	< 0.018	< 0.017 [< 0.017]	< 0.017	< 0.018	< 0.019	0.399	< 0.019	0.133
Hexachlorobenzene	118-74-1	µg/L	< 0.017	< 0.017 J	< 0.011 [< 0.011]	< 0.011	< 0.0095	< 0.0091 [< 0.0092]	< 0.0092	< 0.017	< 0.018	< 0.009	< 0.018	< 0.017
Hexachlorobutadiene	87-68-3	µg/L	< 0.53	< 0.39 J	< 0.15 [< 0.15]	< 0.14	< 0.15	< 0.14 [< 0.15]	< 0.59	< 0.51	< 0.43	< 0.58	< 0.54	< 0.41
Hexachlorocyclopentadiene	77-47-4	µg/L	< 7.4	< 0.48 J	< 0.28 [< 0.28]	< 0.27	< 0.29	< 0.28 [< 0.28]	< 8.2	< 7.1	< 0.54	< 8	< 7.6	< 0.51
Hexachloroethane	67-72-1	µg/L	< 0.57	< 0.29 J	< 0.24 [< 0.24]	< 0.23	< 0.25	< 0.24 [< 0.24]	< 0.63	< 0.55	< 0.32	< 0.62	< 0.59	< 0.30
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.015	< 0.014 J	< 0.033 [< 0.034]	< 0.032	< 0.013	< 0.012 [< 0.012]	< 0.012	< 0.015	< 0.016 J	< 0.012	< 0.016	< 0.015 J
Isophorone	78-59-1	µg/L	< 0.28	< 0.34 J	< 0.28 [< 0.29]	< 0.28	12.5	4.9 [5.9]	< 0.31	< 0.27	0.76 J	< 0.31	< 0.29	< 0.36
Naphthalene	91-20-3	µg/L	< 0.037	< 0.036 J	< 0.021 [< 0.021]	< 0.02	< 0.019	< 0.018 [< 0.019]	< 0.019	< 0.037	0.165	0.162	< 0.039	< 0.037
Nitrobenzene	98-95-3	µg/L	< 0.44	< 0.52 J	< 0.29 [< 0.29]	< 0.28	< 0.3	< 0.29 [< 0.29]	< 0.48	< 0.42	< 0.58	< 0.47	< 0.45	< 0.55
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.31	< 0.38 J	< 0.5 [< 0.5]	< 0.48	< 0.52	< 0.5 [< 0.5]	< 0.35	< 0.30	< 0.42	< 0.34	< 0.32	< 0.40
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.32	< 0.21 J	< 0.25 [< 0.25]	< 0.24	< 0.26	< 0.24 [< 0.25]	< 0.35	< 0.31	< 0.23	< 0.34	< 0.32	< 0.22
Pentachlorophenol	87-86-5	µg/L	< 0.10	< 0.10 J	< 0.078 J [< 0.078 J]	< 0.075	< 0.34	< 0.32 [< 0.33]	< 0.11 J	< 0.10	< 0.11	< 0.11 J	< 0.11	< 0.11
Phenanthrene	85-01-8	µg/L	< 0.022	< 0.021 J	< 0.041 [< 0.041]	< 0.04	< 0.019	< 0.018 [< 0.018]	0.16	< 0.022	< 0.023	1.49	0.809	0.5
Phenol	108-95-2	µg/L	< 1.3	< 0.55 J	< 0.66 [< 0.66]	< 0.64	5.7	< 0.66 [< 0.66]	< 1.5	6	5.4	< 1.4	12.1	10.6
Pyrene	129-00-0	µg/L	< 0.016	< 0.015 J	< 0.025 [< 0.025]	< 0.024	< 0.0096	< 0.0092 [< 0.0093]	< 0.0093	< 0.015	< 0.017	< 0.0091	< 0.016	< 0.016
Metals - Total														
Aluminum, total	7429-90-5	µg/L	< 200 B	62.1 J	508 [479]	563	148 J	128 J [145 J]	314	320	142 J	58.4 J	380	96.1 J
Antimony, total	7440-36-0	µg/L	< 1.8	< 2.6	< 2.2 [< 2.2]	< 2.2	< 1.3	< 1.3 [< 1.3]	< 1.4	< 1.8	< 2.6	< 1.4	< 1.8	< 2.6
Arsenic, total	7440-38-2	µg/L	< 1.5	< 2.6	< 1.4 [< 1.4]	< 1.4	< 0.92	< 0.92 [1.6 B]	10.4	21.4	13.6 J	7.4	< 5.9 B	9.6
Barium, total	7440-39-3	µg/L	45.9 B	49.3 B	36.4 B [34.7 B]	32.7 B	30.6 B	39.8 B [39.4 B]	13 B	6.3 B	6.5 J	12.4 B	35.6 B	13.6 J
Beryllium, total	7440-41-7	µg/L	< 0.17	< 0.40	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.24 [< 0.24]	< 0.44	< 0.17	< 0.40	< 0.44	< 0.17	< 0.40
Cadmium, total	7440-43-9	µg/L	< 0.24	< 0.70	< 0.35 [< 0.35]	0.4 B	< 3	< 3 [< 0.17]	< 0.24	< 0.24	< 0.70	< 0.24	< 0.24	< 3.0 B
Calcium, total	7440-70-2	µg/L	53300	58300	56100 J [53800 J]	55900 J	56500	57300 [57800]	77100	32500	17700	67900	83300	35600 J
Chromium, total	7440-47-3	µg/L	< 0.92	< 0.89	3.2 J [2.3 J]	< 10	2.9 J	4.4 J [4.6 J]	3.2 B	< 0.92	< 0.89	2.9 J	< 0.92	< 0.89
Cobalt, total	7440-48-4	µg/L	< 0.48	< 0.83	< 0.65 [< 0.65]	< 0.65	< 50	< 50 [< 50]	< 0.59	< 0.48	< 0.83	< 0.59	< 50 B	< 0.83
Copper, total	7440-50-8	µg/L	< 10 B	2.9 J	7.9 B [6.6 B]	6.7 B	3.6 J	8.6 J [6.2 J]	< 10	< 1.0	< 10 B	< 10	< 10 B	< 1.2
Iron, total	7439-89-6	µg/L	< 100 B	113	6450 [6020]	7560	3840	4610 [4520]	27.6 J	103	178 J	36.4 B	33.2 B	< 100 B
Lead, total	7439-92-1	µg/L	< 2.4	< 1.3	< 1.9 [< 1.9]	< 1.9	1.5 B	1.9 B [1.5 B]	< 1.7	< 2.4	< 1.3	< 1.7	3.5	< 1.3
Magnesium, total	7439-95-4	µg/L	14300	15300	15100 [14400]	15100	15400	15800 [16000]	1470 B	1220 B	3070 B	3850 B	166 B	< 41
Manganese, total	7439-96-5	µg/L	67.1	80.9	197 [208]	199	133	190 [178]	< 15	1.2 B	< 15 B	0.4 J	0.40 B	< 0.48
Mercury, total	7439-97-6	µg/L	< 0.089	< 0.064	< 0.082 [< 0.082]	< 0.082	< 0.088	< 0.088 [< 0.088]	< 0.2	< 0.089	< 0.064	< 0.2	< 0.089	< 0.064
Nickel, total	7440-02-0	µg/L	6.6 B	23.3	3.3 B [3.7 B]	2.8 B	5.5 B	11.9 [12.2]	3.4 J	< 10 B	6.4 J	5.5 B	< 10 B	17.1
Potassium, total	7440-09-7	µg/L	2360 B	2760 B	2100 B [2010 B]	2090 B	2060 B	2080 B [2060 B]	16400	11600	9020 B	101000	118000	70000
Selenium, total	7782-49-2	µg/L	2.7 B	< 3.6	< 1.9 [< 1.9]	< 1.9	< 1.5	< 1.5 [< 1.5]	< 10	< 2.4	3.9 B	8.4 J	4.5 B	10.1
Silicon, total	7440-21-3	µg/L	NA	7590 B	NA	NA	NA	NA	10300	NA	57600 J	13400	NA	230000
Silver, total	7440-22-4	µg/L	< 1.5	< 1.2	< 0.53 [< 0.53]	< 0.53	< 0.72	< 0.72 [< 0.72]	< 0.85	< 1.5	3.5 B	< 0.85	< 1.5	6.9 B
Sodium, total	7440-23-5	µg/L	7330 B	7720 B	7980 B [7770 B]	7820 B	7790 B	7920 B [7950 B]	83400	77500	51700 J	126000	156000 J	232000
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.8	< 1.8 [< 1.8]	< 1.8	< 2	< 2 [< 0.17]	< 2	1.6 B	< 1.8	< 1.7	< 6.6	< 3.7
Vanadium, total	7440-62-2	µg/L	< 0.72	0.90 B	3.7 J [3.7 J]	3.1 J	< 50	< 50 [< 50]	11.7 B	10.8 B	6.0 J	21.6 B	11.0 B	9.2 J
Zinc, total	7440-66-6	µg/L	6.0 B	< 7.6	568 J [541 J]	505 J	1790	1500 [1440]	5.9 J	17.3 B	23.3 J	< 2.8	8.0 B	< 20 B
Other														
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-4 RW-4 (57-77) (4/28/2008) 4/28/2008	RW-4 RW-4 (108-128) (4/29/2008) 4/29/2008	RW-4 RW-4 (328-348) (4/29/2008) 4/29/2008	RW-4 RW-4 (388-408) (4/29/2008) 4/29/2008	RW-4 RW-4 (328-348) (9/9/2008) 9/9/2008	RW-4 RW-4 (388-408) (9/10/2008) 9/10/2008	RW-4 RW-4 (57-77) 9/15/2008	RW-4 RW-4 (108-128) 9/16/2008	RW-4 RW-4 (108-128) (6/30/2009) 6/30/2009	RW-4 RW-4 (56-77) 6/30/2009	RW-4 RW-4 (328-349) (7/2/2009) 7/2/2009	RW-4 RW-4 (388-408) (7/2/2009) 7/2/2009	RW-4 RW-4 (57-77) 10/21/2009	RW-4 RW-4 (108-128) 10/22/2009	RW-4 RW-4 (328-348) 10/23/2009
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.24	< 0.24	< 0.24	< 0.24	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
1,1-Dichloroethene	75-35-4	µg/L	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 0.37	< 1.3	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 2.4	< 2.4	< 2.4	< 2.4	< 1.3	< 1.3	< 1.3	< 1.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.18	< 0.18	< 0.18	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.22	< 0.22	< 0.22	< 0.22	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 2.3	< 2.3	< 2.3	< 2.3	< 2.3	< 2.3	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.9	< 1.9	< 1.9	< 1.9	< 1.3	< 1.3	< 1.3	< 1.3	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86
Acetone	67-64-1	µg/L	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9
Benzene	71-43-2	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	0.3 J	< 0.26	14.3	3.3	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Bromodichloromethane	75-27-4	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Bromomethane	74-83-9	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Carbon disulfide	75-15-0	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.16	< 0.16	< 0.16	< 0.16	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.19	< 0.19	< 0.19	< 0.19	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39
Chloroethane	75-00-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29 J	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.25	< 0.25	< 0.25	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.18	< 0.18	< 0.18	< 0.18	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Cyclohexane	110-82-7	µg/L	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.16	< 0.16	< 0.16	< 0.16	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.88	< 0.88	< 0.88	< 0.88	< 0.88	< 0.88	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92
Ethylbenzene	100-41-4	µg/L	< 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	< 0.27	< 0.27
Freon 113	76-13-1	µg/L	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
Isopropylbenzene	98-82-8	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.19	< 0.19	< 0.19	< 0.19	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57
Methyl acetate	79-20-9	µg/L	< 2.5	< 2.5	< 2.5	< 2.5	< 1.7	< 1.7	< 1.7	< 1.7	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.16	< 0.16	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Methylcyclohexane	108-87-2	µg/L	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
o-Xylene	95-47-6	µg/L	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	< 0.45	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Styrene	100-42-5	µg/L	< 0.11	< 0.11	< 0.11	< 0.11	< 0.17	< 0.17	< 0.17	< 0.17	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
Toluene	108-88-3	µg/L	24.9	7.8	2.2	1.4	21.4	4.2	20.3	5.1	< 0.3	< 0.3	0.4 J	0.32 J	< 0.3	0.63 J	0.57 J
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.11	< 0.11	< 0.11	< 0.11	< 0.15	< 0.15	< 0.15	< 0.15	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54
Vinyl Chloride	75-01-4	µg/L	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44
Xylene, -m,p	179601-23-1	µg/L	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Xylenes	1330-20-7	µg/L	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 0.22	< 0.23	< 0.22	< 0.23	< 0.6	< 0.61	NA	< 0.55	< 0.42	< 0.48	< 0.46	< 0.43	< 0.47	< 0.47	< 0.47
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.1	< 1.1	< 1.1	< 1.2	< 2.2	< 2.2	< 2	< 2	< 1.3	< 1.5	< 1.4	< 1.3	< 1.5	< 1.5	< 1.5
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1	< 1.1	< 1	< 1.1	< 1.7	< 1.7	< 1.6	< 1.6	< 1.2	< 1.4	< 1.3	< 1.2	< 1.4	< 1.4	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 1.4	< 1.5	< 1.4	< 1.5	< 2.1	< 2.1	< 1.9	< 1.9	< 1.2	< 1.4	< 1.3	< 1.2	< 1.4	< 1.4	< 1.4
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7	< 1.7	< 1.7	< 1.7	< 2.2	< 2.2	< 2	< 2	< 1.7	< 1.9	< 1.8	< 1.7	< 1.8	< 1.9	< 1.8
2,4-Dinitrophenol	51-28-5	µg/L	< 1.1	< 1.1	< 1.1	< 1.2	< 4.5	< 4.6	< 4.2	< 4.2	< 0.74	< 0.84	< 0.8	< 0.74	< 0.82	< 0.83	< 0.82
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.54	< 0.57	< 0.54	< 0.57	< 0.49	< 0.5	< 0.45	< 0.45	< 0.22	< 0.25	< 0.24	< 0.22	< 0.24	< 0.25	< 0.24
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.5	< 0.52	< 0.5	< 0.53	< 0.65	< 0.67	< 0.6	< 0.6	< 0.33	< 0.37	< 0.35	< 0.33	< 0.36	< 0.37	< 0.36
2-Chloronaphthalene	91-58-7	µg/L	< 0.2	< 0.21	< 0.2	< 0.21	< 0.53	< 0.54	< 0.48	< 0.48	< 0.42	< 0.47	< 0.45	< 0.42	< 0.46	< 0.47	< 0.46
2-Chlorophenol	95-57-8	µg/L	< 0.87	< 0.91	< 0.87	< 0.92	< 1.6	< 1.6	< 1.5	< 1.5	< 1.1	< 1.2	< 1.2	< 1.1	< 1.2	< 1.2	< 1.2
2-Methylnaphthalene	91-57-6	µg/L	< 0.76	< 0.8	< 0.76	< 0.8	< 0.47	< 0.48	< 0.43	< 0.43	< 0.66	< 0.75	< 0.72	< 0.66	< 0.73	< 0.74	< 0.73
2-Methylphenol	95-48-7	µg/L	< 1	< 1.1	< 1	< 1.1	< 1.5	< 1.5	< 1.4	< 1.4	< 1.1	< 1.3	< 1.2	< 1.1	< 1.2	< 1.3	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 0.5	< 0.52	< 0.5	< 0.52	< 0.48	< 0.49	< 0.45	< 0.45	< 0.24	< 0.27	< 0.26	< 0.24	< 0.26	< 0.26	< 0.26
2-Nitrophenol	88-75-5	µg/L	< 1.5	< 1.6	< 1.5	< 1.6	< 2.1	< 2.1	< 1.9	< 1.9	< 1.2	< 1.4	< 1.3	< 1.3	< 1.4	< 1.4	< 1.4
3&4-Methylphenol	12-03-3	µg/L	< 1.1	< 1.1	< 1.1	< 1.2	< 1.6	< 1.6	< 1.5	< 1.5	< 1	< 1.2	< 1.1	< 1.1	< 1.2	< 1.2	< 1.2
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.97	< 1	< 0.97	< 1	< 4.9	< 5.1	< 4.6	< 4.6	< 0.3	< 0.34	< 0.32	< 0.3	< 0.33	< 0.33	< 0.33
3-Nitroaniline	99-09-2	µg/L	< 0.32	< 0.34	< 0.32	< 0.34	< 0.49	< 0.5	< 0.45	< 0.45	< 0.29	< 0.33	< 0.31	< 0.29	< 0.32	< 0.32	< 0.32
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.2	< 2.3	< 2.2	< 2.3	< 1.3	< 1.3	< 1.2	< 1.2	< 0.51	< 0.58	< 0.56	< 0.52	< 0.57	< 0.58	< 0.57
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.37	< 0.39	< 0.37	< 0.39	< 0.45	< 0.46	< 0.41	< 0.41	< 0.35	< 0.4	< 0.38	< 0.35	< 0.39	< 0.39	< 0.39
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.2	< 1.3	< 1.2	< 1.3	< 2.5	< 2.5	< 2.3	< 2.3	< 1.1	< 1.2	< 1.1	< 1.1	< 1.2	< 1.2	< 1.2
Semi-Volatile Organic Compounds																	

Location ID			RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4	RW-4
Sample ID			RW-4 (57-77) (4/28/2008)	RW-4 (108-128) (4/29/2008)	RW-4 (328-348) (4/29/2008)	RW-4 (388-408) (4/29/2008)	RW-4 (328-348) (9/9/2008)	RW-4 (388-408) (9/10/2008)	RW-4 (57-77)	RW-4 (108-128)	RW-4 (108-128) (6/30/2009)	RW-4 (56-77)	RW-4 (328-349) (7/2/2009)	RW-4 (388-408) (7/2/2009)	RW-4 (57-77)	RW-4 (108-128)	RW-4 (328-348)
Sample Date	CAS	Units	4/28/2008	4/29/2008	4/29/2008	4/29/2008	9/9/2008	9/10/2008	9/15/2008	9/16/2008	6/30/2009	6/30/2009	7/2/2009	7/2/2009	10/21/2009	10/22/2009	10/23/2009
4-Chloroaniline	106-47-8	µg/L	< 0.35	< 0.36	< 0.35	< 0.37	< 0.36	< 0.37	< 0.33	< 0.33	< 0.25	< 0.29	< 0.28	< 0.26	< 0.28	< 0.28	< 0.28
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.29	< 0.3	< 0.29	< 0.31	< 0.49	< 0.5	< 0.45	< 0.45	< 0.35	< 0.4	< 0.38	< 0.36	< 0.39	< 0.4	< 0.39
4-Nitroaniline	100-01-6	µg/L	< 0.59	< 0.61	< 0.59	< 0.62	< 0.49	< 0.5	< 0.45	< 0.45	< 0.18	< 0.2	< 0.19	< 0.18	< 0.2	< 0.2	< 0.2
4-Nitrophenol	100-02-7	µg/L	< 1.6	< 1.6	< 1.6	< 1.7	< 2.4	< 2.5	< 2.3	< 2.3	< 0.83	< 0.94	< 0.9	< 0.84	< 0.92	< 0.93	< 0.92 J
Acenaphthene	83-32-9	µg/L	< 0.016	< 0.017	< 0.016	< 0.017	< 0.017	< 0.016	< 0.016	< 0.016	< 0.017	< 0.017	< 0.017	< 0.016	< 0.032	< 0.033	< 0.032
Acenaphthylene	208-96-8	µg/L	< 0.007	< 0.0073	< 0.007	< 0.0074	< 0.0077	< 0.007	< 0.007	< 0.007	< 0.0076	< 0.0075	< 0.0076	< 0.0071	< 0.044	< 0.044	< 0.044
Acetophenone	98-86-2	µg/L	< 0.36	< 0.38	< 0.36	< 0.38	< 0.51	< 0.52	NA	< 0.47	< 0.4	< 0.45	< 0.43	< 0.4	< 0.44	< 0.45	< 0.44
Anthracene	120-12-7	µg/L	< 0.021	< 0.022	< 0.021	< 0.022	< 0.023	< 0.021	< 0.021	< 0.021	< 0.023	< 0.023	< 0.023	< 0.021	< 0.028	< 0.029	< 0.028
Atrazine	1912-24-9	µg/L	< 0.28	< 0.29	< 0.28	< 0.3	< 0.67	< 0.68	NA	< 0.62	< 0.39	< 0.44	< 0.43	< 0.39	< 0.43	< 0.44	< 0.43
Benzaldehyde	100-52-7	µg/L	< 0.76	< 0.79	< 0.76	< 0.8	< 1.8	< 1.8	NA	< 1.6	< 0.4	< 0.46	< 0.44	< 0.41	< 0.45	< 0.45	< 0.45
Benzo(a)anthracene	56-55-3	µg/L	< 0.034	< 0.035	< 0.034	< 0.035	< 0.037	< 0.034	< 0.034	< 0.034	< 0.037	< 0.036	< 0.037	< 0.034	< 0.026	< 0.027	< 0.026
Benzo(a)pyrene	50-32-8	µg/L	< 0.036	< 0.037	< 0.036	< 0.037	< 0.039	< 0.036	< 0.036	< 0.036	< 0.039	< 0.038	< 0.039	< 0.036	< 0.034	< 0.035	< 0.034
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.017	< 0.018	< 0.017	< 0.018	< 0.019	< 0.017	< 0.017	< 0.017	< 0.018	< 0.018	< 0.018	< 0.017	< 0.04	< 0.04	< 0.04
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.012	< 0.012	< 0.012	< 0.012	< 0.013	< 0.012	< 0.012	< 0.012	< 0.013	< 0.013	< 0.013	< 0.012	< 0.032	< 0.032	< 0.032
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.019	< 0.02	< 0.019	< 0.02	< 0.021	< 0.019	< 0.019	< 0.019	< 0.02	< 0.02	< 0.02	< 0.019	< 0.031	< 0.032	< 0.031
Benzyl butyl phthalate	85-68-7	µg/L	< 0.64	< 0.66	< 0.64	< 0.67	< 0.45	< 0.46	< 0.42	< 0.42	< 0.25	< 0.29	< 0.27	< 0.25	< 0.28	< 0.28	< 0.28
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.32	< 0.33	< 0.32	< 0.33	< 0.56	< 0.57	< 0.52	< 0.52	< 0.25	< 0.28	< 0.27	< 0.25	< 0.28	< 0.28	< 0.28
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.67	< 0.7	< 0.67	< 0.71	< 0.54	< 0.55	< 0.49	< 0.49	< 0.31	< 0.35	< 0.34	< 0.31	< 0.34	< 0.35	< 0.34
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.58	< 0.6	< 0.58	< 0.61	< 0.59	< 0.6	< 0.54	< 0.54	< 0.39	< 0.44	< 0.42	< 0.39	< 0.43	< 0.44	< 0.43
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	2	< 0.91	< 0.88 J	< 0.92 J	< 0.82	< 0.83	2.3	< 0.75	1.2 J	< 0.37	< 0.36	< 2	< 0.36	< 0.37	< 0.36
Caprolactam	105-60-2	µg/L	< 0.49	< 0.51	< 0.49	< 0.52	< 0.68	< 0.7	NA	< 0.63	< 0.2	< 0.22	< 0.21	< 0.2	< 0.22	< 0.22	< 0.22
Carbazole	86-74-8	µg/L	< 0.4	< 0.41	< 0.4	< 0.42	< 0.49	< 0.5	< 0.45	< 0.45	< 0.17	< 0.19	< 0.18	< 0.17	< 0.18	< 0.19	< 0.18
Chrysene	218-01-9	µg/L	< 0.018	< 0.018	< 0.018	< 0.019	< 0.019	< 0.018	< 0.018	< 0.018	< 0.019	< 0.019	< 0.019	< 0.018	< 0.024	< 0.025	< 0.024
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.02	< 0.021	< 0.02	< 0.021	< 0.022	< 0.02	< 0.02	< 0.02	< 0.022	< 0.022	< 0.022	< 0.02	< 0.025	< 0.025	< 0.025
Dibenzofuran	132-64-9	µg/L	< 0.23	< 0.24	< 0.23	< 0.24	< 0.53	< 0.54	< 0.49	< 0.49	< 0.3	< 0.35	< 0.33	< 0.31	< 0.34	< 0.34	< 0.34
Diethyl phthalate	84-66-2	µg/L	< 0.34	< 0.36	< 0.34	< 0.36	< 0.39	< 0.4	< 0.36	< 0.36	< 0.17	< 0.19	< 0.18	< 0.17	< 0.18	< 0.19	< 0.18
Dimethyl phthalate	131-11-3	µg/L	< 0.34	< 0.35	< 0.34	< 0.35	< 0.39	< 0.4	< 0.36	< 0.36	< 0.23	< 0.26	< 0.24	< 0.23	< 0.25	< 0.25	< 0.25
di-n-butyl phthalate	84-74-2	µg/L	< 0.4	< 0.42	< 0.4	< 0.42	< 0.54	< 0.55	< 0.5	< 0.5	< 0.19	< 0.22	< 0.21	< 0.19	< 0.21	< 0.21	< 0.21
di-n-octylphthalate	117-84-0	µg/L	< 0.48	< 0.5	< 0.48	< 0.5	< 0.54	< 0.55	< 0.5	< 0.5	< 0.4	< 0.45	< 0.43	< 0.4	< 0.44	< 0.44	< 0.44
Fluoranthene	206-44-0	µg/L	< 0.0096	< 0.01	< 0.0096	< 0.01	< 0.01	< 0.0096	< 0.0096	< 0.0096	< 0.01	< 0.01	< 0.01	< 0.0097	< 0.027	< 0.027	< 0.027
Fluorene	86-73-7	µg/L	< 0.02	< 0.02	< 0.02	< 0.021	< 0.021	< 0.02	< 0.02	< 0.02	< 0.021	< 0.021	< 0.021	< 0.02	< 0.03	< 0.03	< 0.03
Hexachlorobenzene	118-74-1	µg/L	< 0.0099	< 0.01	< 0.0099	< 0.01	< 0.011	< 0.0099	< 0.0099	< 0.0099	< 0.011	< 0.011	< 0.011	< 0.01	< 0.011	< 0.011	< 0.011
Hexachlorobutadiene	87-68-3	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.41	< 0.42	< 0.38	< 0.38	< 0.37	< 0.42	< 0.4	< 0.38	< 0.41	< 0.42	< 0.41
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.1	< 0.11	< 0.1	< 0.11	< 4.9	< 5	< 4.5	< 4.5	< 0.67	< 0.76	< 0.73	< 0.68	< 0.75	< 0.76	< 0.75
Hexachloroethane	67-72-1	µg/L	< 0.16	< 0.17	< 0.16	< 0.17	< 0.33	< 0.33	< 0.3	< 0.3	< 0.26	< 0.3	< 0.29	< 0.27	< 0.29	< 0.3	< 0.29
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.014	< 0.015	< 0.014	< 0.015	< 0.016	< 0.014	< 0.014	< 0.014	< 0.016	< 0.015	< 0.016	< 0.015	< 0.032	< 0.033	< 0.032
Isophorone	78-59-1	µg/L	< 0.49	< 0.51	< 0.49	< 0.51	< 0.75	< 0.77	< 0.69	< 0.69	< 0.25	< 0.28	< 0.27	< 0.25	< 0.28	< 0.28	< 0.28
Naphthalene	91-20-3	µg/L	< 0.014	< 0.014	< 0.014	< 0.015	< 0.015	< 0.014	0.479	< 0.014	< 0.015	< 0.015	< 0.015	< 0.014	< 0.021	< 0.021	< 0.021
Nitrobenzene	98-95-3	µg/L	< 0.71	< 0.73	< 0.71	< 0.74	< 0.72	< 0.73	< 0.66	< 0.66	< 0.25	< 0.29	< 0.28	< 0.26	< 0.28	< 0.28	< 0.27 J
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.38	< 0.4	< 0.38	< 0.4	< 0.43	< 0.44	< 0.39	< 0.39	< 0.44	< 0.5	< 0.48	< 0.44	< 0.49	< 0.49	< 0.49
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.41	< 0.43	< 0.41	< 0.44	< 0.66	< 0.67	< 0.61	< 0.61	< 0.22	< 0.24	< 0.23	< 0.22	< 0.24	< 0.24	< 0.24
Pentachlorophenol	87-86-5	µg/L	< 0.22	< 0.23	< 0.22	< 0.23	< 0.24	< 0.22	< 0.22	< 0.22 J	< 0.24	< 0.24	< 0.24	< 0.23	< 0.25	< 0.25	< 0.25
Phenanthrene	85-01-8	µg/L	< 0.017	< 0.018	< 0.017	< 0.018	< 0.019	< 0.017	< 0.017	< 0.017	< 0.018	< 0.018	< 0.018	< 0.017	< 0.04	< 0.041	< 0.04
Phenol	108-95-2	µg/L	< 0.68	< 0.71	< 0.68	< 0.72	< 1.5	< 1.5	< 1.4	< 1.4	< 0.58	< 0.66	< 0.63	< 0.58	< 0.64	< 0.65	< 0.64
Pyrene	129-00-0	µg/L	< 0.012	< 0.013	< 0.012	< 0.013	< 0.013	< 0.012	< 0.012	< 0.012	< 0.013	< 0.013	< 0.013	< 0.012	< 0.025	< 0.025	< 0.025
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	58.5 B	< 24	< 24	< 24	< 24	< 24	< 24	< 24	< 26	< 26	< 26	< 26	< 26	< 26	< 26
Antimony, total	7440-36-0	µg/L	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	6.2	17.8	< 4	< 4	< 2.9	< 2.9	< 2.9
Arsenic, total	7440-38-2	µg/L	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4
Barium, total	7440-39-3	µg/L	7.8 B	14 B	8.5 B	8 B	19.6 B	10.2 BJ	7.2 BJ	13.8 B	9.9 B	5.5 BJ	12.3 B	8.9 BJ	5.7 B	10.2 B	8.7 B
Beryllium, total	7440-41-7	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.1	< 1	< 1	< 1	< 1	< 0.4	< 0.4	< 0.4
Cadmium, total	7440-43-9	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	0.7 B	1.9 B	4.9	1.5 BJ	< 0.4	< 0.4	< 0.4
Calcium, total	7440-70-2	µg/L	10000	13500	10500	11000	NA	10900	9710 J	13400	10400	8640	11500	11100	10200	10500	11500
Chromium, total	7440-47-3	µg/L	2.6 B	1 B	0.8 B	1.1 B	NA	1.3 B	4.7 BJ	< 0.53	< 10	< 10	65.1	< 10	< 0.9	< 0.9	< 0.9
Cobalt, total	7440-48-4	µg/L	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51	< 0.4	< 0.4	< 50	< 0.4	< 1.6	< 1.6	< 1.6
Copper, total	7440-50-8	µg/L	< 2.5 B	5.5 B	5.1 B	6.1 B	< 10	1.8 B	2.3 B	< 1.1	< 1.6	< 10	2.6 BJ	2.9 BJ	< 1.6	< 1.6	1.6 B
Iron, total	7439-89-6	µg/L	1180	602	316	1170	NA	352	3360	105 J	4430	7060	2610	2970	3330	1600	1290 J
Lead, total	7439-92-1	µg/L	3.4	3.1	2.5 B	3.3	1.8 B	< 1.4	< 1.4	< 1.4	< 1.7	3.4 J	< 3	< 3	< 1.7	< 1.7	< 1.7
Magnesium, total	7439-95-4	µg/L	3920 B	5190	4160 B	4340 B	NA	4280 B	3830 B	5300	4000 B	3310 B	4350 B	4310 B	3880 B	3940 B	4170 B
Manganese, total	7439-96-5	µg/L	17.2	5.8 B	1.8 B	5.3 B	NA	3.3 B	75.8 J	5.7 B	44.8	111	67.4	30.7	40.5	26.3	36.3
Mercury, total	7439-97-6	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	0.072 B	< 0.049	< 0.049	< 0.082 J	< 0.082	< 0.082
Nickel, total	7440-02-0	µg/L	3 B	6.6 B	< 1.2	< 1.2	< 1.2	1.7 B	3.9 B	< 1.2	< 0.6	< 10	34.2 J	< 10	< 0.6	< 10	0.7 B
Potassium, total	7440-09-7	µg/L	1140 B	1250 B	1060 B	1100 B	NA	1250 B	1180 BJ	1110 B	1230 B	1170 B	1240 B	1240 B	1040 B	1150 B	1180 B
Selenium, total	7782-49-2	µg/L	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7	< 3.7
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1.8 B	1.8 B	< 1	< 1	< 1
Sodium, total	7440-23-5	µg/L	5450 B	5670 B	5370 B	5570 B	NA	5650 B	5650 B	5810 B	5730 B	5600 B	5920 B	5910 B	5520 B	5520 B	5560 B
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 2	< 2	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Vanadium, total	7440-62-2	µg/L	0.9 B	0.7 B	0.5 B	0.9 B	0.7 B	0.5 B	0.5 B	< 0.43	< 50	< 50	< 50	< 50	< 0.9	< 0.9	0.9 B
Zinc, total	7440-66-6	µg/L	872	373	306	707	815	820	1040	403	501	1530	3770	1110	467	2490	2470
Other																	
Cyanide, total	57-12-5	µg/L	14	< 10	< 10	< 10	< 10	< 10	< 10	< 10	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-4 RW-4 (388-408) 10/23/2009	RW-4 RW-4 (393-403) (6/8/2010) 6/8/2010	RW-4 RW-4 (393-403) 6/25/2010	RW-4 RW-4 (393-403) (052511) 5/25/2011	RW-4 RW-4 (333-343) 6/7/2011	RW-4 RW-4 (333-343) (042512) 4/25/2012	RW-4 RW-4 (393-403) (042612) 4/26/2012	RW-4 RW-4(333-343) (111113) 11/11/2013	RW-4 RW-4(393-403) (111113) 11/11/2013	RW-4 RW-4(333-343) (090914) 9/9/2014	RW-4 RW-4(393-403) (091014) 9/10/2014	RW-4A RW-4A(62-72) (6/7/2010) 6/7/2010	RW-4A RW-4A(113-123) (6/8/2010) 6/8/2010
Volatile Organic Compounds															
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	< 0.26 [< 0.26]	< 0.26 [< 0.26]	< 0.24	< 0.24	< 0.24	< 0.24	< 0.25	< 0.25	< 0.32	< 0.32	< 0.26	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	< 0.24 [< 0.24]	< 0.24 [< 0.24]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.20	< 0.20	< 0.39	< 0.39	< 0.24	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23 [< 0.23]	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21	< 0.28	< 0.28	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.29	< 0.29 [< 0.29]	< 0.29 [< 0.29]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.26	< 0.26	< 0.35	< 0.35	< 0.29	< 0.29
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	< 0.4 [< 0.4]	< 0.4 [< 0.4]	< 0.28	< 0.28	< 0.28	< 0.28	< 0.34	< 0.34	< 0.50	< 0.50	< 0.4	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	< 0.56 [< 0.56]	< 0.56 [< 0.56]	< 0.15	< 0.15	< 0.15	< 0.15	< 0.22	< 0.22	< 0.22	< 0.22	< 0.56	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	< 1.1 [< 1.1]	< 1.1 [< 1.1]	< 1.3	< 1.3	< 1.3*	< 1.3*	< 1.3	< 1.3	< 1.2	< 1.2	< 1.1	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	< 0.39 [< 0.39]	< 0.39 [< 0.39]	< 0.21	< 0.21	< 0.21*	< 0.21*	< 0.16	< 0.16	< 0.23	< 0.23	< 0.39	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	< 0.26 [< 0.26]	< 0.26 [< 0.26]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.20	< 0.20	< 0.16	< 0.16	< 0.26	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	< 0.33 [< 0.33]	< 0.33 [< 0.33]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.22	< 0.22	< 0.30	< 0.30	< 0.33	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	< 0.27 [< 0.27]	< 0.27 [< 0.27]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.28	< 0.28	< 0.43	< 0.43	< 0.27	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	< 0.25 [< 0.25]	< 0.25 [< 0.25]	< 0.29	< 0.29	< 0.29	< 0.29	< 0.31	< 0.31	< 0.26	< 0.26	< 0.25	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	< 0.28 [< 0.28]	< 0.28 [< 0.28]	< 0.26	< 0.26	< 0.26	< 0.26	< 0.30	< 0.30	< 0.24	< 0.24	< 0.28	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	< 1.6 [< 1.6]	< 1.6 [< 1.6]	< 2.9	< 2.9	< 2.9	< 2.9	< 3.2	< 3.2	< 2.5	< 2.5	< 1.6	< 1.6
2-Hexanone	591-78-6	µg/L	< 1.4	< 1.4 [< 1.4]	< 1.4 [< 1.4]	< 3 J	< 3	< 3	< 3	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	< 0.86 [< 0.86]	< 0.86 [< 0.86]	< 1.2	< 1.2	< 1.2	< 1.2	< 1.5	< 1.5	< 1.1	< 1.1	< 0.86	< 0.86
Acetone	67-64-1	µg/L	< 2.9	< 2.9 [< 2.9]	< 2.9 [< 2.9]	< 7.6	< 7.6	8.2 J	< 5	9.7 J	< 3.3	< 2.6	< 2.6	< 2.9	< 2.9
Benzene	71-43-2	µg/L	< 0.23	< 0.23 [< 0.23]	< 0.23 [< 0.23]	< 0.22	< 0.05	< 0.22	< 0.22	< 0.28	< 0.28	< 0.21	< 0.21	< 0.23	< 0.23
Bromodichloromethane	75-27-4	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22 [< 0.22]	< 0.23	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21	< 0.28	< 0.28	< 0.22	< 0.22
Bromoform	75-25-2	µg/L	< 0.23	< 0.23 [< 0.23]	< 0.23 [< 0.23]	< 0.24	< 0.24	< 0.24	< 0.24	< 0.30	< 0.30	< 0.31	< 0.31	< 0.23	< 0.23
Bromomethane	74-83-9	µg/L	< 0.3	< 0.3 [< 0.3]	< 0.3 [< 0.3]	< 0.31	< 0.31	< 0.31	< 0.31	< 0.56	< 0.56	< 0.39	< 0.39	< 0.3	< 0.3
Carbon disulfide	75-15-0	µg/L	< 0.74	< 0.74 [< 0.74]	< 0.74 [< 0.74]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.50	< 0.50	< 0.74	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.26	< 0.26 [< 0.26]	< 0.26 [< 0.26]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.23	< 0.23	< 0.24	< 0.24	< 0.26	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.39	< 0.39 [< 0.39]	< 0.39 [< 0.39]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.35	< 0.35	< 0.27	< 0.27	< 0.39	< 0.39
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37 [< 0.37]	< 0.37 [< 0.37]	< 0.37	< 0.37	< 0.37	< 0.37	< 0.39	< 0.39	< 0.56	< 0.56	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.23	< 0.23 [< 0.23]	< 0.23 [< 0.23]	< 0.21	< 0.21	< 0.21	< 0.21	< 0.25	< 0.25	< 0.20	< 0.20	< 0.23	< 0.23
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29 [< 0.29]	< 0.29 [< 0.29]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.36	< 0.36	0.46 J	< 0.33	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.24	< 0.24	< 0.33	< 0.33	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	< 0.25 [< 0.25]	< 0.25 [< 0.25]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.15	< 0.15	< 0.28	< 0.28	< 0.25	< 0.25
Cyclohexane	110-82-7	µg/L	< 1.9	< 1.9 [< 1.9]	< 1.9 [< 1.9]	< 0.29	< 0.29	< 0.29	< 0.29	< 0.18	< 0.18	< 0.37	< 0.37	< 1.9	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22 [< 0.22]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.19	< 0.19	< 0.25	< 0.25	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	< 0.92 [< 0.92]	< 0.92 [< 0.92]	< 0.31	< 0.31	< 0.31	< 0.31	< 0.63	< 0.63	< 0.73	< 0.73	< 0.92	< 0.92
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27 [< 0.27]	< 0.27 [< 0.27]	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.40	< 0.40	< 0.27	< 0.27
Freon 113	76-13-1	µg/L	< 0.38	< 0.38 [< 0.38]	< 0.38 [< 0.38]	< 0.49	< 0.49	< 0.49	< 0.49	< 0.77	< 0.77	< 0.45	< 0.45	< 0.38	< 0.38
Isopropylbenzene	98-82-8	µg/L	< 0.57	< 0.57 [< 0.57]	< 0.57 [< 0.57]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.22	< 0.22	< 0.26	< 0.26	< 0.57	< 0.57
Methyl acetate	79-20-9	µg/L	< 1.5	< 1.5 [< 1.5]	< 1.5 [< 1.5]	< 2.9	< 2.9	< 2.9	< 2.9	< 1.5	< 1.5	< 3.1	< 3.1	< 1.5	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.23	< 0.23 [< 0.23]	< 0.23 [< 0.23]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.29	< 0.29	< 0.26	< 0.26	< 0.23	< 0.23
Methylcyclohexane	108-87-2	µg/L	< 0.35	< 0.35 [< 0.35]	< 0.35 [< 0.35]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.15	< 0.15	< 0.22	< 0.22	< 0.35	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.3	< 0.3 [< 0.3]	< 0.3 [< 0.3]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.86	< 0.86	< 0.81	< 0.81	< 0.3	< 0.3
o-Xylene	95-47-6	µg/L	< 0.25	NA	NA	NA	NA	NA	NA	< 0.30	< 0.30	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.58	< 0.58 [< 0.58]	< 0.58 [< 0.58]	< 0.23	< 0.23	< 0.23	< 0.23	NA	NA	< 0.26	< 0.26	< 0.58	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	< 0.25	< 0.25	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.27	< 0.27 [< 0.27]	< 0.27 [< 0.27]	< 0.32	< 0.32	< 0.32	< 0.32	< 0.44	< 0.44	< 0.35	< 0.35	< 0.27	< 0.27
Toluene	108-88-3	µg/L	0.53 J	< 0.3 [< 0.3]	< 0.3 [0.91 J]	< 0.15	< 0.15	< 0.15	< 0.15	< 0.38	< 0.38	< 0.22	< 0.22	< 0.3	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	< 0.25 [< 0.25]	< 0.25 [< 0.25]	< 0.31	< 0.31	< 0.31	< 0.31	< 0.21	< 0.21	< 0.51	< 0.51	< 0.25	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	< 0.21 [< 0.21]	< 0.21 [< 0.21]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.50	< 0.50	< 0.32	< 0.32	< 0.21	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.24	< 0.24 [< 0.24]	< 0.24 [< 0.24]	< 0.21	< 0.21	< 0.21	< 0.21	< 0.33	< 0.33	< 0.25	< 0.25	< 0.24	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	< 0.54 [< 0.54]	< 0.54 [< 0.54]	< 0.35	< 0.35	< 0.35	< 0.35	< 0.41	< 0.41	< 0.28	< 0.28	< 0.54	< 0.54
Vinyl Chloride	75-01-4	µg/L	< 0.44	< 0.44 [< 0.44]	< 0.44 [< 0.44]	< 0.27	< 0.27	< 0.27	< 0.27	NA	NA	< 0.17	< 0.17	< 0.44	< 0.44
Xylene, -m,p	179601-23-1	µg/L	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.25	< 0.25 [< 0.25]	< 0.25 [0.38 J]	< 0.17	< 0.17	< 0.17	< 0.17	< 0.19	< 0.19	< 0.20	< 0.20	< 0.25	< 0.25
Semi-Volatile Organic Compounds															
1,1'-Biphenyl	92-52-4	µg/L	< 0.48	< 0.47 [< 0.5]	< 0.48 [< 0.48]	< 0.47	< 0.47	< 0.35	< 0.35	< 0.33	< 3.0	< 0.28	< 0.29	< 0.47	< 0.47
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.5	< 1.5 [< 1.6]	< 1.5 [< 1.5]	< 1.5	< 1.5	< 1.8	< 1.8	< 1.7	< 16	< 1.8	< 1.8	< 1.5	< 1.5
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4	< 1.4 [< 1.4]	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.5	< 1.5	< 1.4	< 13	< 1.6	< 1.6	< 1.4	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 1.4	< 1.4 [< 1.4]	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.3	< 1.3	< 1.3	< 12	< 1.7	< 1.7	< 1.4	< 1.4
2,4-Dimethylphenol	105-67-9	µg/L	< 1.9	< 1.8 [< 1.9]	< 1.8 [< 1.8]	< 1.9	< 1.8	< 1.8	< 1.8	< 1.7	< 15	< 1.9	< 1.9	< 1.8	< 1.9
2,4-Dinitrophenol	51-28-5	µg/L	< 0.84	< 0.82 [< 0.87]	< 0.82 [< 0.82]	< 0.83	< 0.82	< 19	< 19	< 18	< 170	< 6.7	< 6.8	< 0.82	< 0.83
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.25	< 0.24 [< 0.26]	< 0.25 [< 0.25]	< 0.25	< 0.24	< 0.49	< 0.49	< 0.46	< 4.3	< 0.33	< 0.33	< 0.24	< 0.25
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.37	< 0.36 [< 0.38]	< 0.37 [< 0.37]	< 0.37	< 0.36	< 0.53	< 0.53	< 0.50	< 4.6	< 0.26	< 0.27	< 0.36	< 0.37
2-Chloronaphthalene	91-58-7	µg/L	< 0.47	< 0.46 [< 0.49]	< 0.48 [< 0.47]	< 0.47	< 0.46	< 0.34	< 0.34	< 0.32	< 3.0	< 0.35	< 0.36	< 0.46	< 0.47
2-Chlorophenol	95-57-8	µg/L	< 1.2	< 1.2 [< 1.3]	< 1.2 [< 1.2]	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1	< 9.7	< 1.3	< 1.3	< 1.2	< 1.2
2-Methylnaphthalene	91-57-6	µg/L	< 0.75	< 0.73 [< 0.77]	< 0.75 [< 0.75]	< 0.74	< 0.73	< 0.44	< 0.44	< 0.42	< 3.8	< 0.30	< 0.30	< 0.73	< 0.74
2-Methylphenol	95-48-7	µg/L	< 1.3	< 1.2 [< 1.3]	< 1.2 [< 1.2]	< 1.3	< 1.2	< 1.2	< 1.2	< 1.1	< 10	< 1.3	< 1.3	< 1.2	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 0.27	< 0.26 [< 0.28]	< 0.27 [< 0.27]	< 0.26	< 0.26	< 1.3	< 1.3	< 1.2	< 11	< 0.33	< 0.33	< 0.26	< 0.26
2-Nitrophenol	88-75-5	µg/L	< 1.4	< 1.4 [< 1.5]	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.7	< 1.7	< 1.6	< 15	< 1.9	< 1.9	< 1.4	< 1.4
3&4-Methylphenol	12-03-3	µg/L	< 1.2	< 1.2 [< 1.2]	< 1.2 [< 1.2]	< 1.2	< 1.2	< 1.1	< 1.1	< 1.0	< 9.3	< 1.1	< 1.1	< 1.2	< 1.2
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.34	< 0.33 [< 0.35]	< 0.34 [< 0.34]	< 0.33	< 0.33	< 0.42	< 0.41	< 0.39	< 3.6	< 0.58	< 0.58	< 0.33	< 0.33
3-Nitroaniline	99-09-2	µg/L	< 0.33	< 0.32 [< 0.34]	< 0.33 [< 0.33]	< 0.32	< 0.32	< 1.5	< 1.4	< 1.4	< 13	< 0.27	< 0.27	< 0.32	< 0.32
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.58	< 0.57 [< 0.6]	< 0.57 [< 0.57]	< 0.58	< 0.57	< 1.1	< 1.1	< 1.1	< 9.9	< 1.4	< 1.4	< 0.57	< 0.58
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.4	< 0.39 [< 0.41]	< 0.4 [< 0.4]	< 0.39	< 0.39	< 0.41	< 0.41	< 0.39	< 3.6	< 0.26	< 0.26	< 0.39	< 0.39
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.2	< 1.2 [< 1.2]	< 1.2 [< 1.2]	< 1.2	< 1.2	< 2.1	< 2.1	< 2.0	< 18	< 1.3	< 1.4	< 1.2	< 1.2
Semi-Volatile Organic Compounds															

Location ID Sample ID Sample Date	CAS	Units	RW-4 RW-4 (388-408) 10/23/2009	RW-4 RW-4 (393-403) (6/8/2010) 6/8/2010	RW-4 RW-4 (393-403) 6/25/2010	RW-4 RW-4 (393-403) (052511) 5/25/2011	RW-4 RW-4 (333-343) 6/7/2011	RW-4 RW-4 (333-343) (042512) 4/25/2012	RW-4 RW-4 (393-403) (042612) 4/26/2012	RW-4 RW-4(333-343) (111113) 11/11/2013	RW-4 RW-4(393-403) (111113) 11/11/2013	RW-4 RW-4(333-343) (090914) 9/9/2014	RW-4 RW-4(393-403) (091014) 9/10/2014	RW-4A RW-4A(62-72) (6/7/2010) 6/7/2010	RW-4A RW-4A(113-123) (6/8/2010) 6/8/2010
4-Chloroaniline	106-47-8	µg/L	< 0.29	< 0.28 [< 0.3]	< 0.29 [< 0.29]	< 0.28	< 0.28	< 0.61	< 0.61	< 0.57	< 5.3	< 0.31 J	< 0.31 J	< 0.28	< 0.28
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.4	< 0.39 [< 0.42]	< 0.4 [< 0.4]	< 0.4	< 0.39	< 0.36	< 0.36	< 0.34	< 3.1	< 0.39	< 0.40	< 0.39	< 0.4
4-Nitroaniline	100-01-6	µg/L	< 0.2	< 0.2 [< 0.21]	< 0.2 [< 0.2]	< 0.2	< 0.2	< 1.9	< 1.9	< 1.8	< 17	< 0.31	< 0.31	< 0.2	< 0.2
4-Nitrophenol	100-02-7	µg/L	< 0.94	< 0.92 [< 0.97]	< 0.92 [< 0.92]	< 0.93	< 0.92	< 6	< 6	< 5.7	< 52	< 0.94	< 0.94	< 0.92	< 0.93
Acenaphthene	83-32-9	µg/L	< 0.033	< 0.032 [< 0.034]	< 0.033 [< 0.033]	< 0.015	< 0.015	< 0.017	< 0.016	< 0.022	< 0.20	< 0.021	< 0.021	< 0.032	< 0.033
Acenaphthylene	208-96-8	µg/L	< 0.045	< 0.044 [< 0.046]	< 0.045 [< 0.045]	< 0.018	< 0.018	< 0.02	< 0.019	< 0.026	< 0.24	< 0.024	< 0.025	< 0.044	< 0.044
Acetophenone	98-86-2	µg/L	< 0.45	< 0.44 [< 0.47]	< 0.46 [< 0.45]	< 19.8	< 0.44	< 0.33	< 0.33	< 0.31	< 2.9	< 0.38	< 0.38	< 0.44	< 0.45
Anthracene	120-12-7	µg/L	< 0.029	< 0.028 [< 0.03]	< 0.029 [< 0.029]	< 0.011	< 0.011	< 0.013	< 0.011	< 0.022	< 0.20	< 0.021	< 0.021	< 0.028	< 0.029
Atrazine	1912-24-9	µg/L	< 0.44	< 0.43 [< 0.46]	< 0.45 [< 0.44]	< 0.44	< 0.43	< 0.56	< 0.56	< 0.53	< 4.9	< 0.44	< 0.44	< 0.43	< 0.44
Benzaldehyde	100-52-7	µg/L	< 0.46	< 0.45 [< 0.48]	< 0.46 [< 0.46]	< 0.45	< 0.45	< 3.8	< 3.7	< 3.5	< 33	< 0.69	< 0.70	< 0.45	< 0.45
Benzo(a)anthracene	56-55-3	µg/L	< 0.027	< 0.026 [< 0.028]	< 0.027 [< 0.027]	< 0.017	< 0.017	< 0.019	< 0.017	< 0.013	< 0.12	< 0.012	< 0.012	< 0.026	< 0.027
Benzo(a)pyrene	50-32-8	µg/L	< 0.035	< 0.034 [< 0.036]	< 0.035 [< 0.035]	< 0.0055	< 0.0054	< 0.0061	< 0.0056	< 0.013	< 0.12	< 0.013	< 0.013	< 0.034	< 0.035
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.041	< 0.04 [< 0.042]	< 0.041 [< 0.041]	< 0.018	< 0.018	< 0.02	< 0.019	< 0.011	< 0.10	< 0.010	< 0.011	< 0.04	< 0.04
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.033	< 0.032 [< 0.034]	< 0.033 [< 0.033]	< 0.012	< 0.011	< 0.013	< 0.012	< 0.017	< 0.16	< 0.016	< 0.016	< 0.032	< 0.032
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.032	< 0.031 [< 0.033]	< 0.032 [< 0.032]	< 0.014	< 0.014	< 0.016	< 0.014	< 0.016	< 0.15	< 0.015	< 0.015	< 0.031	< 0.032
Benzyl butyl phthalate	85-68-7	µg/L	< 0.29	< 0.28 [< 0.3]	< 0.29 [< 0.29]	< 0.28	< 0.28	< 0.33	< 0.33	< 0.31	< 2.9	< 0.23	< 0.23	< 0.28	< 0.28
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.28	< 0.28 [< 0.29]	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.35	< 0.35	< 0.33	< 3.1	< 0.43	< 0.44	< 0.28	< 0.28
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.35	< 0.34 [< 0.36]	< 0.35 [< 0.35]	< 0.35	< 0.34	< 0.36	< 0.35	< 0.33	< 3.1	< 0.45	< 0.45	< 0.34	< 0.35
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.44	< 0.43 [< 0.46]	< 0.45 [< 0.44]	< 0.44	< 0.43	< 0.52	< 0.52	< 0.49	< 4.5	< 0.42	< 0.42	< 0.43	< 0.44
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.37	< 0.36 [< 0.38]	< 0.37 [< 0.37]	< 0.37	< 5.4	< 0.68	< 0.67	< 0.64	< 5.9	< 0.57	< 0.58	< 0.36	< 0.37
Caprolactam	105-60-2	µg/L	< 0.22	< 0.22 [< 0.23]	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.8	< 0.79	< 0.75	< 6.9	< 0.42	< 0.42	< 0.22	< 0.22
Carbazole	86-74-8	µg/L	< 0.19	< 0.18 [< 0.19]	< 0.19 [< 0.19]	< 0.19	< 0.18	< 0.42	< 0.41	< 0.39	< 3.6	< 0.17	< 0.18	< 0.18	< 0.19
Chrysene	218-01-9	µg/L	< 0.025	< 0.024 [< 0.026]	< 0.025 [< 0.025]	< 0.026	< 0.026	< 0.029	< 0.027	< 0.013	< 0.12	< 0.012	< 0.012	< 0.024	< 0.025
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.026	< 0.025 [< 0.026]	< 0.026 [< 0.026]	< 0.025	< 0.025	< 0.028	< 0.026	< 0.018	< 0.17	< 0.017	< 0.017	< 0.025	< 0.025
Dibenzofuran	132-64-9	µg/L	< 0.35	< 0.34 [< 0.36]	< 0.35 [< 0.35]	< 0.34	< 0.34	< 0.31	< 0.3	< 0.29	< 2.7	< 0.24	< 0.24	< 0.34	< 0.34
Diethyl phthalate	84-66-2	µg/L	< 0.19	< 0.18 [< 0.19]	< 0.19 [< 0.19]	< 0.19	< 0.18	< 0.38	< 0.38	< 0.36	< 3.3	< 0.24	< 0.24	< 0.18	< 0.19
Dimethyl phthalate	131-11-3	µg/L	< 0.26	< 0.25 [< 0.26]	< 0.26 [< 0.26]	< 0.25	< 0.25	< 0.33	< 0.33	< 0.31	< 2.8	< 0.27	< 0.27	< 0.25	< 0.25
di-n-butyl phthalate	84-74-2	µg/L	< 0.22	< 0.21 [< 0.22]	< 0.22 [< 0.22]	< 0.21	< 0.21	< 0.64	< 0.64	< 0.60	< 5.6	< 2.1 BJ	< 3.2 BJ	< 0.21	< 0.21
di-n-octylphthalate	117-84-0	µg/L	< 0.45	< 0.44 [< 0.46]	< 0.45 [< 0.45]	< 0.44	< 0.44	< 0.36	< 0.35	< 0.33	< 3.1	< 0.26	< 0.26	< 0.44	< 0.44
Fluoranthene	206-44-0	µg/L	< 0.028	< 0.027 [< 0.029]	< 0.028 [< 0.028]	< 0.011	< 0.011	< 0.012	< 0.011	< 0.014	< 0.13	< 0.014	< 0.014	< 0.027	< 0.027
Fluorene	86-73-7	µg/L	< 0.031	< 0.03 [< 0.032]	< 0.031 [< 0.031]	< 0.017	< 0.017	< 0.019	< 0.017	< 0.018	< 0.17	< 0.018	< 0.018	< 0.03	< 0.03
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.011 [< 0.012]	< 0.011 [< 0.011]	< 0.009	< 0.0089	< 0.01	< 0.0092	< 0.018	< 0.17	< 0.017	< 0.017	< 0.011	< 0.011
Hexachlorobutadiene	87-68-3	µg/L	< 0.42	< 0.14 [< 0.15]	< 0.15 [< 0.14]	< 0.14	< 0.14	< 0.59	< 0.59	< 0.56	< 5.1	< 0.40	< 0.40	< 0.14	< 0.14
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.76	< 0.27 [< 0.29]	< 0.28 [< 0.28]	< 0.27	< 0.27	< 8.2	< 8.2	< 7.7	< 71	< 0.50	< 0.50	< 0.27	< 0.27
Hexachloroethane	67-72-1	µg/L	< 0.3	< 0.23 [< 0.25]	< 0.24 [< 0.24]	< 0.23	< 0.23	< 0.64	< 0.63	< 0.60	< 5.5	< 0.30	< 0.30	< 0.23	< 0.23
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.033	< 0.032 [< 0.034]	< 0.033 [< 0.033]	< 0.012	< 0.012	< 0.013	< 0.012	< 0.016	< 0.14	< 0.015	< 0.015	< 0.032	< 0.033
Isophorone	78-59-1	µg/L	< 0.28	< 0.28 [< 0.29]	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.32	< 0.31	< 0.30	< 2.7	< 0.35	< 0.35	< 0.28	< 0.28
Naphthalene	91-20-3	µg/L	< 0.021	< 0.021 [< 0.022]	< 0.021 [< 0.021]	< 2.17	< 0.018	0.193	< 0.019	< 0.039	< 0.36	< 0.037	< 0.037	< 0.021	0.796
Nitrobenzene	98-95-3	µg/L	< 0.27 J	< 0.28 [< 0.3]	< 0.29 [< 0.29]	< 0.28	< 0.28	< 0.48	< 0.48	< 0.46	< 4.2	< 0.54	< 0.54	< 0.28	< 0.28
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.5	< 0.49 [< 0.52]	< 0.5 [< 0.5]	< 0.49	< 0.49	< 0.35	< 0.35	< 0.33	< 3.0	< 0.39 J	< 0.39 J	< 0.49	< 0.49
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.24	< 0.24 [< 0.25]	< 0.25 [< 0.24]	< 0.24	< 0.24	< 0.35	< 0.35	< 0.33	< 3.1	< 0.21	< 0.21	< 0.24	< 0.24
Pentachlorophenol	87-86-5	µg/L	< 0.25	< 0.076 [< 0.08]	< 0.078 [< 0.077]	< 0.32	< 0.32	< 0.13	< 0.11 J	< 0.11	< 1.0	< 0.10	< 0.10	< 0.076 J	< 0.076
Phenanthrene	85-01-8	µg/L	< 0.041	< 0.04 [< 0.042]	< 0.041 [< 0.041]	< 0.018	< 0.017	< 0.02	< 0.018	0.161	< 0.21	0.126	< 0.022	< 0.04	< 0.041
Phenol	108-95-2	µg/L	< 0.66	< 0.64 [< 0.68]	< 0.64 [< 0.64]	< 0.65	< 0.64	< 1.5	< 1.5	< 1.4	< 13	< 0.56	< 0.57	< 0.64	< 0.65
Pyrene	129-00-0	µg/L	< 0.025	< 0.025 [< 0.026]	< 0.025 [< 0.025]	< 0.0091	< 0.009	< 0.01	< 0.0093	< 0.016	< 0.15	< 0.015	< 0.016	< 0.025	< 0.025
Metals - Total															
Aluminum, total	7429-90-5	µg/L	< 26	3240 [2780]	264 [301]	150 B	983 J	1050	111 B	1030	38700	807	29200	44.5 J	74.7 J
Antimony, total	7440-36-0	µg/L	< 2.9	< 2.2 [< 2.2]	< 2.2 [< 2.2]	< 1.3	< 1.3	< 1.4	< 1.4	< 1.8	< 1.8	< 2.6	< 2.6	< 2.2	< 2.2
Arsenic, total	7440-38-2	µg/L	< 2.4	< 1.4 [< 1.4]	1.8 B [2 B]	< 3	< 0.92	< 0.97	< 3	< 1.5	3.6	< 2.6	9.6	< 1.4	3
Barium, total	7440-39-3	µg/L	8.7 B	50.6 B [40.8 B]	27.2 J [26.4 J]	16.2 B	124 B	56.3 B	16.3 B	58.4 B	174 B	30.0 B	92.3 B	< 200	16.9 B
Beryllium, total	7440-41-7	µg/L	< 0.4	0.5 B [0.4 B]	< 1 [< 1]	< 0.24	< 0.24	< 0.44	< 0.44	< 0.17	4.7	< 0.40	3	< 0.24	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.4	< 0.35 [< 0.35]	< 0.35 [< 0.35]	< 0.17	< 0.17	< 3	< 0.24	< 0.24	< 3.0 B	< 0.70	< 0.70	< 0.35	< 0.35
Calcium, total	7440-70-2	µg/L	11400	19900 [16600]	17200 [17500]	17400	157000	93500	17000	86000	46000	53600 J	36800	12800	26100
Chromium, total	7440-47-3	µg/L	< 0.9	< 10 [< 10]	4.1 B [3.9 J]	< 10	39.2	51.1	< 0.91	67	6.1 J	51.0 J	4.7 B	3 J	< 10
Cobalt, total	7440-48-4	µg/L	< 1.6	< 0.65 [< 0.65]	< 0.65 [< 0.65]	< 0.3	< 50	< 0.59	< 0.59	< 0.48	< 50 B	< 0.83	1.8 B	< 0.65	< 0.65
Copper, total	7440-50-8	µg/L	3 B	20.2 J [40.7 J]	< 2.5 [< 2.5]	< 0.85	5.5 B	4.2 B	< 10	4.6 J	13	3.2 B	4.9 B	< 0.91	< 2.5
Iron, total	7439-89-6	µg/L	1310 J	1750 [1710]	275 [306]	150	77.8 J	< 24	79.4 B	< 100 B	17400	< 12	13000	141 J	< 100
Lead, total	7439-92-1	µg/L	< 1.7	3.2 [2.7 B]	< 1.9 [2 B]	< 3	1.3 B	< 1.7	< 1.7	< 2.4	44.6	< 1.3	13.8	< 1.9	< 1.9
Magnesium, total	7439-95-4	µg/L	4240 B	4960 B [4170 B]	4600 B [4300 B]	5150	23.2 B	< 16	5140	< 23	18100	< 41	15300	3830 B	2700 B
Manganese, total	7439-96-5	µg/L	36.7	17.6 J [14.2 J]	5.5 B [4.8 B]	< 15	< 15	< 15	< 15	< 15 B	141	0.60 J	82.6	< 15	< 15
Mercury, total	7439-97-6	µg/L	< 0.082	< 0.082 [0.15 B]	< 0.082 [< 0.082]	< 0.088	< 0.088	< 0.075	< 0.075	< 0.089	< 0.089	< 0.064	0.15 B	< 0.082	< 0.082
Nickel, total	7440-02-0	µg/L	1.8 B	< 10 [< 10]	0.9 B [2.1 B]	5.7 B	< 10	< 0.94	< 10	< 1.6	20.1	1.0 B	11.1	< 10	< 10
Potassium, total	7440-09-7	µg/L	1190 B	4520 B [3820 B]	3410 B [3220 B]	2430 B	14600	10400	2290 B	14000	6760 B	6360 B	5670 B	1680 B	2800 B
Selenium, total	7782-49-2	µg/L	< 3.7	< 1.9 [< 1.9]	< 1.9 [< 1.9]	< 1.5	< 1.5	< 2.4	< 2.4	4.0 B	7.7 B	< 3.6	< 3.6	< 1.9	< 1.9
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	5110	10000 J	NA	NA	18900	14100 J	NA	NA
Silver, total	7440-22-4	µg/L	< 1	< 0.53 [< 0.53]	< 0.53 [< 0.53]	< 0.72	< 0.72	< 0.85	< 0.85	< 1.5	1.8 B	< 1.2	< 1.2	< 0.53	< 0.53
Sodium, total	7440-23-5	µg/L	5630 B	17700 [14900 J]	16200 [15400]	7400 B	23600	21800	7750 B	24900	17700	17600	19000	5440 J	14200
Thallium, total	7440-28-0	µg/L	< 1.5	< 1.8 [< 1.8]	< 1.8 [< 1.8]	< 0.17	< 1.7	< 1.7	< 1.7	1.6 B	17.9 B	< 1.8	3.8 B	< 1.8	< 1.8
Vanadium, total	7440-62-2	µg/L	1 B	2.5 J [2.2 J]	1.8 J [1.5 J]	< 50	3.4 J	5.5 B	1.1 J	4.9 J	6.1 J	6.4 B	5.2 B	0.7 B	3.3 J
Zinc, total	7440-66-6	µg/L	2500	18.2 J [36.9]	5 J [11.3 B]	8 J	8.3 B	< 2.8	< 30	< 4.4	85	9.2 J	85.9	< 20	< 20
Other															
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-4A RW-4A (113-123) 6/25/2010	RW-4A RW-4A (62-72) 6/25/2010	RW-4A RW-4A (113-123) (052511) 5/25/2011	RW-4A RW-4A (62-72) (052511) 5/25/2011	RW-4A RW-4A (113-123) (042512) 4/25/2012	RW-4A RW-4A (62-72) (042512) 4/25/2012	RW-4A RW-4A (62-72) (110813) 11/8/2013	RW-4A RW-4A (113-123) (110813) 11/8/2013	RW-4A RW-4A(62-72)(091014) 9/10/2014	RW-4A RW-4A(113-123)(091014) 9/10/2014	RW-5 RW-5 (080502) 5/2/2008	RW-5 RW-5 (080917) 9/17/2008	RW-5 RW-5 (070709) 7/7/2009
Volatile Organic Compounds															
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	< 0.26	< 0.24	< 0.24	< 0.24	< 0.24	< 0.25	< 0.25	< 0.32	< 0.32	< 0.24	< 0.24 [< 0.24]	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	< 0.24	< 0.2	< 0.2	< 0.2	< 0.2	< 0.20	< 0.20	< 0.39	< 0.39	< 0.13	< 0.13 [< 0.13]	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21	< 0.28	< 0.28	< 0.17	< 0.17 [< 0.17]	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.29	< 0.29	< 0.19	< 0.19	< 0.19	< 0.19	< 0.26	< 0.26	< 0.35	< 0.35	< 0.16	< 0.24 [< 0.24]	< 0.29
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	< 0.4	< 0.28	< 0.28	< 0.28	< 0.28	< 0.34	< 0.34	< 0.50	< 0.50	< 0.29	< 0.29 [< 0.29]	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	< 0.56	< 0.15	< 0.15	< 0.15	< 0.15	< 0.22	< 0.22	< 0.22	< 0.22	< 1.3	< 1.3 [< 1.3]	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	< 1.1	< 1.3	< 1.3	< 1.3*	< 1.3*	< 1.3	< 1.3	< 1.2	< 1.2	< 2.4	< 1.3 [< 1.3]	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	< 0.39	< 0.21	< 0.21	< 0.21*	< 0.21*	< 0.16	< 0.16	< 0.23	< 0.23	< 0.17	< 0.18 [< 0.18]	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	< 0.26	< 0.18	< 0.18	< 0.18	< 0.18	< 0.20	< 0.20	< 0.16	< 0.16	< 0.18	< 0.18 [< 0.18]	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	< 0.33	< 0.18	< 0.18	< 0.18	< 0.18	< 0.22	< 0.22	< 0.30	< 0.30	< 0.35	< 0.35 [< 0.35]	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	< 0.27	< 0.22	< 0.22	< 0.22	< 0.22	< 0.28	< 0.28	< 0.43	< 0.43	< 0.18	< 0.18 [< 0.18]	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	< 0.25	< 0.29	< 0.29	< 0.29	< 0.29	< 0.31	< 0.31	< 0.26	< 0.26	< 0.26	< 0.26 [< 0.26]	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	< 0.28	< 0.26	< 0.26	< 0.26	< 0.26	< 0.30	< 0.30	< 0.24	< 0.24	< 0.32	< 0.22 [< 0.22]	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	< 1.6	< 2.9	< 2.9	< 2.9	< 2.9	< 3.2	< 3.2	< 2.5	< 2.5	< 2.3	< 2.3 [< 2.3]	< 1.6
2-Hexanone	591-78-6	µg/L	< 1.4	< 1.4	< 3 J	< 3 J	< 3	< 3	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7 [< 1.7]	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	< 0.86	< 1.2	< 1.2	< 1.2	< 1.2	< 1.5	< 1.5	< 1.1	< 1.1	< 1.9	< 1.3 [< 1.3]	< 0.86
Acetone	67-64-1	µg/L	< 2.9	< 2.9	< 7.6	< 7.6	< 5	< 5	< 3.3	< 3.3	< 2.6	< 2.6	< 2.1	< 2.1 [< 2.1]	< 2.9
Benzene	71-43-2	µg/L	< 0.23	< 0.23	< 0.22	< 0.22	< 0.22	< 0.22	< 0.28	< 0.28	< 0.21	< 0.21	0.89 J	0.41 J [0.42 J]	0.26 J
Bromodichloromethane	75-27-4	µg/L	< 0.22	< 0.22	< 0.23	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21	< 0.28	< 0.28	< 0.14	< 0.14 [< 0.14]	< 0.22
Bromoform	75-25-2	µg/L	< 0.23	< 0.23	< 0.24	< 0.24	< 0.24	< 0.24	< 0.30	< 0.30	< 0.31	< 0.31	< 0.18	< 0.18 [< 0.18]	< 0.23
Bromomethane	74-83-9	µg/L	< 0.3	< 0.3	< 0.31	< 0.31	< 0.31	< 0.31	< 0.56	< 0.56	< 0.39	< 0.39	< 0.32	< 0.32 [< 0.32]	< 0.3
Carbon disulfide	75-15-0	µg/L	< 0.74	< 0.74	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 J	< 0.50	< 0.50	< 0.15	< 0.16 [< 0.16]	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.26	< 0.26	< 0.19	< 0.19	< 0.19	< 0.19	< 0.23	< 0.23	< 0.24	< 0.24	< 0.18	< 0.18 [< 0.18]	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.39	< 0.39	< 0.22	< 0.22	< 0.22	< 0.22	< 0.35	< 0.35	< 0.27	< 0.27	< 0.14	< 0.19 [< 0.19]	< 0.39
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.39	< 0.39	< 0.56	< 0.56	17.8	17.6 [18.2]	18.6
Chloroform	67-66-3	µg/L	< 0.23	< 0.23	< 0.21	< 0.21	< 0.21	< 0.21	< 0.25	< 0.25	< 0.20	< 0.20	< 0.16	< 0.16 [< 0.16]	< 0.23
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.22	< 0.22	< 0.22	< 0.22	< 0.36	< 0.36	< 0.33	< 0.33	< 0.29	< 0.29 [< 0.29]	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.24	< 0.24	< 0.33	< 0.33	< 0.19	< 0.25 [< 0.25]	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.15	< 0.15	< 0.28	< 0.28	< 0.15	< 0.18 [< 0.18]	< 0.25
Cyclohexane	110-82-7	µg/L	< 1.9	< 1.9	< 0.29	< 0.29	< 0.29	< 0.29	< 0.18	< 0.18	< 0.37	< 0.37	< 0.85	< 0.85 [< 0.85]	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.2	< 0.2	< 0.2	< 0.2	< 0.19	< 0.19	< 0.25	< 0.25	< 0.12	< 0.16 [< 0.16]	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	< 0.92	< 0.31	< 0.31	< 0.31	< 0.31	< 0.63	< 0.63	< 0.73	< 0.73	< 0.88	< 0.88 [< 0.88]	< 0.92
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.40	< 0.40	< 0.27	< 0.27 [< 0.27]	< 0.27
Isopropylbenzene	98-82-8	µg/L	< 0.57	< 0.57	< 0.19	< 0.19	< 0.19	< 0.19	< 0.22	< 0.22	< 0.26	< 0.26	< 0.15	< 0.19 [< 0.19]	< 0.57
Methyl acetate	79-20-9	µg/L	< 1.5	< 1.5	< 2.9	< 2.9	< 2.9	< 2.9	< 1.5	< 1.5	< 3.1	< 3.1	< 2.5	< 1.7 [< 1.7]	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.23	< 0.23	< 0.18	< 0.18	< 0.18	< 0.18	< 0.29	< 0.29	< 0.26	< 0.26	< 0.14	< 0.16 [< 0.16]	< 0.23
Methylcyclohexane	108-87-2	µg/L	< 0.35	< 0.35	< 0.18	< 0.18	< 0.18	< 0.18	< 0.15	< 0.15 J	< 0.22	< 0.22	< 0.11	< 0.11 [< 0.11]	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.3	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.86	< 0.86	< 0.81	< 0.81	< 0.16	< 0.16 [< 0.16]	< 0.3
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	< 0.30	< 0.30	NA	NA	< 0.45	< 0.45 [< 0.45]	< 0.25
Styrene	100-42-5	µg/L	< 0.58	< 0.58	< 0.23	< 0.23	< 0.23	< 0.23	NA	NA	< 0.26	< 0.26	< 0.11	< 0.17 [< 0.17]	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	< 0.25	< 0.25 J	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.27	< 0.27	< 0.32	< 0.32	< 0.32	< 0.32	< 0.44	< 0.44	< 0.35	< 0.35	< 0.29	< 0.29 [< 0.29]	< 0.27
Toluene	108-88-3	µg/L	0.66 J	< 0.3	< 0.15	< 0.15	< 0.15	< 0.15	< 0.38	< 0.38	< 0.22	< 0.22	< 0.15	< 0.15 [< 0.15]	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	< 0.25	< 0.31	< 0.31	< 0.31	< 0.31	< 0.21	< 0.21	< 0.51	< 0.51	< 0.16	< 0.16 [< 0.16]	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	< 0.21	< 0.19	< 0.19	< 0.19	< 0.19	< 0.50	< 0.50	< 0.32	< 0.32	< 0.11	< 0.15 [< 0.15]	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.24	< 0.24	< 0.21	< 0.21	< 0.21	< 0.21	< 0.33	< 0.33	< 0.25	< 0.25	< 0.18	< 0.18 [< 0.18]	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	< 0.54	< 0.35	< 0.35	< 0.35	< 0.35	< 0.41	< 0.41	< 0.28	< 0.28	< 0.25	< 0.25 [< 0.25]	< 0.54
Vinyl Chloride	75-01-4	µg/L	< 0.44	< 0.44	< 0.27	< 0.27	< 0.27	< 0.27	NA	NA	< 0.17	< 0.17	< 0.21	< 0.21 [< 0.21]	< 0.44
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.39	< 0.39 [< 0.39]	< 0.25
Xylenes	1330-20-7	µg/L	0.72 J	< 0.25	< 0.17	< 0.17	< 0.17	< 0.17	< 0.19	< 0.19	< 0.20	< 0.20	< 0.39	< 0.39 [< 0.39]	< 0.25
Semi-Volatile Organic Compounds															
1,1'-Biphenyl	92-52-4	µg/L	< 0.48	< 0.48	< 0.44	< 0.42	< 0.34	< 0.36	< 0.34	< 0.30	< 0.27 J	< 0.29 J	< 0.23 J	< 0.61 [< 0.55]	< 0.42
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.5	< 1.5	< 1.4	< 1.3	< 1.8	< 1.8	< 1.7	< 1.6	< 1.7 J	< 1.8 J	< 1.2 J	< 2.2 [< 2]	< 1.3
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4	< 1.4	< 1.3	< 1.2	< 1.5	< 1.5	< 1.4	< 1.3	< 1.5 J	< 1.6 J	< 1.1 J	< 1.7 [< 1.6]	< 1.2
2,4-Dichlorophenol	120-83-2	µg/L	< 1.4	< 1.4	< 1.3	< 1.2	< 1.3	< 1.4	< 1.3	< 1.2	< 1.6 J	< 1.7 J	< 1.5 J	< 2.1 [< 1.9]	< 1.2
2,4-Dimethylphenol	105-67-9	µg/L	< 1.9	< 1.9	< 1.7	< 1.7	< 1.7	< 1.8	< 1.7	< 1.5	< 1.8 J	< 1.9 J	< 1.7 J	< 2.2 [< 2]	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	< 0.84	< 0.84 J	< 0.77	< 0.74	< 19	< 19	< 18	< 17	< 6.5 J	< 6.8 J	< 1.2 J	< 4.6 [< 4.2]	< 0.74
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.25	< 0.25	< 0.23	< 0.22	< 0.48	< 0.5	< 0.47	< 0.43	< 0.32 J	< 0.33 J	< 0.57 J	< 0.5 [< 0.45]	< 0.22
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.37	< 0.37	< 0.34	< 0.33	< 0.52	< 0.54	< 0.51	< 0.46	< 0.26 J	< 0.27 J	< 0.53 J	< 0.67 [< 0.6]	< 0.33
2-Chloronaphthalene	91-58-7	µg/L	< 0.47	< 0.47	< 0.43	< 0.42	< 0.34	< 0.35	< 0.33	< 0.30	< 0.34 J	< 0.36 J	< 0.21 J	< 0.54 [< 0.48]	< 0.42
2-Chlorophenol	95-57-8	µg/L	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 0.97	< 1.3 J	< 1.3 J	< 0.92 J	< 1.6 [< 1.5]	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	< 0.75	< 0.75	< 0.69	< 0.66	< 0.43	< 0.45	< 0.43	< 0.38	< 0.29 J	< 0.30 J	< 0.8 J	< 0.48 [< 0.43]	< 0.66
2-Methylphenol	95-48-7	µg/L	< 1.3	< 1.3	< 1.2	< 1.1	< 1.2	< 1.2	< 1.2	< 1.0	< 1.3 J	< 1.3 J	< 1.1 J	< 1.5 [< 1.4]	< 1.1
2-Nitroaniline	88-74-4	µg/L	< 0.27	< 0.27	< 0.24	< 0.24	< 1.3	< 1.3	< 1.2	< 1.1	< 0.32 J	< 0.33 J	< 0.52 J	< 0.49 [< 0.45]	< 0.24
2-Nitrophenol	88-75-5	µg/L	< 1.4	< 1.4	< 1.3	< 1.2	< 1.7	< 1.8	< 1.7	< 1.5	< 1.9 J	< 1.9 J	< 1.6 J	< 2.1 [< 1.9]	< 1.2
3&4-Methylphenol	12-03-3	µg/L	< 1.2	< 1.2	< 1.1	< 1	< 1	< 1.1	< 1.0	< 0.93	< 1.1 J	< 1.1 J	< 1.2 J	< 1.6 [< 1.5]	< 1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.34	< 0.34	< 0.31	< 0.3	< 0.41	< 0.42	< 0.40	< 0.36	< 0.56 J	< 0.58 J	< 1 J	< 5.1 [< 4.6]	< 0.3
3-Nitroaniline	99-09-2	µg/L	< 0.33	< 0.33	< 0.3	< 0.29	< 1.4	< 1.5	< 1.4	< 1.3	< 0.26 J	< 0.27 J	< 0.34 J	< 0.5 [< 0.45]	< 0.29
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.58	< 0.58	< 0.53	< 0.51	< 1.1	< 1.2	< 1.1	< 0.99	< 1.3 J	< 1.4 J	< 2.3 J	< 1.3 [< 1.2]	< 0.51
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.4	< 0.4	< 0.36	< 0.35	< 0.4	< 0.42	< 0.40	< 0.36	< 0.25 J	< 0.26 J	< 0.39 J	< 0.46 [< 0.41]	< 0.35
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.2	< 1.2	< 1.1	< 1.1	< 2.1	< 2.1	< 2.0	< 1.8	< 1.3 J	< 1.4 J	< 1.3 J	< 2.5 [< 2.3]	< 1.1
Semi-Volatile Organic Compounds															

Location ID Sample ID Sample Date	CAS	Units	RW-4A RW-4A (113-123) 6/25/2010	RW-4A RW-4A (62-72) 6/25/2010	RW-4A RW-4A (113-123) (052511) 5/25/2011	RW-4A RW-4A (62-72) (052511) 5/25/2011	RW-4A RW-4A (113-123) (042512) 4/25/2012	RW-4A RW-4A (62-72) (042512) 4/25/2012	RW-4A RW-4A (62-72) (110813) 11/8/2013	RW-4A RW-4A (113-123) (110813) 11/8/2013	RW-4A RW-4A(62-72)(091014) 9/10/2014	RW-4A RW-4A(113-123)(091014) 9/10/2014	RW-5 RW-5 (080502) 5/2/2008	RW-5 RW-5 (080917) 9/17/2008	RW-5 RW-5 (070709) 7/7/2009
4-Chloroaniline	106-47-8	µg/L	< 0.29	< 0.29	< 0.26	< 0.25	< 0.6	< 0.62	< 0.59	< 0.53	< 0.30 J	< 0.31 J	< 0.37 J	< 0.37 [< 0.33]	< 0.25
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.4	< 0.4	< 0.37	< 0.35	< 0.35	< 0.37	< 0.35	< 0.31	< 0.38 J	< 0.40 J	< 0.31 J	< 0.5 [< 0.45]	< 0.35
4-Nitroaniline	100-01-6	µg/L	< 0.2	< 0.2	< 0.19	< 0.18	< 1.9	< 1.9	< 1.8	< 1.7	< 0.30 J	< 0.31 J	< 0.62 J	< 0.5 [< 0.45]	< 0.18
4-Nitrophenol	100-02-7	µg/L	< 0.94	< 0.94	< 0.86	< 0.83	< 5.9	< 6.1	< 5.8	< 5.2	< 0.91 J	< 0.94 J	< 1.7 J	< 2.5 [< 2.3]	< 0.83
Acenaphthene	83-32-9	µg/L	< 0.033	< 0.032	< 0.014	< 0.014	< 0.016	< 0.016	< 0.023	< 0.020	< 0.020 J	< 0.021 J	< 0.017	< 0.018 [< 0.016]	< 0.016
Acenaphthylene	208-96-8	µg/L	< 0.045	< 0.044	< 0.017	< 0.016	< 0.019	< 0.019	< 0.026	< 0.024	< 0.024 J	< 0.025 J	< 0.0075	< 0.0078 [< 0.007]	< 0.007
Acetophenone	98-86-2	µg/L	< 0.45	< 0.45	< 19.9	< 11.5	< 0.32	< 0.34	< 0.32	< 0.29	< 0.36 J	< 0.38 J	< 0.38 J	< 0.52 [< 0.47]	< 0.4
Anthracene	120-12-7	µg/L	< 0.029	< 0.028	< 0.01	< 0.01	< 0.012	< 0.012	< 0.023	< 0.020	< 0.020 J	< 0.021 J	< 0.023	< 0.023 [< 0.021]	< 0.021
Atrazine	1912-24-9	µg/L	< 0.44	< 0.44	< 0.41	< 0.39	< 0.55	< 0.57	< 0.54	< 0.49	< 0.42 J	< 0.44 J	< 0.3 J	< 0.68 [< 0.62]	< 0.39
Benzaldehyde	100-52-7	µg/L	< 0.46	< 0.46	< 0.42	< 0.4	< 3.7	< 3.8	< 3.6	< 3.3	< 0.67 J	< 0.70 J	< 0.8 J	NA	< 0.4
Benzo(a)anthracene	56-55-3	µg/L	< 0.027	< 0.026	< 0.016	< 0.015	< 0.018	< 0.018	< 0.013	< 0.012	< 0.012 J	< 0.012 J	< 0.036	< 0.037 [< 0.034]	< 0.034
Benzo(a)pyrene	50-32-8	µg/L	< 0.035	< 0.034	< 0.0051	< 0.0049	< 0.0058	< 0.0057	< 0.014	< 0.012	< 0.012 J	< 0.013 J	< 0.038	< 0.039 [< 0.036]	< 0.036
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.041	< 0.04	< 0.017	< 0.016	< 0.019	< 0.019	< 0.011	< 0.010	< 0.010 J	< 0.011 J	< 0.018	< 0.019 [< 0.017]	< 0.017
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.033	< 0.032	< 0.011	< 0.01	< 0.012	< 0.012	< 0.017	< 0.016	< 0.016 J	< 0.016 J	< 0.013	< 0.013 [< 0.012]	< 0.012
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.032	< 0.031	< 0.013	< 0.013	< 0.015	< 0.015	< 0.016	< 0.015	< 0.015 J	< 0.015 J	< 0.02	< 0.021 [< 0.019]	< 0.019
Benzyl butyl phthalate	85-68-7	µg/L	< 0.29	< 0.29	< 0.26	< 0.25	< 0.33	< 0.34	< 0.32	< 0.29	< 0.22 J	< 0.23 J	< 0.67 J	< 0.46 [< 0.42]	< 0.25
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.28	< 0.28	< 0.26	< 0.25	< 0.35	< 0.36	< 0.34	< 0.31	< 0.42 J	< 0.44 J	< 0.33 J	< 0.57 [< 0.52]	< 0.25
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.35	< 0.35	< 0.32	< 0.31	< 0.35	< 0.36	< 0.34	< 0.31	< 0.43 J	< 0.45 J	< 0.71 J	< 0.55 [< 0.49]	< 0.31
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.44	< 0.44	< 0.41	< 0.39	< 0.51	< 0.53	< 0.50	< 0.45	< 0.41 J	< 0.42 J	< 0.61 J	< 0.6 [< 0.54]	< 0.39
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.37	< 0.37	< 0.34	< 0.33	< 0.66	< 0.69	< 0.65	< 0.59	< 0.55 J	< 2.1 BJ	< 0.92 J	< 0.83 J [< 0.75 J]	< 0.33
Caprolactam	105-60-2	µg/L	< 0.22	< 0.22	< 0.2	< 0.2	< 0.78	< 0.81	< 0.77	< 0.69	< 0.41 J	< 0.42 J	< 0.52 J	< 0.7 [< 0.63]	< 0.2
Carbazole	86-74-8	µg/L	< 0.19	< 0.19	< 0.17	< 0.17	< 0.41	< 0.42	< 0.40	< 0.36	< 0.17 J	< 0.18 J	< 0.42 J	< 0.5 [< 0.45]	< 0.17
Chrysene	218-01-9	µg/L	< 0.025	< 0.024	< 0.024	< 0.023	< 0.027	< 0.027	< 0.013	< 0.012	< 0.012 J	< 0.012 J	< 0.019	< 0.02 [< 0.018]	< 0.018
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.026	< 0.025	< 0.023	< 0.023	< 0.026	< 0.026	< 0.018	< 0.017	< 0.017 J	< 0.017 J	< 0.022	< 0.022 [< 0.02]	< 0.02
Dibenzofuran	132-64-9	µg/L	< 0.35	< 0.35	< 0.32	< 0.3	< 0.3	< 0.31	< 0.29	< 0.27	< 0.23 J	< 0.24 J	< 0.24 J	< 0.54 [< 0.49]	< 0.3
Diethyl phthalate	84-66-2	µg/L	< 0.19	< 0.19	< 0.17	1.1 J	< 0.37	< 0.38	< 0.36	< 0.33	< 0.23 J	< 0.24 J	< 0.36 J	< 0.4 [< 0.36]	< 0.17
Dimethyl phthalate	131-11-3	µg/L	< 0.26	< 0.26	< 0.23	< 0.23	< 0.32	< 0.33	< 0.31	< 0.28	< 0.26 J	< 0.27 J	< 0.35 J	< 0.4 [< 0.36]	< 0.23
di-n-butyl phthalate	84-74-2	µg/L	< 0.22	< 0.22	< 0.2	< 0.19	< 0.63	< 0.65	< 0.62	< 0.56	< 0.58 J	1.5 J	< 0.42 J	< 0.55 [< 0.5]	< 0.19
di-n-octylphthalate	117-84-0	µg/L	< 0.45	< 0.45	< 0.41	1.1 J	< 0.35	< 0.36	< 0.34	< 0.31	< 0.25 J	< 0.26 J	< 0.5 J	< 0.55 [< 0.5]	< 0.4
Fluoranthene	206-44-0	µg/L	< 0.028	< 0.027	< 0.01	< 0.0096	< 0.011	< 0.011	< 0.015	< 0.013	< 0.013 J	< 0.014 J	< 0.01	< 0.011 [< 0.0096]	< 0.0096
Fluorene	86-73-7	µg/L	< 0.031	< 0.03	< 0.016	< 0.015	< 0.018	< 0.017	< 0.019	< 0.017	< 0.017 J	< 0.018 J	< 0.021	< 0.022 [< 0.02]	< 0.02
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.011	< 0.0083	< 0.008	< 0.0094	< 0.0093	< 0.018	< 0.017	< 0.017 J	< 0.017 J	< 0.011	< 0.011 [< 0.0099]	< 0.0099
Hexachlorobutadiene	87-68-3	µg/L	< 0.14	< 0.14	< 0.13	< 0.13	< 0.58	< 0.6	< 0.57	< 0.51	< 0.39 J	< 0.40 J	< 0.13 J	< 0.42 [< 0.38]	< 0.37
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.28	< 0.28	< 0.25	< 0.24	< 8	< 8.4	< 7.9	< 7.1	< 0.48 J	< 0.50 J	< 0.11 J	< 5 [< 4.5]	< 0.67
Hexachloroethane	67-72-1	µg/L	< 0.24	< 0.24	< 0.22	< 0.21	< 0.62	< 0.65	< 0.61	< 0.55	< 0.29 J	< 0.30 J	< 0.17 J	< 0.33 [< 0.3]	< 0.26
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.033	< 0.032	< 0.011	< 0.011	< 0.012	< 0.012	< 0.016	< 0.014	< 0.014 J	< 0.015 J	< 0.015	< 0.016 [< 0.014]	< 0.014
Isophorone	78-59-1	µg/L	< 0.28	< 0.28	< 0.26	< 0.25	< 0.31	< 0.32	< 0.30	< 0.27	< 0.34 J	< 0.35	< 0.51 J	< 0.77 [< 0.69]	< 0.25
Naphthalene	91-20-3	µg/L	< 0.021	< 0.021	< 6.9	< 4.37	< 0.019	< 0.019	< 0.039	< 0.036	< 0.036 J	< 0.037 J	< 0.015	< 0.015 [< 0.014]	< 0.014
Nitrobenzene	98-95-3	µg/L	< 0.29	< 0.29	< 0.26	< 0.25	< 0.47	< 0.49	< 0.47	< 0.42	< 0.52 J	< 0.54 J	< 0.74 J	< 0.73 [< 0.66]	< 0.25
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.5	< 0.5	< 0.46	< 0.44	< 0.34	< 0.36	< 0.34	< 0.30	< 0.38 J	< 0.39 J	< 0.4 J	< 0.44 [< 0.39]	< 0.44
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.24	< 0.24	< 0.22	< 0.22	< 0.34	< 0.36	< 0.34	< 0.31	< 0.21 J	< 0.21 J	< 0.44 J	< 0.67 [< 0.61]	< 0.22
Pentachlorophenol	87-86-5	µg/L	< 0.077	< 0.076	< 0.3	< 0.29	< 0.12	< 0.12	< 0.11	< 0.10	< 0.10 J	< 0.10 J	< 0.23 J	< 0.25 [< 0.22]	< 0.22
Phenanthrene	85-01-8	µg/L	< 0.041	< 0.04	< 0.016	< 0.016	< 0.018	< 0.018	< 0.023	< 0.021	< 0.021 J	< 0.022 J	< 0.018	< 0.019 [< 0.017]	< 0.017
Phenol	108-95-2	µg/L	< 0.66	< 0.66	< 0.6	< 0.58	< 1.4	< 1.5	< 1.4	< 1.3	< 0.55 J	< 0.57 J	< 0.72 J	< 1.5 [< 1.4]	< 0.58
Pyrene	129-00-0	µg/L	< 0.025	< 0.025	< 0.0084	< 0.0081	< 0.0095	< 0.0094	< 0.017	< 0.015	< 0.015 J	< 0.016 J	< 0.013	< 0.013 [< 0.012]	< 0.012
Metals - Total															
Aluminum, total	7429-90-5	µg/L	24.5 J	32.4 J	94.4 J	184 B	90.9 B	240	11.2 B	35.9 B	54.6 J	79.3 J	< 24	< 24 [55.3 B]	< 200
Antimony, total	7440-36-0	µg/L	< 2.2	< 2.2	< 1.3	< 1.3	< 6	< 6	< 1.8	< 1.8	< 2.6	< 2.6	< 1.8 B	< 1.8 [< 1.8]	< 4
Arsenic, total	7440-38-2	µg/L	2.6 B	1.5 B	< 0.92	< 0.92	< 0.97	< 0.97	< 1.5	< 1.5	< 2.6	< 2.6	4.1	2.4 B [2.3 B]	< 2.4
Barium, total	7440-39-3	µg/L	23.5 J	6.3 B	19.7 B	5 J	19.2 B	5.4 B	4.2 J	16.5 B	4.0 B	16.4 B	29 B	29.3 BJ [32.7 BJ]	25.9 BJ
Beryllium, total	7440-41-7	µg/L	< 0.24	< 1	< 0.24	< 0.24	< 0.44	< 0.44	< 0.17	< 0.17	< 0.40	< 0.40	< 0.15	< 0.15 [< 0.15]	< 0.4
Cadmium, total	7440-43-9	µg/L	< 0.35	< 0.35	< 0.17	< 0.17	< 3	< 3	< 0.24	< 0.24	< 0.70	< 0.70	0.9 B	< 0.28 [< 0.28]	1 B
Calcium, total	7440-70-2	µg/L	21100	12800 J	15500	9810	14500	10000	9540	13700	9020	12800	74200	63500 J [66300 J]	65000
Chromium, total	7440-47-3	µg/L	1.4 J	< 0.59	< 0.9	< 0.9	< 0.91	< 0.91	< 0.92	< 0.92	< 0.89	< 0.89	1.1 B	1.4 B [2.1 B]	< 10
Cobalt, total	7440-48-4	µg/L	< 0.65	< 0.65	< 0.3	< 0.3	< 0.59	< 0.59	< 0.48	< 0.48	< 0.83	< 0.83	< 0.51	2.5 B [2.6 B]	1.2 B
Copper, total	7440-50-8	µg/L	< 2.5	< 2.5	< 0.85	< 0.85	< 1.3	< 1.3	1.2 B	1.3 B	< 10 B	4.6 J	< 2.5	2.1 B [2.3 B]	< 10
Iron, total	7439-89-6	µg/L	< 18	28.5 B	49.1 J	252	< 100	319 J	21.4 B	41.6 B	17.1 B	23.3 B	15200	6880 [7290]	8700 J
Lead, total	7439-92-1	µg/L	< 1.9	< 1.9	< 0.94	< 3	< 1.7	< 1.7	< 2.4	< 2.4	< 1.3	< 1.3	< 1.4	< 1.4 [< 1.4]	< 1.7
Magnesium, total	7439-95-4	µg/L	4000 B	4100 B	4540 B	3660 B	4480 B	3670 B	3920 B	4900 B	3640 B	4720 B	18300	15400 [16700]	16700
Manganese, total	7439-96-5	µg/L	1.1 B	1.5 B	2.8 J	3.5 J	7.4 B	3.7 J	< 0.18	< 15 B	< 0.48	2.7 B	4890	3820 J [3990]	3670
Mercury, total	7439-97-6	µg/L	< 0.082	< 0.082	< 0.088	< 0.088	< 0.075	< 0.075	< 0.089	< 0.089	< 0.064	< 0.064	< 0.15	< 0.049 [< 0.049]	< 0.049
Nickel, total	7440-02-0	µg/L	1.2 B	3.6 B	2.5 J	6.5 B	9.2 B	10.1	25.3	67.5	27	68.7	1.8 B	2.2 B [2.4 B]	< 10
Potassium, total	7440-09-7	µg/L	2320 B	1740 B	1760 B	1430 B	1780 B	1580 B	1200 B	1500 B	1180 B	1460 B	5970 B	5060 B [5650 B]	7650 B
Selenium, total	7782-49-2	µg/L	< 1.9	< 1.9	< 1.5	< 1.5	< 2.4	< 2.4	2.5 B	2.5 B	< 3.6	< 3.6	2.7 B	4.5 B [2.2 B]	< 3.7
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	9620	11500	NA	NA	5550 B	5890 B	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 0.53	< 0.53	< 0.72	< 0.72	< 0.85	< 0.85	< 1.5	< 1.5	2.2	2.5 B	< 1	< 1 [1.3 B]	< 1
Sodium, total	7440-23-5	µg/L	10600	5630 B	7410 B	4920 B	7270 B	6280 B	5460 B	6080 B	5310 B	5860 B	17000	10600 J [11600 J]	11600
Thallium, total	7440-28-0	µg/L	< 1.8	< 1.8	< 0.17	< 2	< 1.7	< 1.7	< 1.3	< 1.3	< 1.8	< 1.8	< 1.3	< 1.3 [< 1.3]	< 1.5
Vanadium, total	7440-62-2	µg/L	1.1 J	0.7 J	< 50	< 50	0.9 B	0.8 B	< 0.72	< 0.72	< 0.87	< 0.87	0.8 B	0.6 B [0.9 B]	< 0.9
Zinc, total	7440-66-6	µg/L	< 20	< 20	< 20	9.9 J	< 2.8	8.2 B	6.3 B	< 4.4	8.9 J	8.5 J	59.5	19.3 B [22.3]	< 20
Other															
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 10	< 10 [< 10]	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-5 RW-5 (102709) 10/27/2009	RW-5 RW-5 (060210) 6/2/2010	RW-5 RW-5 (060410) 6/4/2010	RW-5 RW-5 (052011) 5/20/2011	RW-5 RW-5 (042612) 4/26/2012	RW-5 RW-5 (111413) 11/14/2013	RW-5 RW-5 (090414) 9/4/2014	RW-5A RW-SA (080429) 4/29/2008	RW-5A RW-5A (080912) 9/12/2008	RW-5A RW-5A (070709) 7/7/2009	RW-5A RW-5A (102809) 10/28/2009	RW-5A RW-5A (060110) 6/1/2010	RW-5A RW-5A (051811) 5/18/2011	RW-5A RW-5A (042512) 4/25/2012	RW-5A RW-5A (110813) 11/8/2013
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	NA	< 0.26	< 0.2	< 0.24	< 0.25 J	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26 [< 0.26]	< 0.24	< 0.24	< 0.25
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	NA	< 0.24	< 0.12	< 0.2	< 0.20 J	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24 [< 0.24]	< 0.2	< 0.2	< 0.20
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	NA	< 0.23	< 0.13	< 0.23	< 0.21 J	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.21
1,1-Dichloroethane	75-34-3	µg/L	< 0.29	NA	< 0.29	< 0.16	< 0.19	< 0.26 J	< 0.35	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29 [< 0.29]	< 0.19	< 0.19	< 0.26
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	NA	< 0.4	< 0.24	< 0.28	< 0.34 J	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4 [< 0.4]	< 0.28	< 0.28	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	NA	< 0.56	< 0.16	< 0.15	< 0.22 J	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56 [< 0.56]	< 0.15	< 0.15	< 0.22
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	NA	< 1.1	< 1.2	< 1.3*	< 1.3 J	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1 [< 1.1]	< 1.3	< 1.3*	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	NA	< 0.39	< 0.39	< 0.21*	< 0.16 J	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39 [< 0.39]	< 0.21	< 0.21*	< 0.16
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	NA	< 0.26	< 0.15	< 0.18	< 0.20 J	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26 [< 0.26]	< 0.18	< 0.18	< 0.20
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	NA	< 0.33	< 0.31	< 0.18	< 0.22 J	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33 [< 0.33]	< 0.18	< 0.18	< 0.22
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	NA	< 0.27	< 0.23	< 0.22	< 0.28 J	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27 [< 0.27]	< 0.22	< 0.22	< 0.28
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	NA	< 0.25	< 0.19	< 0.29	< 0.31 J	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25 [< 0.25]	< 0.29	< 0.29	< 0.31
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	NA	< 0.28	< 0.22	< 0.26	< 0.30 J	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28 [< 0.28]	< 0.26	< 0.26	< 0.30
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	NA	< 1.6	< 1.7	< 2.9	< 3.2 J	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6 [< 1.6]	< 2.9	< 2.9	< 3.2
2-Hexanone	591-78-6	µg/L	< 1.4	NA	< 1.4	< 1.9	< 3	< 1.7 J	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4 [< 1.4]	< 3	< 3	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	NA	< 0.86	< 0.74	< 1.2	< 1.5 J	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86 [< 0.86]	< 1.2	< 1.2	< 1.5
Acetone	67-64-1	µg/L	< 2.9	NA	< 2.9	< 4.4	< 5	< 3.3 J	< 2.6	14.6	< 2.1	< 2.9	< 2.9	< 2.9 [< 2.9]	< 7.6	< 5	< 3.3
Benzene	71-43-2	µg/L	< 0.23	NA	0.24 J	< 0.26	< 0.22	< 0.28 J	< 0.21	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23 [< 0.23]	< 0.22	< 0.22	< 0.28
Bromodichloromethane	75-27-4	µg/L	< 0.22	NA	< 0.22	< 0.18	< 0.23	< 0.21 J	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.23	< 0.23	< 0.21
Bromoform	75-25-2	µg/L	< 0.23	NA	< 0.23	< 0.42	< 0.24	< 0.30 J	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23 [< 0.23]	< 0.24	< 0.24	< 0.30
Bromomethane	74-83-9	µg/L	< 0.3 J	NA	< 0.3	< 0.24	< 0.31	< 0.56 J	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3 J	< 0.3 [< 0.3]	< 0.31	< 0.31	< 0.56
Carbon disulfide	75-15-0	µg/L	< 0.74	NA	< 0.74	< 0.13	< 0.18	< 0.18 J	< 0.50	0.32 J	< 0.16	< 0.74	< 0.74	< 0.74 [< 0.74]	< 0.18	< 0.18	< 0.18
Carbon tetrachloride	56-23-5	µg/L	< 0.26	NA	< 0.26 J	< 0.35	< 0.19	< 0.23 J	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26 [< 0.26]	< 0.19	< 0.19	< 0.23
Chlorobenzene	108-90-7	µg/L	< 0.39	NA	< 0.39	< 0.15	< 0.22	< 0.35 J	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39 [< 0.39]	< 0.22	< 0.22	< 0.35
Chloroethane	75-00-3	µg/L	7.4	NA	9.1	7.2	5.1 J	1.9 J	1.7	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37 [< 0.37]	< 0.37	< 0.37	< 0.39
Chloroform	67-66-3	µg/L	< 0.23	NA	< 0.23	< 0.14	< 0.21	< 0.25 J	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23 [< 0.23]	< 0.21	< 0.21	< 0.25
Chloromethane	74-87-3	µg/L	< 0.29	NA	< 0.29	< 0.34	< 0.22	< 0.36 J	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29 [< 0.29]	< 0.22 J	< 0.22	< 0.36
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	NA	< 0.22	< 0.24	< 0.22	< 0.24 J	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.24
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	NA	< 0.25	< 0.16	< 0.22	< 0.15 J	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25 [< 0.25]	< 0.22	< 0.22	< 0.15
Cyclohexane	110-82-7	µg/L	< 1.9	NA	< 1.9	< 0.43	< 0.29	< 0.18 J	< 0.37	< 0.85	< 0.85	< 1.9 J	< 1.9	< 1.9 [< 1.9]	< 0.29	< 0.29	< 0.18
Dibromochloromethane	124-48-1	µg/L	< 0.22	NA	< 0.22	< 0.16	< 0.2	< 0.19 J	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.2	< 0.2	< 0.19
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	NA	< 0.92	< 0.39	< 0.31	< 0.63 J	< 0.73	< 0.88	< 0.88	< 0.92 J	< 0.92	< 0.92 [< 0.92]	< 0.31 J	< 0.31	< 0.63
Ethylbenzene	100-41-4	µg/L	< 0.27	NA	< 0.27	< 0.31	< 0.21	< 0.21 J	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27 [< 0.27]	< 0.21	< 0.21	< 0.21
Isopropylbenzene	98-82-8	µg/L	< 0.57	NA	< 0.57	< 0.31	< 0.19	< 0.22 J	< 0.26	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57 [< 0.57]	< 0.19	< 0.19	< 0.22
Methyl acetate	79-20-9	µg/L	< 1.5	NA	< 1.5	< 1.3	< 2.9	< 1.5 J	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5 [< 1.5]	< 2.9	< 2.9	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.23	NA	< 0.23	< 0.2	< 0.18	< 0.29 J	< 0.26	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23 [< 0.23]	< 0.18	< 0.18	< 0.29
Methylcyclohexane	108-87-2	µg/L	< 0.35	NA	< 0.35	< 0.16	< 0.18	< 0.15 J	< 0.22	< 0.11	< 0.11	< 0.35 J	< 0.35	< 0.35 [< 0.35]	< 0.18	< 0.18	< 0.15
Methylene chloride	75-09-2	µg/L	< 0.3	NA	< 0.3	< 0.2	< 0.2	< 0.86 J	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3 [< 0.3]	< 0.2	< 0.2	< 0.86
o-Xylene	95-47-6	µg/L	< 0.25	NA	NA	NA	NA	< 0.30 J	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	< 0.30
Styrene	100-42-5	µg/L	< 0.58	NA	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58 [< 0.58]	< 0.23	< 0.23	NA
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	< 0.25 J	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25
Tetrachloroethene	127-18-4	µg/L	< 0.27	NA	< 0.27	< 0.24	< 0.32	< 0.44 J	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27 [< 0.27]	< 0.32	< 0.32	< 0.44
Toluene	108-88-3	µg/L	< 0.3	NA	< 0.3	< 0.27	< 0.15	< 0.38 J	< 0.22	< 0.15	< 0.15	< 0.3	0.66 J	< 0.3 [< 0.3]	< 0.15	< 0.15	< 0.38
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	NA	< 0.25	< 0.3	< 0.31	< 0.21 J	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25 [< 0.25]	< 0.31	< 0.31	< 0.21
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	NA	< 0.21	< 0.22	< 0.19	< 0.50 J	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21 [< 0.21]	< 0.19	< 0.19	< 0.50
Trichloroethene	79-01-6	µg/L	< 0.24	NA	< 0.24	< 0.22	< 0.21	< 0.33 J	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24 [< 0.24]	< 0.21	< 0.21	< 0.33
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	NA	< 0.54	< 0.23	< 0.35	< 0.41 J	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54 [< 0.54]	< 0.35	< 0.35	< 0.41
Vinyl Chloride	75-01-4	µg/L	< 0.44	NA	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44 [< 0.44]	< 0.27	< 0.27	NA
Xylene, -m,p	179601-23-1	µg/L	< 0.25	NA	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.25	NA	< 0.25	< 0.28	< 0.17	< 0.19 J	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25 [< 0.25]	< 0.17	< 0.17	< 0.19
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 0.46	< 0.5	NA	< 0.42	< 0.31	< 0.34	< 0.27 J	< 0.24	< 0.63	< 0.46	< 0.46	< 0.5 [< 0.5]	< 0.46	< 0.3	< 0.34
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.4	< 1.6	NA	< 1.3	< 1.6	< 1.7	< 1.7 J	< 1.2	< 2.3	< 1.4	< 1.5	< 1.6 J [< 1.6]	< 1.4	< 1.6	< 1.7
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.3	< 1.4	NA	< 1.2	< 1.3	< 1.4	< 1.5 J	< 1.1	< 1.8	< 1.3	< 1.3	< 1.5 J [< 1.4]	< 1.3	< 1.3	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 1.3	< 1.4	NA	< 1.2	< 1.2	< 1.3	< 1.6 J	< 1.5	< 2.2	< 1.3	< 1.3	< 1.5 J [< 1.4]	< 1.3	< 1.2	< 1.3
2,4-Dimethylphenol	105-67-9	µg/L	< 1.8	< 1.9	NA	< 1.7	< 1.6	< 1.7	< 1.8 J	< 1.8	< 2.3	< 1.8	< 1.8	< 2 J [< 1.9]	< 1.8	< 1.5	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	< 0.8 J	< 0.87	NA	< 0.74	< 17	< 18	< 6.5 J	< 1.2	< 4.8	< 0.8	< 0.81	< 0.88 J [< 0.87]	< 0.8	< 17	< 18
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.24 J	< 0.26	NA	< 0.22	< 0.43	< 0.47	< 0.32 J	< 0.6	< 0.52	< 0.24	< 0.24 J	< 0.26 [< 0.26]	< 0.24 J	< 0.43	< 0.47
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.35	< 0.38	NA	< 0.33	< 0.47	< 0.51	< 0.26 J	< 0.55	< 0.69	< 0.35	< 0.36	< 0.39 [< 0.38]	< 0.35	< 0.46	< 0.51
2-Chloronaphthalene	91-58-7	µg/L	< 0.45	< 0.49	NA	< 0.42	< 0.3	< 0.33	< 0.34 J	< 0.22	< 0.56	< 0.45	< 0.46	< 0.5 [< 0.49]	< 0.45	< 0.3	< 0.33
2-Chlorophenol	95-57-8	µg/L	< 1.2	< 1.3	NA	< 1.1	< 0.99	< 1.1	< 1.3 J	< 0.96	< 1.7	< 1.2	< 1.2	< 1.3 J [< 1.3]	< 1.2	< 0.97	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	< 0.72	< 0.77	NA	< 0.66	< 0.39	< 0.43	< 0.29 J	< 0.84	< 0.5	< 0.72	< 0.72	< 0.78 [< 0.77]	< 0.72	< 0.38	< 0.43
2-Methylphenol	95-48-7	µg/L	< 1.2	< 1.3	NA	< 1.1	< 1.1	< 1.2	< 1.3 J	< 1.1	< 1.6	< 1.2	< 1.2	< 1.3 J [< 1.3]	< 1.2	< 1	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 0.26	< 0.28	NA	< 0.24	< 1.1	< 1.2	< 0.32 J	< 0.55	< 0.51	< 0.26	< 0.26	< 0.28 [< 0.28]	< 0.26	< 1.1	< 1.2
2-Nitrophenol	88-75-5	µg/L	< 1.3	< 1.5	NA	< 1.2	< 1.5	< 1.7	< 1.9 J	< 1.6	< 2.2	< 1.3	< 1.4	< 1.5 J [< 1.5]	< 1.3	< 1.5	< 1.7
3&4-Methylphenol	12-03-3	µg/L	< 1.1	< 1.2	NA	< 1	< 0.94	< 1.0	< 1.1 J	< 1.2	< 1.7	< 1.1	< 1.1	< 1.2 J [< 1.2]	< 1.1	< 0.93	< 1.0
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.32	< 0.35	NA	< 0.3	< 0.37	< 0.40	< 0.56 J	< 1.1	< 5.2	< 0.32	< 0.32	< 0.35 [< 0.35]	< 0.32	< 0.36	< 0.40
3-Nitroaniline	99-09-2	µg/L	< 0.31	< 0.34	NA	< 0.29	< 1.3	< 1.4	< 0.26 J	< 0.36	< 0.52	< 0.31	< 0.32	< 0.34 [< 0.34]	< 0.31	< 1.3	< 1.4
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.56	< 0.6	NA	< 0.51	< 1	< 1.1	< 1.3 J	< 2.5	< 1.3	< 0.56	< 0.56	< 0.61 J [< 0.6]	< 0.56	< 0.99	< 1.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.38	< 0.41	NA	< 0.35	< 0.36	< 0.40	< 0.25 J	< 0.41	< 0.47	< 0.38	< 0.38	< 0.42 [< 0.41]	< 0.38	< 0.36	< 0.40
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.1	< 1.2	NA	< 1.1	< 1.9	< 2.0	< 1.3 J	< 1.3	< 2.6	< 1.1	< 1.2	< 1.3 J [< 1.2]	< 1.1	< 1.8	< 2.0
Semi-Volatile Organic Compounds																	

Location ID Sample ID Sample Date	CAS	Units	RW-5 RW-5 (102709) 10/27/2009	RW-5 RW-5 (060210) 6/2/2010	RW-5 RW-5 (060410) 6/4/2010	RW-5 RW-5 (052011) 5/20/2011	RW-5 RW-5 (042612) 4/26/2012	RW-5 RW-5 (111413) 11/14/2013	RW-5 RW-5 (090414) 9/4/2014	RW-5A RW-SA (080429) 4/29/2008	RW-5A RW-5A (080912) 9/12/2008	RW-5A RW-5A (070709) 7/7/2009	RW-5A RW-5A (102809) 10/28/2009	RW-5A RW-5A (060110) 6/1/2010	RW-5A RW-5A (051811) 5/18/2011	RW-5A RW-5A (042512) 4/25/2012	RW-5A RW-5A (110813) 11/8/2013
4-Chloroaniline	106-47-8	µg/L	< 0.28	< 0.3	NA	< 0.25	< 0.54	< 0.59	< 0.30 J	< 0.38	< 0.38	< 0.28	< 0.28	< 0.3 [< 0.3]	< 0.28	< 0.53	< 0.59
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.38	< 0.42	NA	< 0.35	< 0.32	< 0.35	< 0.38 J	< 0.32	< 0.52	< 0.38	< 0.39	< 0.42 [< 0.42]	< 0.38	< 0.31	< 0.35
4-Nitroaniline	100-01-6	µg/L	< 0.19	< 0.21	NA	< 0.18	< 1.7	< 1.8	< 0.30 J	< 0.65	< 0.52	< 0.19	< 0.2	< 0.21 [< 0.21]	< 0.19	< 1.7	< 1.8
4-Nitrophenol	100-02-7	µg/L	< 0.9	< 0.97	NA	< 0.83	< 5.3	< 5.8	< 0.91 J	< 1.7	< 2.6	< 0.9	< 0.91	< 0.99 J [< 0.97]	< 0.9	< 5.2	< 5.8
Acenaphthene	83-32-9	µg/L	< 0.032	< 0.034	NA	< 0.014	< 0.014	< 0.023	< 0.020	< 0.018	< 0.018	< 0.017	< 0.032	< 0.035 [< 0.034]	< 0.015	< 0.015	< 0.023
Acenaphthylene	208-96-8	µg/L	< 0.043	< 0.046	NA	< 0.016	< 0.016	< 0.026	< 0.024	< 0.0077	< 0.008	< 0.0076	< 0.043	< 0.047 [< 0.046]	< 0.018	< 0.018	< 0.026
Acetophenone	98-86-2	µg/L	< 0.43	< 0.47	NA	< 0.4	< 0.29	< 0.32	0.51 J	0.47 J	< 0.54	< 0.43	< 0.44	< 0.48 [< 0.47]	< 0.43	< 0.29	< 0.32
Anthracene	120-12-7	µg/L	< 0.028	< 0.03	NA	< 0.01	< 0.01	< 0.023	< 0.020	< 0.023	< 0.024	< 0.023	< 0.028	< 0.03 [< 0.03]	< 0.011	< 0.011	< 0.023
Atrazine	1912-24-9	µg/L	< 0.43 J	< 0.46	NA	< 0.39	< 0.5	< 0.54	< 0.42 J	< 0.31	< 0.71	< 0.43	< 0.43	< 0.47 [< 0.46]	< 0.43	< 0.49	< 0.54
Benzaldehyde	100-52-7	µg/L	< 0.44	< 0.48	NA	< 0.4	< 3.3	< 3.6	< 0.67 J	< 0.84	< 1.9	< 0.44	< 0.44	< 0.48 [< 0.48]	< 0.44	< 3.3	< 3.6
Benzo(a)anthracene	56-55-3	µg/L	< 0.026	< 0.028	NA	< 0.015	0.142	< 0.013	< 0.012	< 0.037	< 0.039	< 0.037	< 0.026	< 0.028 [< 0.028]	< 0.016	< 0.017	< 0.013
Benzo(a)pyrene	50-32-8	µg/L	< 0.033	< 0.036	NA	< 0.0049	< 0.005	< 0.014	< 0.012	< 0.039	< 0.041	< 0.039	< 0.034	< 0.037 [< 0.036]	< 0.0053	< 0.0054	< 0.014
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.039	< 0.042	NA	< 0.016	0.22	< 0.011	< 0.010	< 0.019	< 0.02	< 0.018	< 0.039	< 0.043 [< 0.042]	< 0.018	< 0.018	< 0.011
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.031	< 0.034	NA	< 0.01	1.95	< 0.017	< 0.016	< 0.013	< 0.013	< 0.013	< 0.032	< 0.034 [< 0.034]	< 0.011	< 0.011	< 0.017
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.031	< 0.033	NA	< 0.013	0.283	< 0.016	< 0.015	< 0.021	< 0.022	< 0.02	< 0.031	< 0.034 [< 0.033]	< 0.014	< 0.014	< 0.016
Benzyl butyl phthalate	85-68-7	µg/L	< 0.27	< 0.3	NA	< 0.25	< 0.29	< 0.32	< 0.22 J	< 0.7	< 0.48	< 0.27	< 0.28	< 0.3 [< 0.3]	< 0.27	< 0.29	< 0.32
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.27	< 0.29	NA	< 0.25	< 0.31	< 0.34	< 0.42 J	< 0.35	< 0.59	< 0.27	< 0.27	< 0.3 [< 0.29]	< 0.27	< 0.31	< 0.34
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.34	< 0.36	NA	< 0.31	< 0.31	< 0.34	< 0.43 J	< 0.74	< 0.57	< 0.34	< 0.34	< 0.37 [< 0.36]	< 0.34	< 0.31	< 0.34
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.42	< 0.46	NA	< 0.39	< 0.46	< 0.50	< 0.41 J	< 0.64	< 0.63	< 0.42	< 0.43	< 0.46 [< 0.46]	< 0.42	< 0.45	< 0.50
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.36	< 0.38	NA	< 0.33	< 0.6	21.4	3.6 J	< 0.96	< 0.86	< 0.36	< 2.2 J	< 0.39 [< 0.38]	< 0.36	< 0.59	< 0.65
Caprolactam	105-60-2	µg/L	< 0.21	< 0.23	NA	< 0.2	< 0.7	< 0.77	< 0.41 J	< 0.54	< 0.72	< 0.21	< 0.21	< 0.23 [< 0.23]	< 0.21	< 0.69	5.1
Carbazole	86-74-8	µg/L	< 0.18	< 0.19	NA	< 0.17	< 0.37	< 0.40	< 0.17 J	< 0.44	< 0.51	< 0.18	< 0.18	< 0.2 [< 0.19]	< 0.18	< 0.36	< 0.40
Chrysene	218-01-9	µg/L	< 0.024	< 0.026	NA	< 0.023	< 0.024	< 0.013	< 0.012	< 0.019	< 0.02	< 0.019	< 0.024	< 0.026 [< 0.026]	< 0.025	< 0.026	< 0.013
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.024	< 0.026	NA	< 0.023	0.402	< 0.018	< 0.017	< 0.022	< 0.023	< 0.022	< 0.025	< 0.027 [< 0.026]	< 0.024	< 0.025	< 0.018
Dibenzofuran	132-64-9	µg/L	< 0.33	< 0.36	NA	< 0.3	< 0.27	< 0.29	< 0.23 J	< 0.25	< 0.56	< 0.33	< 0.33	< 0.36 [< 0.36]	< 0.33	< 0.27	< 0.29
Diethyl phthalate	84-66-2	µg/L	< 0.18	< 0.19	NA	< 0.17	< 0.33	< 0.36	< 0.23 J	< 0.38	< 0.41	< 0.18	< 0.18	< 0.2 [< 0.19]	< 0.18	< 0.33	< 0.36
Dimethyl phthalate	131-11-3	µg/L	< 0.24	< 0.26	NA	< 0.23	< 0.29	< 0.31	< 0.26 J	< 0.37	< 0.41	< 0.24	< 0.25	< 0.27 [< 0.26]	< 0.24	< 0.28	< 0.31
di-n-butyl phthalate	84-74-2	µg/L	< 0.21	< 0.22	NA	< 0.19	< 0.57	< 0.62	< 2.0 BJ	< 0.44	< 0.57	< 0.21	< 0.21	< 0.23 [< 0.22]	< 0.21	< 0.56	< 0.62
di-n-octylphthalate	117-84-0	µg/L	< 0.43	< 0.46	NA	< 0.4	< 0.31	< 0.34	< 0.25 J	< 0.53	< 0.57	< 0.43	< 0.43	< 0.47 [< 0.46]	< 0.43	< 0.31	< 0.34
Fluoranthene	206-44-0	µg/L	< 0.026	< 0.029	NA	< 0.0096	< 0.0098	< 0.015	< 0.013	< 0.011	< 0.011	< 0.01	< 0.027	< 0.029 [< 0.029]	< 0.01	< 0.011	< 0.015
Fluorene	86-73-7	µg/L	< 0.029	< 0.032	NA	< 0.015	< 0.015	< 0.019	< 0.017	< 0.022	< 0.023	< 0.021	< 0.03	< 0.032 [< 0.032]	< 0.016	< 0.017	< 0.019
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.012	NA	< 0.008	< 0.0082	< 0.018	< 0.017	< 0.011	< 0.011	< 0.011	< 0.011	< 0.012 [< 0.012]	< 0.0087	< 0.0089	< 0.018
Hexachlorobutadiene	87-68-3	µg/L	< 0.4	< 0.15	NA	< 0.13	< 0.52	< 0.57	< 0.39 J	< 0.14	< 0.43	< 0.4	< 0.41 J	< 0.15 [< 0.15]	< 0.14	< 0.51	< 0.57
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.73	< 0.29	NA	< 0.24	< 7.3	< 7.9	< 0.48 J	< 0.11	< 5.2	< 0.73	< 0.74	< 0.29 [< 0.29]	< 0.27	< 7.1	< 7.9
Hexachloroethane	67-72-1	µg/L	< 0.29	< 0.25	NA	< 0.21	< 0.56	< 0.61	< 0.29 J	< 0.18	< 0.34	< 0.29	< 0.29	< 0.25 [< 0.25]	< 0.23	< 0.55	< 0.61
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.032	< 0.034	NA	< 0.011	0.526	< 0.016	< 0.014	< 0.016	< 0.017	< 0.016	< 0.032	< 0.035 [< 0.034]	< 0.012	< 0.012	< 0.016
Isophorone	78-59-1	µg/L	< 0.27	< 0.29	NA	< 0.25	< 0.28	< 0.30	< 0.34 J	< 0.54	< 0.79	< 0.27	< 0.27	< 0.3 [< 0.29]	< 0.27	< 0.27	< 0.30
Naphthalene	91-20-3	µg/L	< 0.02	0.277	NA	< 0.016	< 0.017	< 0.039	< 0.036	< 0.015	< 0.016	< 0.015	< 0.02	< 0.022 [< 0.022]	< 0.018	< 0.018	< 0.039
Nitrobenzene	98-95-3	µg/L	< 0.28	< 0.3	NA	< 0.25	< 0.43	< 0.47	< 0.52 J	< 0.77	< 0.76	< 0.28	< 0.28	< 0.3 [< 0.3]	< 0.28	< 0.42	< 0.47
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.48	< 0.52	NA	< 0.44	< 0.31	< 0.34	< 0.38 J	< 0.42	< 0.45	< 0.48	< 0.48	< 0.52 [< 0.52]	< 0.48	< 0.3	< 0.34
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.23	< 0.25	NA	< 0.22	< 0.31	< 0.34	< 0.21 J	< 0.45	< 0.7	< 0.23	< 0.24	< 0.26 [< 0.25]	< 0.23	< 0.31	< 0.34
Pentachlorophenol	87-86-5	µg/L	< 0.24	< 0.08	NA	< 0.29	< 0.1 J	< 0.11	< 0.10	< 0.25	< 0.26	< 0.24	< 0.25 J	< 0.081 [< 0.08]	< 0.31	< 0.11	< 0.11
Phenanthrene	85-01-8	µg/L	< 0.039	0.165	NA	0.142	0.122	< 0.023	0.145	< 0.019	< 0.02	< 0.018	< 0.04	< 0.043 [< 0.042]	< 0.017	< 0.017	< 0.023
Phenol	108-95-2	µg/L	< 0.63	< 0.68	NA	< 0.58	< 1.3	< 1.4	< 0.55 J	< 0.75	< 1.6	< 0.63	< 0.63	< 0.69 J [< 0.68]	< 0.63	< 1.3	< 1.4
Pyrene	129-00-0	µg/L	< 0.024	< 0.026	NA	< 0.0081	< 0.0083	< 0.017	< 0.015	< 0.013	< 0.014	< 0.013	< 0.024	< 0.026 [< 0.026]	< 0.0088	< 0.009	< 0.017
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	135 J	105 B	NA	23.3 B	66.9 B	129 B	318 J	834	625	< 200	204	145 B [87.8 J]	249 J	810	292
Antimony, total	7440-36-0	µg/L	< 2.9	< 2.2	NA	< 1.3	< 1.4	< 1.8	< 2.6	< 1.8	< 1.8	< 4	< 2.9	< 2.2 [< 2.2]	< 1.3	< 1.4	< 1.8
Arsenic, total	7440-38-2	µg/L	< 2.4	2.1 B	NA	1.1 B	< 3	< 1.5	9.4	8.6	10	< 2.4	3.5	2.6 B [3.6]	2.2 B	4.9 J	6.3
Barium, total	7440-39-3	µg/L	32 B	30 B	NA	22.4 B	21.9 B	9.5 B	9.8 B	13.1 B	< 7.7	< 200	26.2 B	17.2 J [16.8 J]	8.8 B	26.8 B	51.7 B
Beryllium, total	7440-41-7	µg/L	< 0.4	< 0.24	NA	< 0.24	< 0.44	< 0.17	< 0.40	< 0.15	< 0.2	< 0.4	< 0.4	< 0.24 [< 0.24]	< 0.24	< 0.44	< 0.17
Cadmium, total	7440-43-9	µg/L	11.8	< 0.35	NA	< 0.17	< 3	0.30 B	< 0.70	< 0.28	< 0.28	0.8 B	< 0.4	< 0.35 [< 0.35]	< 0.17	< 3	< 0.24
Calcium, total	7440-70-2	µg/L	61200	64400	NA	48200	39900	18100	15700	12400	19600	27000	26100	23400 [23200]	22600	30900	92300 J
Chromium, total	7440-47-3	µg/L	4.4 B	< 0.59	NA	< 0.9	< 0.91	2.2 B	5.2 B	2.2 B	1.7 B	< 0.9	< 10	< 10 [< 0.59]	< 0.9	1.8 B	2.6 B
Cobalt, total	7440-48-4	µg/L	34.7 B	< 0.65	NA	< 0.3	< 0.59	< 0.48	< 0.83	0.6 B	< 0.51	< 0.4	< 1.6	< 0.65 [< 0.65]	< 0.3	< 0.59	3.2 B
Copper, total	7440-50-8	µg/L	58.6 J	< 2.5	NA	5.6 B	7.9 J	6.3 B	6.1 B	27.2	4.5 B	< 10	2.4 B	< 2.5 [< 2.5]	< 10	4.5 B	3.2 B
Iron, total	7439-89-6	µg/L	9040	5760	NA	3400	2860	1250	3090 J	704	605 J	1420 J	1290 J	829 [786]	750	3000	11000 J
Lead, total	7439-92-1	µg/L	< 1.7	< 1.9	NA	< 0.94	1.9 J	< 2.4	4.7	2.9 B	2.2 BJ	< 1.7	< 1.7	< 1.9 [< 1.9]	1.6 J	< 1.7	< 2.4
Magnesium, total	7439-95-4	µg/L	14600	15600	NA	13300	11800	5320	3280 B	1820 B	2830 B	6610	6540	5350 [5280]	4980 B	6910	10400
Manganese, total	7439-96-5	µg/L	3360 J	3420	NA	2220	1550	361	288	123	234	320	209	184 [183]	198	352	1610 J
Mercury, total	7439-97-6	µg/L	< 0.082	< 0.082	NA	< 0.088	< 0.075	< 0.089	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082 [< 0.082]	< 0.088	< 0.075	< 0.089
Nickel, total	7440-02-0	µg/L	3.6 J	< 10	NA	3.8 B	< 10	2.3 B	2.2 B	3.8 B	< 4.7	< 0.6	1.3 B	0.9 B [1 B]	0.9 J	2 J	2.4 B
Potassium, total	7440-09-7	µg/L	6860 B	8240 B	NA	16300	18500	55300	71200	67700	30300	50400	102000 J	64800 [63200]	21200	29200 J	18000
Selenium, total	7782-49-2	µg/L	< 3.7	< 10	NA	< 1.5	< 2.4	< 2.4	< 3.6	< 1.6	< 1.6	< 3.7	< 3.7	< 1.9 [< 1.9]	< 1.5	< 2.4	5.3 B
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	7510 J	NA	51900	NA	NA	NA	NA	NA	NA	7430	NA
Silver, total	7440-22-4	µg/L	< 1	< 0.53	NA	< 0.72	< 0.85	< 1.5	1.3 B	< 1	< 1	< 1	< 1	< 0.53 [< 0.53]	< 0.72	< 0.85	1.9 B
Sodium, total	7440-23-5	µg/L	11300	12400	NA	15700	17300	40500	50700	63100	34200 J	36600	73300	48000 J [47000 J]	16900	23500 J	11300
Thallium, total	7440-28-0	µg/L	< 1.5	< 1.8	NA	< 0.17	< 1.7	< 1.3	< 1.8	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8 [< 1.8]	< 2	< 1.7	< 1.3
Vanadium, total	7440-62-2	µg/L	< 0.9	0.9 B	NA	< 0.43	0.8 J	1.3 B	3.4 B	9.2 B	7.8 B	< 0.9	< 0.9	< 50 [< 50]	< 0.43	2.1 B	< 0.72
Zinc, total	7440-66-6	µg/L	108	15.8 J	NA	17 B	35.3 J	40.7	206	13.5 B	< 10.3 J	< 20	3.4 B	< 20 [< 20]	< 20	6.2 B	6.0 B
Other																	
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	< 10	< 10	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-5A RW-5A (091014) 9/10/2014	RW-6 RW-6 (080502) 5/2/2008	RW-6 RW-6 (080915) 9/15/2008	RW-6 RW-6 (070909) 7/9/2009	RW-6 RW-6 (102809) 10/28/2009	RW-6 RW-6 (060210) 6/2/2010	RW-6 RW-6 (060410) 6/4/2010	RW-6 RW-6 (051811) 5/18/2011	RW-6 RW-6 (042712) 4/27/2012	RW-6 RW-6 (111813) 11/18/2013	RW-6 RW-6 (090514) 9/5/2014	RW-6A RW-6A (080502) 5/2/2008	RW-6A RW-6A (080915) 9/15/2008	RW-6A RW-6A (070909) 7/9/2009
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	NA	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.24	< 0.24	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	NA	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39	< 0.13	< 0.13	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	NA	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.17	< 0.17	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.35	0.89 J	0.72 J	0.76 J	0.61 J	NA	0.58 J	0.7 J	0.38 J	0.82 J	0.72 J	0.67 J	0.62 J	0.94 J
1,1-Dichloroethene	75-35-4	µg/L	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	NA	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.29	< 0.29	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.22	< 1.3	< 0.37	< 0.56	< 0.56	NA	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 1.3	< 0.37	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	NA	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2	< 2.4	< 1.3	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	NA	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23	< 0.17	< 0.18	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	NA	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.18	< 0.18	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	NA	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.35	< 0.35	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	NA	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.18	< 0.18	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	NA	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	NA	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.32	< 0.22	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	NA	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5	< 2.3	< 2.3	< 1.6
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	NA	< 1.4	< 1.9	< 3	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	NA	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1	< 1.9	< 1.3	< 0.86
Acetone	67-64-1	µg/L	< 2.6	< 2.1	< 2.1	< 2.9	< 2.9	NA	< 2.9	< 4.4	< 5	< 3.3	< 2.6	< 2.1	< 2.1	< 2.9
Benzene	71-43-2	µg/L	< 0.21	1.7	2.1	2	1.5	NA	1.5	1.6	0.74 J	2.3	2.1	1.7	2.9	1.3
Bromodichloromethane	75-27-4	µg/L	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	NA	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.14	< 0.14	< 0.22
Bromoform	75-25-2	µg/L	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	NA	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.18	< 0.18	< 0.23
Bromomethane	74-83-9	µg/L	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	NA	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39	< 0.32	< 0.32	< 0.3
Carbon disulfide	75-15-0	µg/L	< 0.50	< 0.15	< 0.16	< 0.74	< 0.74	NA	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.15	< 0.16	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	NA	< 0.26 J	< 0.35	< 0.19	< 0.23	< 0.24	< 0.18	< 0.18	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	NA	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27	< 0.14	< 0.19	< 0.39
Chloroethane	75-00-3	µg/L	< 0.56	7.9	7.7	6.4	4.3	NA	4.2	4.5	2.5 J	5.9	3.5	1.9	2.3	1.3
Chloroform	67-66-3	µg/L	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	NA	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	< 0.16	< 0.16	< 0.23
Chloromethane	74-87-3	µg/L	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	NA	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	NA	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.19	< 0.25	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	NA	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.15	< 0.18	< 0.25
Cyclohexane	110-82-7	µg/L	< 0.37	< 0.85	< 0.85	< 1.9	< 1.9	NA	< 1.9	0.67 J	< 0.29	0.60 J	0.70 J	< 0.85	< 0.85	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	NA	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.12	< 0.16	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.73	< 0.88	< 0.88	< 0.92	< 0.92	NA	< 0.92	< 0.39	< 0.31	0.97 J	< 0.73	< 0.88	< 0.88	< 0.92
Ethylbenzene	100-41-4	µg/L	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	NA	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27
Freon 113	76-13-1	µg/L	< 0.45	< 0.8	< 0.8	< 0.38	< 0.38	NA	< 0.38	< 0.66	< 0.49	< 0.77	< 0.45	< 0.8	< 0.8	< 0.38
Isopropylbenzene	98-82-8	µg/L	< 0.26	0.56 J	0.88 J	< 0.57	< 0.57	NA	< 0.57	0.32 J	< 0.19	0.46 J	0.57 J	1.9 J	5.1	1.6 J
Methyl acetate	79-20-9	µg/L	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	NA	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1	< 2.5	< 1.7	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.26	< 0.14	< 0.16	< 0.23	< 0.23	NA	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26	< 0.14	< 0.16	< 0.23
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.11	0.49 J	< 0.35	< 0.35	NA	0.68 J	0.83 J	< 0.18	0.77 J	1.0 J	< 0.11	0.68 J	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	NA	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.16	< 0.16	< 0.3
o-Xylene	95-47-6	µg/L	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.25
Styrene	100-42-5	µg/L	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	NA	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.17	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	NA	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.29	< 0.29	< 0.27
Toluene	108-88-3	µg/L	< 0.22	< 0.15	< 0.15	< 0.3	< 0.3	NA	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22	< 0.15	< 0.15	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	NA	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.16	< 0.16	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	NA	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.11	< 0.15	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	NA	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.18	< 0.18	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	NA	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.25	< 0.25	< 0.54
Vinyl Chloride	75-01-4	µg/L	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	NA	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21	< 0.44
Xylene, -m,p	179601-23-1	µg/L	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	1.8	49.6	2.5
Xylenes	1330-20-7	µg/L	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	NA	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20	1.8	49.6	2.5
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.29	< 0.24 J	NA	< 0.42	< 0.42	< 0.53	NA	< 0.42	< 0.33	< 0.34	< 0.27 J	< 0.22 J	NA	< 0.47
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.8	< 1.2 J	< 2	< 1.3	< 1.3	< 1.7	NA	< 1.3	< 1.7	< 1.7	< 1.7 J	< 1.1 J	< 2	< 1.5
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.7	< 1.1 J	< 1.6	< 1.2	< 1.2	< 1.5	NA	< 1.2	< 1.4	< 1.4	< 1.5 J	< 1 J	< 1.6	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 1.7	< 1.5 J	< 1.9	< 1.2	< 1.2	< 1.5	NA	< 1.2	< 1.3	< 1.3	< 1.6 J	< 1.4 J	< 1.9	< 1.4
2,4-Dimethylphenol	105-67-9	µg/L	< 2.0	< 1.8 J	< 2	< 1.7	< 1.7	< 2.1	NA	< 1.7	< 1.7	< 1.7	< 1.8 J	< 1.7 J	< 2	< 1.8
2,4-Dinitrophenol	51-28-5	µg/L	< 7.0	< 1.2 J	< 4.2	< 0.74	< 0.74	< 0.92	NA	< 0.74 J	< 18	< 18	< 6.5 J	< 1.1 J	< 4.2	< 0.82
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.35	< 0.59 J	< 0.45	< 0.22	< 0.22 J	< 0.28	NA	< 0.22	< 0.47	< 0.47	< 0.32 J	< 0.54 J	< 0.45	< 0.24
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.27	< 0.54 J	< 0.6	< 0.33	< 0.33	< 0.41	NA	< 0.33	< 0.51	< 0.51	< 0.26 J	< 0.5 J	< 0.6	< 0.36
2-Chloronaphthalene	91-58-7	µg/L	< 0.37	< 0.22 J	< 0.48	< 0.42	< 0.42	< 0.52	NA	< 0.42	< 0.33	< 0.33	< 0.34 J	< 0.2 J	< 0.48	< 0.46
2-Chlorophenol	95-57-8	µg/L	< 1.3	< 0.95 J	< 1.5	< 1.1	< 1.1	< 1.3	NA	< 1.1	< 1.1	< 1.1	< 1.3 J	< 0.87 J	< 1.5	< 1.2
2-Methylnaphthalene	91-57-6	µg/L	< 0.31	< 0.83 J	< 0.43	< 0.66	< 0.66	< 0.82	NA	< 0.66	< 0.42	< 0.43	< 0.29 J	< 0.76 J	0.48 J	< 0.73
2-Methylphenol	95-48-7	µg/L	< 1.4	< 1.1 J	< 1.4	< 1.1	< 1.1	< 1.4	NA	< 1.1	< 1.1	< 1.2	< 1.3 J	< 1 J	< 1.4	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 0.34	< 0.54 J	< 0.45	< 0.24	< 0.24	< 0.29	NA	< 0.24	< 1.2	< 1.2	< 0.32 J	< 0.5 J	< 0.45	< 0.26
2-Nitrophenol	88-75-5	µg/L	< 2.0	< 1.6 J	< 1.9	< 1.2	< 1.2	< 1.6	NA	< 1.2	< 1.6	< 1.7	< 1.9 J	< 1.5 J	< 1.9	< 1.4
3&4-Methylphenol	12-03-3	µg/L	< 1.2	< 1.2 J	< 1.5	< 1	< 1	< 1.3	NA	< 1	< 1	< 1.0	< 1.1 J	< 1.1 J	< 1.5	< 1.2
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.60	< 1.1 J	< 4.6	< 0.3	< 0.3	< 0.37	NA	< 0.3	< 0.4	< 0.40 J	< 0.56 J	< 0.97 J	< 4.6	< 0.33
3-Nitroaniline	99-09-2	µg/L	< 0.28	< 0.35 J	< 0.45	< 0.29	< 0.29	< 0.36	NA	< 0.29	< 1.4	< 1.4 J	< 0.26 J	< 0.32 J	< 0.45	< 0.32
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.4	< 2.4 J	< 1.2	< 0.51	< 0.51	< 0.64	NA	< 0.51	< 1.1	< 1.1	< 1.3 J	< 2.2 J	< 1.2	< 0.57
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.27	< 0.41 J	< 0.41	< 0.35	< 0.35	< 0.44	NA	< 0.35	< 0.39	< 0.40	< 0.25 J	< 0.37 J	< 0.41	< 0.39
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.4	< 1.3 J	< 2.3	< 1.1	< 1.1	< 1.3	NA	< 1.1	< 2	< 2.0	< 1.3 J	< 1.2 J	< 2.3	< 1.2
Semi-Volatile Organic Compounds																

Location ID			RW-5A	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6	RW-6A	RW-6A	RW-6A
Sample ID			RW-5A (091014)	RW-6 (080502)	RW-6 (080915)	RW-6 (070909)	RW-6 (102809)	RW-6 (060210)	RW-6 (060410)	RW-6 (051811)	RW-6 (042712)	RW-6 (111813)	RW-6 (090514)	RW-6A (080502)	RW-6A (080915)	RW-6A (070909)
Sample Date	CAS	Units	9/10/2014	5/2/2008	9/15/2008	7/9/2009	10/28/2009	6/2/2010	6/4/2010	5/18/2011	4/27/2012	11/18/2013	9/5/2014	5/2/2008	9/15/2008	7/9/2009
4-Chloroaniline	106-47-8	µg/L	< 0.32 J	< 0.38 J	< 0.33	< 0.25	< 0.25	< 0.32	NA	< 0.25	< 0.58	< 0.59 J	< 0.30 J	< 0.35 J	< 0.33	< 0.28
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.41	< 0.32 J	< 0.45	< 0.35	< 0.35	< 0.44	NA	< 0.35	< 0.34	< 0.35	< 0.38 J	< 0.29 J	< 0.45	< 0.39
4-Nitroaniline	100-01-6	µg/L	< 0.32	< 0.64 J	< 0.45	< 0.18	< 0.18	< 0.22	NA	< 0.18	< 1.8	< 1.8	< 0.30 J	< 0.59 J	< 0.45	< 0.2
4-Nitrophenol	100-02-7	µg/L	< 0.98	< 1.7 J	< 2.3	< 0.83	< 0.83	< 1	NA	< 0.83	< 5.7	< 5.8	< 0.91 J	< 1.6 J	< 2.3	< 0.92
Acenaphthene	83-32-9	µg/L	< 0.022	< 0.017	< 0.016	< 0.016	< 0.029	< 0.036	NA	< 0.014	< 0.015	< 0.023	0.107	< 0.016	< 0.016	< 0.02
Acenaphthylene	208-96-8	µg/L	< 0.025	< 0.0076	< 0.007	< 0.007	< 0.039	< 0.049	NA	< 0.016	< 0.018	< 0.026	< 0.024	< 0.007	< 0.007	< 0.0088
Acetophenone	98-86-2	µg/L	< 0.39	< 0.39 J	NA	< 0.4	< 0.4	< 0.5	NA	< 0.4	< 0.31	< 0.32	< 0.36 J	< 0.36 J	NA	< 0.44
Anthracene	120-12-7	µg/L	< 0.022	< 0.023	< 0.021	< 0.021	< 0.026	< 0.032	NA	< 0.01	< 0.011	< 0.023	< 0.020	< 0.021	< 0.021	< 0.026
Atrazine	1912-24-9	µg/L	< 0.45	< 0.31 J	NA	< 0.39	< 0.39	< 0.49	NA	< 0.39	< 0.54	< 0.54	< 0.42 J	< 0.28 J	NA	< 0.43
Benzaldehyde	100-52-7	µg/L	< 0.72	< 0.83 J	NA	< 0.4	< 0.4	< 0.51	NA	< 0.4	< 3.6	< 3.6	< 0.67 J	< 0.76 J	NA	< 0.45
Benzo(a)anthracene	56-55-3	µg/L	< 0.012	< 0.037	< 0.034	< 0.034	< 0.024	< 0.03	NA	< 0.015	0.233	< 0.013	< 0.012	< 0.034	< 0.034	< 0.042
Benzo(a)pyrene	50-32-8	µg/L	< 0.013	< 0.039	< 0.036	< 0.036	< 0.031	< 0.039	NA	< 0.0049	1.25	< 0.014	< 0.012	< 0.036	< 0.036	< 0.044
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.011	< 0.018	< 0.017	< 0.017	< 0.036	< 0.045	NA	< 0.016	0.714	< 0.011	< 0.010	< 0.017	< 0.017	< 0.021
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.017	< 0.013	< 0.012	< 0.012	< 0.029	< 0.036	NA	< 0.01	3.25	< 0.017	< 0.016	< 0.012	< 0.012	< 0.015
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.016	< 0.02	< 0.019	< 0.019	< 0.028	< 0.035	NA	< 0.013	1.24	< 0.016	< 0.015	< 0.019	< 0.019	< 0.024
Benzyl butyl phthalate	85-68-7	µg/L	< 0.24	< 0.69 J	< 0.42	< 0.25	< 0.25	< 0.31	NA	< 0.25	< 0.32	< 0.32	< 0.22 J	< 0.64 J	< 0.42	< 0.28
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.45	< 0.35 J	< 0.52	< 0.25	< 0.25	< 0.31	NA	< 0.25	< 0.34	< 0.34	< 0.42 J	< 0.32 J	< 0.52	< 0.28
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.47	< 0.73 J	< 0.49	< 0.31	< 0.31	< 0.39	NA	< 0.31	< 0.34	< 0.34	< 0.43 J	< 0.67 J	< 0.49	< 0.34
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.44	< 0.63 J	< 0.54	< 0.39	< 0.39	< 0.49	NA	< 0.39	< 0.5	< 0.50	< 0.41 J	< 0.58 J	< 0.54	< 0.43
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	2.4 J	< 0.95 J	3.7	< 2	< 2 J	< 0.41	NA	1.5 J	< 0.64	1.5 J	1.6 J	< 0.88 J	< 0.75	< 0.36
Caprolactam	105-60-2	µg/L	1.2 J	< 0.53 J	NA	< 0.2	< 0.2	< 0.24	NA	< 0.2	< 0.76	< 0.77	< 0.41 J	< 0.49 J	NA	< 0.22
Carbazole	86-74-8	µg/L	< 0.18	< 0.43 J	< 0.45	< 0.17	< 0.17	< 0.21	NA	< 0.17	< 0.4	< 0.40	< 0.17 J	< 0.4 J	< 0.45	< 0.18
Chrysene	218-01-9	µg/L	< 0.013	< 0.019	< 0.018	< 0.018	< 0.022	< 0.028	NA	< 0.023	0.15	< 0.013	< 0.012	< 0.018	< 0.018	< 0.022
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.018	< 0.022	< 0.02	< 0.02	< 0.023	< 0.028	NA	< 0.023	0.616	< 0.018	< 0.017	< 0.02	< 0.02	< 0.025
Dibenzofuran	132-64-9	µg/L	< 0.25	< 0.25 J	< 0.49	< 0.3	< 0.3	< 0.38	NA	< 0.3	< 0.29	< 0.29	< 0.23 J	< 0.23 J	< 0.49	< 0.34
Diethyl phthalate	84-66-2	µg/L	< 0.25	< 0.37 J	< 0.36	< 0.17	< 0.17	< 0.21	NA	< 0.17	< 0.36	< 0.36	< 0.23 J	< 0.34 J	< 0.36	< 0.18
Dimethyl phthalate	131-11-3	µg/L	< 0.28	< 0.37 J	< 0.36	< 0.23	< 0.23	< 0.28	NA	< 0.23	< 0.31	< 0.31	< 0.26 J	< 0.34 J	< 0.36	< 0.25
di-n-butyl phthalate	84-74-2	µg/L	< 2.4 BJ	< 0.43 J	< 0.5	< 0.19	< 0.19	< 0.24	NA	< 0.19	< 0.61	< 0.62	< 0.58 J	< 0.4 J	< 0.5	< 0.21
di-n-octylphthalate	117-84-0	µg/L	< 0.27	< 0.52 J	< 0.5	< 0.4	< 0.4	< 0.49	NA	< 0.4	< 0.34	< 0.34	< 0.25 J	< 0.48 J	< 0.5	< 0.44
Fluoranthene	206-44-0	µg/L	< 0.014	< 0.01	< 0.0096	< 0.0096	< 0.024	< 0.03	NA	< 0.0096	< 0.011	< 0.015	< 0.013	< 0.0096	< 0.0096	< 0.012
Fluorene	86-73-7	µg/L	< 0.018	< 0.021	< 0.02	< 0.02	< 0.027	< 0.034	NA	< 0.015	< 0.016	< 0.019	< 0.017	< 0.02	< 0.02	< 0.025
Hexachlorobenzene	118-74-1	µg/L	< 0.018	< 0.011	< 0.0099	< 0.0099	< 0.0099	< 0.012	NA	< 0.008	< 0.0088	< 0.018	< 0.017	< 0.0099	< 0.0099	< 0.012
Hexachlorobutadiene	87-68-3	µg/L	< 0.42	< 0.14 J	< 0.38	< 0.37	< 0.37 J	< 0.16	NA	< 0.13	< 0.56	< 0.57	< 0.39 J	< 0.13 J	< 0.38	< 0.41
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.52	< 0.11 J	< 4.5	< 0.67	< 0.67	< 0.31	NA	< 0.24	< 7.8	< 7.9 J	< 0.48 J	< 0.1 J	< 4.5	< 0.75
Hexachloroethane	67-72-1	µg/L	< 0.31	< 0.18 J	< 0.3	< 0.26	< 0.26	< 0.26	NA	< 0.21	< 0.6	< 0.61	< 0.29 J	< 0.16 J	< 0.3	< 0.29
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.015	< 0.016	< 0.014	< 0.014	< 0.029	< 0.037	NA	< 0.011	0.818	< 0.016	< 0.014	< 0.014	< 0.014	< 0.018
Isophorone	78-59-1	µg/L	< 0.36	< 0.53 J	< 0.69	< 0.25	< 0.25	< 0.31	NA	< 0.25	< 0.3	< 0.30	< 0.34 J	< 0.49 J	< 0.69	< 0.28
Naphthalene	91-20-3	µg/L	< 0.038	< 0.015	0.644	< 0.014	< 0.019	0.142	NA	< 0.016	< 0.018	0.404	0.547	0.384	3.6	1.79
Nitrobenzene	98-95-3	µg/L	< 0.56	< 0.77 J	< 0.66	< 0.25	< 0.25	< 0.32	NA	< 0.25	< 0.46	< 0.47	< 0.52 J	< 0.71 J	< 0.66	< 0.28
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.41 J	< 0.42 J	< 0.39	< 0.44	< 0.44	< 0.55	NA	< 0.44	< 0.33	< 0.34	< 0.38 J	< 0.38 J	< 0.39	< 0.49
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.22	< 0.45 J	< 0.61	0.4 J	< 0.22	< 0.27	NA	< 0.22	< 0.34	< 0.34	< 0.21 J	< 0.41 J	0.93 J	< 0.24
Pentachlorophenol	87-86-5	µg/L	< 0.11	< 0.24 J	< 0.22	< 0.22	< 0.22 J	< 0.085	NA	< 0.29	< 0.11 J	< 0.11	< 0.10	< 0.23 J	< 0.22	< 0.28
Phenanthrene	85-01-8	µg/L	< 0.022	< 0.018	< 0.017	< 0.017	< 0.036	< 0.045	NA	< 0.016	0.141	< 0.023	< 0.021	< 0.017	< 0.017	< 0.021
Phenol	108-95-2	µg/L	< 0.59	< 0.74 J	< 1.4	< 0.58	< 0.58	< 0.72	NA	< 0.58	< 1.4	< 1.4	< 0.55 J	< 0.68 J	< 1.4	< 0.64
Pyrene	129-00-0	µg/L	< 0.016	< 0.013	< 0.012	< 0.012	< 0.022	< 0.028	NA	< 0.0081	< 0.0089	< 0.017	< 0.015	< 0.012	< 0.012	< 0.015
Metals - Total																
Aluminum, total	7429-90-5	µg/L	253	< 24	< 24	< 26	< 26	74.8 B	NA	< 200 J	< 16	104 B	92.2 J	< 24	< 24	< 26
Antimony, total	7440-36-0	µg/L	< 2.6	< 1.8 B	< 1.8	< 4	< 2.9	< 2.2	NA	< 1.3	< 1.4	< 1.8	< 2.6	< 1.8 B	< 1.8	< 4
Arsenic, total	7440-38-2	µg/L	7.6	3.8	2.4 B	4.1 J	< 2.4	2.1 B	NA	< 0.92	< 3	3.6	2.6 B	2.9 B	1.9 B	< 3
Barium, total	7440-39-3	µg/L	46.6 B	246	308	272	316	318	NA	287	230	410	422	18.7 B	18.7 B	19.6 B
Beryllium, total	7440-41-7	µg/L	< 0.40	0.2 B	< 0.15	< 1	< 0.4	< 0.24	NA	< 0.24	< 0.44	< 0.17	< 0.40	0.3 B	0.5 B	< 1
Cadmium, total	7440-43-9	µg/L	< 0.70	1.6 B	< 0.28	< 0.4	< 0.4	0.6 B	NA	< 3	< 0.24	0.70 B	< 0.70	3.6 B	< 0.28	< 0.4
Calcium, total	7440-70-2	µg/L	100000 J	71200	61100	66900	69000	64600	NA	64200	59500	72700	75000	67900	67200	70100
Chromium, total	7440-47-3	µg/L	1.5 B	3.9 B	4 BJ	< 10	3.9 J	0.7 B	NA	< 0.9	< 0.91	2.3 B	4.6 B	< 0.53	< 0.53	< 0.9
Cobalt, total	7440-48-4	µg/L	2.3 B	< 0.51	7.2 B	6.1 BJ	2.8 B	5.8 B	NA	< 50	< 0.59	4.3 B	6.0 B	5.4 B	8.7 B	9 BJ
Copper, total	7440-50-8	µg/L	2.3 B	< 2.5	< 1.1	< 10	< 1.6	< 2.5	NA	< 0.85	< 10	4.9 J	< 1.2	< 2.5	3.6 B	< 10
Iron, total	7439-89-6	µg/L	9950	36400	43200	37600	37800 J	40800	NA	39900	31400	37400	41800 J	9290	9460	10000
Lead, total	7439-92-1	µg/L	2.2 B	1.5 B	< 1.4	< 1.7	< 1.7	< 1.9	NA	1.8 J	2.3 J	4.9	1.3 B	2.8 B	< 1.4	< 1.7
Magnesium, total	7439-95-4	µg/L	10900	11600	9050	10200	9670	8870	NA	8710	7810	12600	12000	16900	16200	17500
Manganese, total	7439-96-5	µg/L	1650 J	6640	4500	4860	4920	4580	NA	4420	4650	6320 J	6970	10200 J	9770	10300
Mercury, total	7439-97-6	µg/L	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	NA	< 0.088	< 0.075	< 0.089	< 0.064	< 0.15	< 0.049	< 0.049
Nickel, total	7440-02-0	µg/L	3.0 B	< 1.2	2.4 B	< 10	1.3 B	< 10	NA	1.5 B	< 0.94	< 1.6	1.8 B	< 1.2	1.5 B	< 10
Potassium, total	7440-09-7	µg/L	18600	55200	9560 B	8860 B	7230 J	4550 B	NA	4810 B	4470 B	3210 B	3010 B	3080 B	2690 B	2780 B
Selenium, total	7782-49-2	µg/L	< 3.6	9 B	3.8 B	< 3.7	< 3.7	< 10	NA	< 1.5	2.8 J	3.4 B	< 3.6	4.8 B	5.8 B	< 3.7
Silicon, total	7440-21-3	µg/L	12300 J	NA	NA	NA	NA	NA	NA	NA	10600 J	NA	5710 B	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.2	< 1	< 1	< 10	1.3 B	< 0.53	NA	< 0.72	1 J	3.6 B	2.9 B	< 1	< 1	2.7 BJ
Sodium, total	7440-23-5	µg/L	11300	30000	9520 B	10700	9640 B	6900 B	NA	6900 B	8580 B	6440 B	5670 B	9090 B	8350 B	7950 B
Thallium, total	7440-28-0	µg/L	< 1.8	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	NA	< 0.17	< 1.7	< 1.3	< 1.8	< 1.3	< 1.3	< 1.5
Vanadium, total	7440-62-2	µg/L	1.6 B	1 B	5.5 B	< 50	< 0.9	2.5 B	NA	< 0.43	1.4 J	< 0.72	3.8 B	1.2 B	2 B	< 0.9
Zinc, total	7440-66-6	µg/L	78.7	< 4	11.1 B	10.4 BJ	4.9 B	9 J	NA	< 20	< 30	8.1 B	33.6	< 4	4.4 B	5.5 BJ
Other																
Cyanide, total	57-12-5	µg/L	NA	< 10	< 10	NA	NA	NA	NA	NA	NA	NA	NA	< 10	< 10	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-6A RW-6A (102809) 10/28/2009	RW-6A RW-6A (060210) 6/2/2010	RW-6A RW-6A (051811) 5/18/2011	RW-6A RW-6A (042712) 4/27/2012	RW-6A RW-6A (110813) 11/8/2013	RW-6A RW-6A (090514) 9/5/2014	RW-8 RW-8 (158-178) (7/7/2009) 7/7/2009	RW-8 RW-8 (199-219) (7/7/2009) 7/7/2009	RW-8 RW-8 (42-62) (7/7/2009) 7/7/2009	RW-8 RW-8 (163-173) (6/23/2010) 6/23/2010	RW-8 RW-8 (204-214) (6/23/2010) 6/23/2010	RW-8 RW-8 (163-173) (6/24/2010) 6/24/2010	RW-8 RW-8 (204-214) (6/24/2010) 6/24/2010	RW-8 RW-8 (163-173) (6/25/2010) 6/25/2010
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	< 0.26	< 0.24	< 0.24	< 0.25	< 0.32	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	NA	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	< 0.24	< 0.2	< 0.2	< 0.20	< 0.39	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23	< 0.23	< 0.23	< 0.21	< 0.28	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA	NA	NA
1,1-Dichloroethane	75-34-3	µg/L	0.57 J	0.97 J	0.52 J	0.66 J	0.41 J	0.37 J	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	NA	NA	NA
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	< 0.4	< 0.28	< 0.28	< 0.34	< 0.50	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	NA	NA	NA
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	< 0.56	< 0.15	< 0.15	< 0.22	< 0.22	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	NA	NA	NA
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	< 1.1	< 1.3	< 1.3*	< 1.3	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	NA	NA	NA
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	< 0.39	< 0.21	< 0.21*	< 0.16	< 0.23	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	NA	NA	NA
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	< 0.26	< 0.18	< 0.18	< 0.20	< 0.16	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	NA	NA	NA
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	< 0.33	< 0.18	< 0.18	< 0.22	< 0.30	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	NA	NA	NA
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	< 0.27	< 0.22	< 0.22	< 0.28	< 0.43	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	NA	NA	NA
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	< 0.25	< 0.29	< 0.29	< 0.31	< 0.26	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	< 0.28	< 0.26	< 0.26	< 0.30	0.25 J	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	NA	NA	NA
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	< 1.6	< 2.9	< 2.9	< 3.2	< 2.5	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	NA	NA	NA
2-Hexanone	591-78-6	µg/L	< 1.4	< 1.4	< 3	< 3	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	NA	NA	NA
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	< 0.86	< 1.2	< 1.2	< 1.5	< 1.1	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	NA	NA	NA
Acetone	67-64-1	µg/L	< 2.9	< 2.9	< 7.6	< 5	< 3.3	< 2.6	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	NA	NA	NA
Benzene	71-43-2	µg/L	2.4	1.9	1.5	2	15	R	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA	NA	NA
Bromodichloromethane	75-27-4	µg/L	< 0.22	< 0.22	< 0.23	< 0.23	< 0.21	< 0.28	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA	NA	NA
Bromoform	75-25-2	µg/L	< 0.23	< 0.23	< 0.24	< 0.24	< 0.30	< 0.31	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA	NA	NA
Bromomethane	74-83-9	µg/L	< 0.3	< 0.3	< 0.31	< 0.31	< 0.56	< 0.39	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	NA	NA	NA
Carbon disulfide	75-15-0	µg/L	< 0.74	< 0.74	< 0.18	< 0.18	< 0.18 J	< 0.50	< 0.74	< 0.74	< 0.74	< 0.74	1.2 J	NA	NA	NA
Carbon tetrachloride	56-23-5	µg/L	< 0.26	< 0.26	< 0.19	< 0.19	< 0.23	< 0.24	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	NA	NA	NA
Chlorobenzene	108-90-7	µg/L	< 0.39	< 0.39	< 0.22	< 0.22	< 0.35	< 0.27	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	NA	NA	NA
Chloroethane	75-00-3	µg/L	1	1.4	0.95 J	1.7 J	1.6	1.1	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	NA	NA	NA
Chloroform	67-66-3	µg/L	< 0.23	< 0.23	< 0.21	< 0.21	< 0.25	< 0.20	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA	NA	NA
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.22 J	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	NA	NA	NA
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.24	< 0.33	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA	NA	NA
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	< 0.25	< 0.22	< 0.22	< 0.15	< 0.28	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	NA	NA	NA
Cyclohexane	110-82-7	µg/L	< 1.9	< 1.9	0.77 J	0.91 J	3.4 J	2.2 J	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	NA	NA	NA
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.2	< 0.2	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA	NA	NA
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	< 0.92	< 0.31 J	< 0.31	< 0.63	< 0.73	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	NA	NA	NA
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	0.31 J	< 0.21	1.3	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	NA	NA	NA
Freon 113	76-13-1	µg/L	< 0.38	< 0.38	< 0.49	< 0.49	< 0.77 J	< 0.45	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	NA	NA	NA
Isopropylbenzene	98-82-8	µg/L	3	2.1	2	1.9 J	7.5	4.4	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	NA	NA	NA
Methyl acetate	79-20-9	µg/L	< 1.5	< 1.5	< 2.9	< 2.9	< 1.5	< 3.1	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	NA	NA	NA
Methyl tert butyl ether	1634-04-4	µg/L	< 0.23	< 0.23	< 0.18	< 0.18	< 0.29	< 0.26	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA	NA	NA
Methylcyclohexane	108-87-2	µg/L	0.55 J	< 0.35	0.34 J	0.42 J	1.1 J	0.64 J	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	NA	NA	NA
Methylene chloride	75-09-2	µg/L	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	NA	NA	NA
o-Xylene	95-47-6	µg/L	< 0.25	NA	NA	NA	< 0.30	NA	< 0.25	< 0.25	< 0.25	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.58	< 0.58	< 0.23	< 0.23	NA	< 0.26	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	NA	NA	NA
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	< 0.25 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.27	< 0.27	< 0.32	< 0.32	< 0.44	< 0.35	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	NA	NA	NA
Toluene	108-88-3	µg/L	0.32 J	< 0.3	< 0.15	< 0.15	< 0.38	< 0.22	< 0.3	0.66 J	< 0.3	< 0.3	0.39 J	NA	NA	NA
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	< 0.25	< 0.31	< 0.31	< 0.21	< 0.51	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	NA	NA	NA
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	< 0.21	< 0.19	< 0.19	< 0.50	< 0.32	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	NA	NA	NA
Trichloroethene	79-01-6	µg/L	< 0.24	< 0.24	< 0.21	< 0.21	< 0.33	< 0.25	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	NA	NA	NA
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	< 0.54	< 0.35	< 0.35	< 0.41	< 0.28	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	NA	NA	NA
Vinyl Chloride	75-01-4	µg/L	< 0.44	< 0.44	< 0.27	< 0.27	NA	< 0.17	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	NA	NA	NA
Xylene, -m,p	179601-23-1	µg/L	15.1	NA	NA	NA	NA	NA	< 0.25	< 0.25	< 0.25	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	15.1	1.3	< 0.17	< 0.17	41	16.1	< 0.25	< 0.25	< 0.25	< 0.25	0.47 J	NA	NA	NA
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.45	< 0.47	< 0.42	< 0.32	< 0.34	< 0.30	< 0.47	< 0.49	< 0.43	NA	NA	< 0.49	< 0.44	NA
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.4	< 1.5	< 1.3	< 1.7	< 1.8	< 1.9	< 1.5	< 1.5	< 1.3	NA	NA	< 2	< 1.4	NA
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.3	< 1.4	< 1.2	< 1.4	< 1.4	< 1.7	< 1.4	< 1.4	< 1.2	NA	NA	< 1.9	< 1.3	NA
2,4-Dichlorophenol	120-83-2	µg/L	< 1.3	< 1.4	< 1.2	< 1.2	< 1.3	< 1.8	< 1.4	< 1.4	< 1.2	NA	NA	< 1.9	< 1.3	NA
2,4-Dimethylphenol	105-67-9	µg/L	< 1.8	< 1.8	< 1.7	< 1.6	< 1.7	< 2.0	< 1.8	< 1.9	< 1.7	NA	NA	< 2.5	< 1.7	NA
2,4-Dinitrophenol	51-28-5	µg/L	< 0.79	< 0.82	< 0.74 J	< 18	< 19	< 7.1	< 0.82	< 0.86	< 0.75	NA	NA	< 1.1	< 0.78	NA
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.24 J	< 0.24	< 0.22	< 0.45	< 0.48	< 0.35	< 0.24	< 0.26	< 0.22	NA	NA	< 0.25	< 0.23	NA
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.35	< 0.36	< 0.33	< 0.49	< 0.52	< 0.28	< 0.36	< 0.38	< 0.33	NA	NA	< 0.38	< 0.34	NA
2-Chloronaphthalene	91-58-7	µg/L	< 0.45	< 0.46	< 0.42	< 0.32	< 0.33	< 0.37	< 0.46	< 0.48	< 0.42	NA	NA	< 0.48	< 0.43	NA
2-Chlorophenol	95-57-8	µg/L	< 1.2	< 1.2	< 1.1	< 1	< 1.1	< 1.4	< 1.2	< 1.2	< 1.1	NA	NA	< 1.6	< 1.1	NA
2-Methylnaphthalene	91-57-6	µg/L	< 0.71	< 0.73	< 0.66	< 0.41	1.2	0.46 J	< 0.73	< 0.77	< 0.67	NA	NA	< 0.76	< 0.69	NA
2-Methylphenol	95-48-7	µg/L	< 1.2	< 1.2	< 1.1	< 1.1	< 1.2	< 1.4	< 1.2	< 1.3	< 1.1	NA	NA	< 1.7	< 1.2	NA
2-Nitroaniline	88-74-4	µg/L	< 0.25	< 0.26	< 0.24	< 1.2	< 1.2	< 0.34	< 0.26	< 0.27	< 0.24	NA	NA	< 0.27	< 0.24	NA
2-Nitrophenol	88-75-5	µg/L	< 1.3	< 1.4	< 1.2	< 1.6	< 1.7	< 2.0	< 1.4	< 1.4	< 1.3	NA	NA	< 1.9	< 1.3	NA
3&4-Methylphenol	12-03-3	µg/L	< 1.1	< 1.2	< 1	< 0.98	< 1.0	< 1.2	< 1.2	< 1.2	< 1.1	NA	NA	< 1.6	< 1.1	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.32	< 0.33	< 0.3	< 0.38	< 0.40	< 0.61	< 0.33	< 0.34	< 0.3	NA	NA	< 0.34	< 0.31	NA
3-Nitroaniline	99-09-2	µg/L	< 0.31	< 0.32	< 0.29	< 1.3	< 1.4	< 0.28	< 0.32	< 0.33	< 0.29	NA	NA	< 0.33	< 0.3	NA
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.55	< 0.57	< 0.51	< 1.1	< 1.1	< 1.4	< 0.57	< 0.6	< 0.52	NA	NA	< 0.79	< 0.54	NA
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.38	< 0.39	< 0.35	< 0.38	< 0.40	< 0.27	< 0.39	< 0.41	< 0.36	NA	NA	< 0.4	< 0.36	NA
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.1	< 1.2	< 1.1	< 1.9	< 2.0	< 1.4	< 1.2	< 1.2	< 1.1	NA	NA	< 1.6	< 1.1	NA
Semi-Volatile Organic Compounds																

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4-Chloroaniline	106-47-8	µg/L	< 0.27	< 0.28	< 0.25	< 0.56	< 0.59	R	< 0.28	< 0.29	< 0.26	NA	NA	< 0.29	< 0.26	NA
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.38	< 0.39	< 0.35	< 0.33	< 0.35	< 0.41	< 0.39	< 0.41	< 0.36	NA	NA	< 0.41	< 0.37	NA
4-Nitroaniline	100-01-6	µg/L	< 0.19	< 0.2	< 0.18	< 1.8	< 1.9	< 0.33	< 0.2	< 0.21	< 0.18	NA	NA	< 0.21	< 0.19	NA
4-Nitrophenol	100-02-7	µg/L	< 0.89	< 0.92	< 0.83	< 5.5	< 5.8	< 0.99	< 0.92	< 0.96	< 0.84	NA	NA	< 1.3	< 0.87	NA
Acenaphthene	83-32-9	µg/L	< 0.031	< 0.032	< 0.014	< 0.015	< 0.023	< 0.022	< 0.018	< 0.019	< 0.016	NA	NA	< 0.034	< 0.032	NA
Acenaphthylene	208-96-8	µg/L	< 0.042	< 0.044	< 0.016	< 0.017	< 0.027	< 0.026	< 0.0078	< 0.0081	< 0.0071	NA	NA	< 0.045	< 0.044	NA
Acetophenone	98-86-2	µg/L	< 0.43	< 0.44	< 0.4	< 0.3	< 0.32	< 0.40	< 0.44	< 0.46	< 0.41	NA	NA	< 0.46	< 0.42	NA
Anthracene	120-12-7	µg/L	< 0.028	< 0.028	< 0.01	< 0.011	< 0.023	< 0.022	< 0.023	< 0.024	< 0.021	NA	NA	< 0.03	< 0.028	NA
Atrazine	1912-24-9	µg/L	< 0.42	< 0.43	< 0.39	< 0.52	< 0.55	< 0.46	< 0.43	< 0.45	< 0.4	NA	NA	< 0.45	< 0.41	NA
Benzaldehyde	100-52-7	µg/L	< 0.43	< 0.45	< 0.4	< 3.5	< 3.7	< 0.73	< 0.45	< 0.47	< 0.41	NA	NA	< 0.47	< 0.42	NA
Benzo(a)anthracene	56-55-3	µg/L	< 0.025	< 0.026	< 0.015	< 0.016	< 0.013	< 0.013	< 0.037	< 0.039	< 0.034	NA	NA	< 0.027	< 0.026	NA
Benzo(a)pyrene	50-32-8	µg/L	< 0.033	< 0.034	< 0.0049	< 0.0052	< 0.014	< 0.013	< 0.039	< 0.041	< 0.036	NA	NA	< 0.036	< 0.034	NA
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.038	< 0.04	< 0.016	< 0.017	< 0.011	< 0.011	< 0.019	< 0.02	< 0.017	NA	NA	< 0.041	< 0.04	NA
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.031	< 0.032	< 0.01	< 0.011	< 0.018	< 0.017	< 0.013	< 0.014	< 0.012	NA	NA	< 0.033	< 0.032	NA
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.03	< 0.031	< 0.013	< 0.013	< 0.017	< 0.016	< 0.021	< 0.022	< 0.019	NA	NA	< 0.033	< 0.031	NA
Benzyl butyl phthalate	85-68-7	µg/L	< 0.27	< 0.28	< 0.25	< 0.31	< 0.32	< 0.24	< 0.28	< 0.29	< 0.26	NA	NA	< 0.29	< 0.26	NA
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.27	< 0.28	< 0.25	< 0.33	< 0.34	< 0.46	< 0.28	< 0.29	< 0.25	NA	NA	< 0.29	< 0.26	NA
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.33	< 0.34	< 0.31	< 0.33	< 0.35	< 0.47	< 0.34	< 0.36	< 0.32	NA	NA	< 0.36	< 0.32	NA
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.42	< 0.43	< 0.39	< 0.48	< 0.51	< 0.44	< 0.43	< 0.45	< 0.4	NA	NA	< 0.45	< 0.41	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 3.8 J	< 0.36	< 0.33	< 0.62	< 0.66	< 0.60	< 0.36	< 0.38	< 0.33	NA	NA	< 0.38	< 0.34	NA
Caprolactam	105-60-2	µg/L	< 0.21	< 0.22	< 0.2	< 0.73	< 0.77	< 0.44	< 0.22	< 0.23	< 0.2	NA	NA	< 0.23	< 0.2	NA
Carbazole	86-74-8	µg/L	< 0.18	< 0.18	< 0.17	< 0.38	< 0.40	< 0.18	< 0.18	< 0.19	< 0.17	NA	NA	< 0.19	< 0.17	NA
Chrysene	218-01-9	µg/L	< 0.024	< 0.024	< 0.023	< 0.025	< 0.013	< 0.013	< 0.02	< 0.02	< 0.018	NA	NA	< 0.025	< 0.024	NA
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.024	< 0.025	< 0.023	< 0.024	< 0.019	< 0.018	< 0.022	< 0.023	< 0.021	NA	NA	< 0.026	< 0.025	NA
Dibenzofuran	132-64-9	µg/L	< 0.33	< 0.34	< 0.3	< 0.28	< 0.30	< 0.25	< 0.34	< 0.35	< 0.31	NA	NA	< 0.35	< 0.32	NA
Diethyl phthalate	84-66-2	µg/L	< 0.18	< 0.18	< 0.17	< 0.35	< 0.37	< 0.25	< 0.18	< 0.19	< 0.17	NA	NA	< 0.19	< 0.17	NA
Dimethyl phthalate	131-11-3	µg/L	< 0.24	< 0.25	< 0.23	< 0.3	< 0.32	< 0.28	< 0.25	< 0.26	< 0.23	NA	NA	< 0.26	< 0.23	NA
di-n-butyl phthalate	84-74-2	µg/L	< 0.21	< 0.21	< 0.19	< 0.59	< 0.62	< 0.63	< 0.21	< 0.22	< 0.19	NA	NA	< 0.22	< 0.2	NA
di-n-octylphthalate	117-84-0	µg/L	< 0.42	< 0.44	< 0.4	< 0.33	< 0.35	< 0.27	< 0.44	< 0.46	< 0.4	NA	NA	< 0.46	< 0.41	NA
Fluoranthene	206-44-0	µg/L	< 0.026	< 0.027	< 0.0096	< 0.01	< 0.015	< 0.014	< 0.011	< 0.011	< 0.0098	NA	NA	< 0.028	< 0.027	NA
Fluorene	86-73-7	µg/L	< 0.029	< 0.03	< 0.015	< 0.016	< 0.019	< 0.018	< 0.022	< 0.023	< 0.02	NA	NA	< 0.031	< 0.03	NA
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.011	< 0.008	< 0.0085	< 0.019	< 0.018	< 0.011	< 0.012	< 0.01	NA	NA	< 0.011	< 0.011	NA
Hexachlorobutadiene	87-68-3	µg/L	< 0.4 J	< 0.14	< 0.13	< 0.54	< 0.58	< 0.42	< 0.41	< 0.43	< 0.38	NA	NA	< 0.15	< 0.13	NA
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.72	< 0.27	< 0.24	< 7.6	< 8.0	< 0.52 J	< 0.75	< 0.78	< 0.69	NA	NA	< 0.28	< 0.25	NA
Hexachloroethane	67-72-1	µg/L	< 0.28	< 0.23	< 0.21	< 0.59	< 0.62	< 0.31	< 0.29	< 0.31	< 0.27	NA	NA	< 0.24	< 0.22	NA
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.031	< 0.032	< 0.011	< 0.011	< 0.016	< 0.016	< 0.016	< 0.017	< 0.015	NA	NA	< 0.034	< 0.032	NA
Isophorone	78-59-1	µg/L	< 0.27	< 0.28	< 0.25	< 0.29	< 0.31	< 0.37	< 0.28	< 0.29	< 0.25	NA	NA	< 0.29	2.2 J	NA
Naphthalene	91-20-3	µg/L	1.54	0.9	1.37	1.75	9.1	2.96	< 0.015	< 0.016	< 0.014	NA	NA	< 0.021	< 0.021	NA
Nitrobenzene	98-95-3	µg/L	< 0.27	< 0.28	< 0.25	< 0.45	< 0.47	< 0.56	< 0.28	< 0.29	< 0.26	NA	NA	< 0.29	< 0.26	NA
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.47	< 0.49	< 0.44	< 0.32	< 0.34	< 0.41	< 0.49	< 0.51	< 0.45	NA	NA	< 0.51	< 0.46	NA
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.23	0.79 J	< 0.22	< 0.32	< 0.34	< 0.22	< 0.24	< 0.25	< 0.22	NA	NA	< 0.25	< 0.22	NA
Pentachlorophenol	87-86-5	µg/L	< 0.24 J	< 0.076	< 0.29	< 0.11 J	< 0.11	< 0.11	< 0.25	< 0.26	< 0.23	NA	NA	< 0.079	< 0.072	NA
Phenanthrene	85-01-8	µg/L	< 0.039	< 0.04	< 0.016	< 0.017	< 0.023	< 0.023	< 0.019	< 0.02	< 0.017	NA	NA	< 0.042	< 0.04	NA
Phenol	108-95-2	µg/L	< 0.62	< 0.64	< 0.58	< 1.4	< 1.4	< 0.59	< 0.64	< 0.67	< 0.59	NA	NA	< 0.89	< 0.61	NA
Pyrene	129-00-0	µg/L	< 0.024	< 0.025	< 0.0081	< 0.0086	< 0.017	< 0.016	< 0.013	< 0.014	< 0.012	NA	NA	< 0.026	< 0.025	NA
Metals - Total																
Aluminum, total	7429-90-5	µg/L	< 26	69.3 B	< 200 J	< 16	< 11	64.7 J	< 200	< 200	< 200	NA	NA	NA	NA	< 7.8
Antimony, total	7440-36-0	µg/L	< 2.9	< 2.2	< 1.3	< 1.4	< 1.8	< 2.6	< 4	< 4	< 4	NA	NA	NA	NA	< 2.2
Arsenic, total	7440-38-2	µg/L	< 2.4	< 1.4	< 0.92	< 0.97	< 1.5	< 2.6	< 2.4	< 2.4	< 2.4	NA	NA	NA	NA	2.1 B
Barium, total	7440-39-3	µg/L	19.3 B	19 B	23.3 B	25.2 B	37.9 B	33.5 B	15.3 BJ	20.9 BJ	< 200	NA	NA	NA	NA	42.1 B
Beryllium, total	7440-41-7	µg/L	< 0.4	0.3 B	< 0.24	< 0.44	< 0.17	< 0.40	< 0.4	< 0.4	< 0.4	NA	NA	NA	NA	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.4	0.6 B	< 3	0.4 J	0.30 B	< 0.70	1 B	1.1 B	2.8 B	NA	NA	NA	NA	< 0.35
Calcium, total	7440-70-2	µg/L	67400	58200	66000	63600	78700	70300	63600	68100	16600	NA	NA	NA	NA	62500
Chromium, total	7440-47-3	µg/L	3.3 J	< 0.59	< 0.9	< 0.91	8.5 B	0.90 B	< 0.9	< 0.9	< 0.9	NA	NA	NA	NA	< 10
Cobalt, total	7440-48-4	µg/L	7.8 B	6.3 B	9.2 B	8.7 B	17.2 B	13.3 B	< 0.4	< 0.4	0.6 B	NA	NA	NA	NA	0.9 B
Copper, total	7440-50-8	µg/L	2.4 B	4 B	< 0.85	6.3 J	2.5 B	1.5 B	< 1.6	< 10	< 10	NA	NA	NA	NA	< 2.5
Iron, total	7439-89-6	µg/L	9810 J	8610	10500	10800	20100	16300 J	759 J	895 J	1570 J	NA	NA	NA	NA	358
Lead, total	7439-92-1	µg/L	< 1.7	< 1.9	3.1	1.8 J	< 2.4	< 1.3	6	< 3	17.9	NA	NA	NA	NA	< 1.9
Magnesium, total	7439-95-4	µg/L	14900	13500	15700	15300	18700	16200	15700	29100	4710 B	NA	NA	NA	NA	12900
Manganese, total	7439-96-5	µg/L	10600	9280	10700	11200	12900	11200	158	126	135	NA	NA	NA	NA	219
Mercury, total	7439-97-6	µg/L	< 0.082	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064	< 0.049	< 0.049	< 0.049	NA	NA	NA	NA	< 0.082
Nickel, total	7440-02-0	µg/L	2 B	< 10	2 B	< 10	2.7 B	0.90 B	< 0.6	< 0.6	< 10	NA	NA	NA	NA	5.7 B
Potassium, total	7440-09-7	µg/L	2190 J	2280 B	2410 B	2510 B	2850 B	2650 B	2500 B	3690 B	1750 B	NA	NA	NA	NA	2750 B
Selenium, total	7782-49-2	µg/L	< 3.7	2.5 J	< 2.9	2.5 J	6.2 B	< 3.6	< 3.7	< 3.7	< 3.7	NA	NA	NA	NA	< 1.9
Silicon, total	7440-21-3	µg/L	NA	NA	NA	12700 J	NA	7010 B	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	2 B	< 0.53	< 0.72	2.1 B	5.4 B	3.6 B	< 1	< 1	< 1	NA	NA	NA	NA	< 0.53
Sodium, total	7440-23-5	µg/L	7350 B	7210 B	7410 B	8020 B	7700 B	7400 B	8710 B	26900	5680 B	NA	NA	NA	NA	28400
Thallium, total	7440-28-0	µg/L	1.6 B	< 1.8	< 0.34	< 3.5	< 1.3	< 3.7	< 1.5	< 1.5	< 1.5	NA	NA	NA	NA	< 1.8
Vanadium, total	7440-62-2	µg/L	< 0.9	< 0.56	< 0.43	< 0.77	< 0.72	5.3 B	< 0.9	< 0.9	< 0.9	NA	NA	NA	NA	< 0.56
Zinc, total	7440-66-6	µg/L	3.3 B	< 20	< 20	< 30	< 4.4	< 7.6	1030	400	9990	NA	NA	NA	NA	86
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-8 RW-8 (204-214) (6/25/2010) 6/25/2010	RW-8 RW-8 (163-173) (6/28/2010) 6/28/2010	RW-8 RW-8 (204-214) (6/28/2010) 6/28/2010	RW-8 RW-8 (163-173) (053111) 5/31/2011	RW-8 RW-8 (163-173) (060111) 6/1/2011	RW-8 RW-8 (204-214) (060111) 6/1/2011	RW-8 RW-8(163-173) 5/3/2012	RW-8 RW-8 (163-173) (111513) 11/15/2013	RW-8 RW-8 (204-214) (111513) 11/15/2013	RW-8 RW-8 (204-214) (111413) 11/14/2013	RW-8 RW-8(163-173)(092214) 9/22/2014	RW-8 RW-8(204-214)(092314) 9/23/2014	RW-9 RW-9(20-40) (7/15/2009) 7/15/2009	RW-9 RW-9 (80-100) (7/15/2009) 7/15/2009
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	NA	NA	NA	< 0.24	NA	< 0.24	< 0.24	< 0.25 J	NA	< 0.25 J	< 0.32	< 0.32	< 0.26	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	NA	NA	NA	< 0.2	NA	< 0.2	< 0.2	< 0.20 J	NA	< 0.20 J	< 0.39	< 0.39	< 0.24	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	NA	NA	NA	< 0.23	NA	< 0.23	< 0.23	< 0.21 J	NA	< 0.21 J	< 0.28	< 0.28	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	NA	NA	NA	< 0.19	NA	< 0.19	< 0.19	< 0.26 J	NA	< 0.26 J	< 0.35	< 0.35	< 0.29	< 0.29
1,1-Dichloroethene	75-35-4	µg/L	NA	NA	NA	< 0.28	NA	< 0.28	< 0.28	< 0.34 J	NA	< 0.34 J	< 0.50	< 0.50	< 0.4	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	NA	NA	NA	< 0.15	NA	< 0.15	< 0.15	< 0.22 J	NA	< 0.22 J	< 0.22	< 0.22	< 0.56	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	NA	NA	NA	< 1.3	NA	< 1.3	< 1.3*	< 1.3 J	NA	< 1.3 J	< 1.2	< 1.2	< 1.1	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	NA	NA	NA	< 0.21	NA	< 0.21	< 0.21*	< 0.16 J	NA	< 0.16 J	< 0.23	< 0.23	< 0.39	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	NA	NA	NA	< 0.18	NA	< 0.18	< 0.18	< 0.20 J	NA	< 0.20 J	< 0.16	< 0.16	< 0.26	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	NA	NA	NA	< 0.18	NA	< 0.18	< 0.18	< 0.22 J	NA	< 0.22 J	< 0.30	< 0.30	< 0.33	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	NA	NA	NA	< 0.22	NA	< 0.22	< 0.22	< 0.28 J	NA	< 0.28 J	< 0.43	< 0.43	< 0.27	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	NA	NA	NA	< 0.29	NA	< 0.29	< 0.29	< 0.31 J	NA	< 0.31 J	< 0.26	< 0.26	< 0.25	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	NA	NA	NA	< 0.26	NA	< 0.26	< 0.26	< 0.30 J	NA	< 0.30 J	< 0.24	< 0.24	< 0.28	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	NA	NA	NA	< 2.9	NA	< 2.9	< 2.9	< 3.2 J	NA	6.1 J	< 2.5	< 2.5	< 1.6	< 1.6
2-Hexanone	591-78-6	µg/L	NA	NA	NA	< 3	NA	< 3	< 3	< 1.7 J	NA	< 1.7 J	< 1.7	< 1.7	< 1.4	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	NA	NA	NA	< 1.2	NA	< 1.2	< 1.2	< 1.5 J	NA	< 1.5 J	< 1.1	< 1.1	< 0.86	< 0.86
Acetone	67-64-1	µg/L	NA	NA	NA	< 7.6	NA	< 7.6	< 5	< 3.3 J	NA	< 3.3 J	< 2.6	< 2.6	< 2.9	< 2.9
Benzene	71-43-2	µg/L	NA	NA	NA	< 0.22	NA	< 0.22	< 0.22	0.34 J	NA	2.2 J	< 0.21	0.58	< 0.23	< 0.23
Bromodichloromethane	75-27-4	µg/L	NA	NA	NA	< 0.23	NA	< 0.23	< 0.23	< 0.21 J	NA	< 0.21 J	< 0.28	< 0.28	< 0.22	< 0.22
Bromoform	75-25-2	µg/L	NA	NA	NA	< 0.24	NA	< 0.24	< 0.24	< 0.30 J	NA	< 0.30 J	< 0.31	< 0.31	< 0.23	< 0.23
Bromomethane	74-83-9	µg/L	NA	NA	NA	< 0.31	NA	< 0.31	< 0.31	< 0.56 J	NA	< 0.56 J	< 0.39	< 0.39	< 0.3	< 0.3
Carbon disulfide	75-15-0	µg/L	NA	NA	NA	0.44 J	NA	0.41 J	0.63 J	1.0 J	NA	0.54 J	< 0.50	< 0.50	< 0.74	< 0.74
Carbon tetrachloride	56-23-5	µg/L	NA	NA	NA	< 0.19	NA	< 0.19	< 0.19	< 0.23 J	NA	< 0.23 J	< 0.24	< 0.24	< 0.26	< 0.26
Chlorobenzene	108-90-7	µg/L	NA	NA	NA	< 0.22	NA	< 0.22	< 0.22	< 0.35 J	NA	< 0.35 J	< 0.27	< 0.27	< 0.39	< 0.39
Chloroethane	75-00-3	µg/L	NA	NA	NA	< 0.37	NA	< 0.37	< 0.37	< 0.39 J	NA	< 0.39 J	< 0.56	< 0.56	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	NA	NA	NA	< 0.21	NA	< 0.21	< 0.21	< 0.25 J	NA	< 0.25 J	< 0.20	< 0.20	< 0.23	< 0.23
Chloromethane	74-87-3	µg/L	NA	NA	NA	< 0.22	NA	< 0.22	< 0.22	< 0.36 J	NA	0.53 J	< 0.33	< 0.33	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	NA	NA	NA	< 0.22	NA	< 0.22	< 0.22	< 0.24 J	NA	< 0.24 J	< 0.33	< 0.33	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	NA	NA	NA	< 0.22	NA	< 0.22	< 0.22	< 0.15 J	NA	< 0.15 J	< 0.28	< 0.28	< 0.25	< 0.25
Cyclohexane	110-82-7	µg/L	NA	NA	NA	< 0.29	NA	< 0.29	< 0.29	< 0.18 J	NA	< 0.18 J	< 0.37	< 0.37	< 1.9	< 1.9
Dibromochloromethane	124-48-1	µg/L	NA	NA	NA	< 0.2	NA	< 0.2	< 0.2	< 0.19 J	NA	< 0.19 J	< 0.25	< 0.25	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	NA	NA	NA	< 0.31	NA	< 0.31	< 0.31	< 0.63 J	NA	< 0.63 J	< 0.73	< 0.73	< 0.92	< 0.92
Ethylbenzene	100-41-4	µg/L	NA	NA	NA	< 0.21	NA	< 0.21	< 0.21	< 0.21 J	NA	< 0.21 J	< 0.40	< 0.40	< 0.27	< 0.27
Isopropylbenzene	98-82-8	µg/L	NA	NA	NA	< 0.19	NA	< 0.19	< 0.19	< 0.22 J	NA	< 0.22 J	< 0.26	< 0.26	< 0.57	< 0.57
Methyl acetate	79-20-9	µg/L	NA	NA	NA	< 2.9	NA	< 2.9	< 2.9	< 1.5 J	NA	< 1.5 J	< 3.1	< 3.1	< 1.5	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	NA	NA	NA	< 0.18	NA	< 0.18	< 0.18	< 0.29 J	NA	< 0.29 J	< 0.26	< 0.26	< 0.23	< 0.23
Methylcyclohexane	108-87-2	µg/L	NA	NA	NA	< 0.18	NA	< 0.18	< 0.18	< 0.15 J	NA	< 0.15 J	< 0.22	< 0.22	< 0.35	< 0.35
Methylene chloride	75-09-2	µg/L	NA	NA	NA	< 0.2	NA	< 0.2	< 0.2	< 0.86 J	NA	< 0.86 J	< 0.81	< 0.81	< 0.3	< 0.3
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	< 0.30 J	NA	< 0.30 J	NA	NA	< 0.25	< 0.25
Styrene	100-42-5	µg/L	NA	NA	NA	< 0.23	NA	< 0.23	< 0.23	NA	NA	NA	< 0.26	< 0.26	< 0.58	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	< 0.25 J	NA	< 0.25 J	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	NA	NA	NA	< 0.32	NA	< 0.32	< 0.32	< 0.44 J	NA	< 0.44 J	< 0.35	< 0.35	< 0.27	< 0.27
Toluene	108-88-3	µg/L	NA	NA	NA	< 0.15	NA	< 0.15	< 0.15	< 0.38 J	NA	< 0.38 J	< 0.22	< 0.22	< 0.3	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	NA	NA	NA	< 0.31	NA	< 0.31	< 0.31	< 0.21 J	NA	< 0.21 J	< 0.51	< 0.51	< 0.25	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	NA	NA	NA	< 0.19	NA	< 0.19	< 0.19	< 0.50 J	NA	< 0.50 J	< 0.32	< 0.32	< 0.21	< 0.21
Trichloroethene	79-01-6	µg/L	NA	NA	NA	< 0.21	NA	< 0.21	< 0.21	< 0.33 J	NA	< 0.33 J	< 0.25	< 0.25	< 0.24	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	NA	NA	NA	< 0.35	NA	< 0.35	< 0.35	< 0.41 J	NA	< 0.41 J	< 0.28	< 0.28	< 0.54	< 0.54
Vinyl Chloride	75-01-4	µg/L	NA	NA	NA	< 0.27	NA	< 0.27	< 0.27	NA	NA	NA	< 0.17	< 0.17	< 0.44	< 0.44
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	< 0.25
Xylenes	1330-20-7	µg/L	NA	NA	NA	< 0.17	NA	< 0.17	< 0.17	< 0.19 J	NA	< 0.19 J	< 0.20	< 0.20	< 0.25	< 0.25
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	NA	NA	NA	NA	< 0.46	NA	< 0.34	< 0.59	NA	NA	< 0.30	NA	< 0.47	< 0.45
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	NA	NA	NA	NA	< 1.4	NA	< 1.8	< 3.1	NA	NA	< 1.9	NA	< 1.5	< 1.4
2,4,6-Trichlorophenol	88-06-2	µg/L	NA	NA	NA	NA	< 1.3	NA	< 1.4	< 2.5	NA	NA	< 1.7	NA	< 1.4	< 1.3
2,4-Dichlorophenol	120-83-2	µg/L	NA	NA	NA	NA	< 1.3	NA	< 1.3	< 2.3	NA	NA	< 1.8	NA	< 1.4	< 1.3
2,4-Dimethylphenol	105-67-9	µg/L	NA	NA	NA	NA	< 1.8	NA	< 1.7	< 3.0	NA	NA	< 2.0	NA	< 1.8	< 1.8
2,4-Dinitrophenol	51-28-5	µg/L	NA	NA	NA	NA	< 0.8	NA	< 19	< 32	NA	NA	< 7.1	NA	< 0.82	< 0.79
2,4-Dinitrotoluene	121-14-2	µg/L	NA	NA	NA	NA	< 0.24	NA	< 0.48	< 0.84	NA	NA	< 0.35	NA	< 0.24	< 0.24
2,6-Dinitrotoluene	606-20-2	µg/L	NA	NA	NA	NA	< 0.35	NA	< 0.52	< 0.90	NA	NA	< 0.28	NA	< 0.36	< 0.35
2-Chloronaphthalene	91-58-7	µg/L	NA	NA	NA	NA	< 0.45	NA	< 0.33	< 0.58	NA	NA	< 0.37	NA	< 0.46	< 0.45
2-Chlorophenol	95-57-8	µg/L	NA	NA	NA	NA	< 1.2	NA	< 1.1	< 1.9	NA	NA	< 1.4	NA	< 1.2	< 1.2
2-Methylnaphthalene	91-57-6	µg/L	NA	NA	NA	NA	< 0.72	NA	< 0.43	< 0.75	NA	NA	< 0.32	NA	< 0.73	< 0.71
2-Methylphenol	95-48-7	µg/L	NA	NA	NA	NA	< 1.2	NA	< 1.2	< 2.0	NA	NA	< 1.4	NA	< 1.2	< 1.2
2-Nitroaniline	88-74-4	µg/L	NA	NA	NA	NA	< 0.26	NA	< 1.2	< 2.2	NA	NA	< 0.34	NA	< 0.26	< 0.25
2-Nitrophenol	88-75-5	µg/L	NA	NA	NA	NA	< 1.3	NA	< 1.7	< 2.9	NA	NA	< 2.0	NA	< 1.4	< 1.3
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	< 1.1	NA	< 1	< 1.8	NA	NA	< 1.2	NA	< 1.2	< 1.1
3,3'-Dichlorobenzidine	91-94-1	µg/L	NA	NA	NA	NA	< 0.32	NA	< 0.4	< 0.71	NA	NA	< 0.61	NA	< 0.33	< 0.32
3-Nitroaniline	99-09-2	µg/L	NA	NA	NA	NA	< 0.31	NA	< 1.4	< 2.5	NA	NA	< 0.28	NA	< 0.32	< 0.31
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	NA	NA	NA	NA	< 0.56	NA	< 1.1	< 1.9	NA	NA	< 1.4	NA	< 0.57	< 0.55
4-Bromophenyl phenyl ether	101-55-3	µg/L	NA	NA	NA	NA	< 0.38	NA	< 0.4	< 0.70	NA	NA	< 0.27	NA	< 0.39	< 0.38
4-Chloro-3-Methylphenol	59-50-7	µg/L	NA	NA	NA	NA	< 1.1	NA	< 2	< 3.6	NA	NA	< 1.4	NA	< 1.2	< 1.1
Semi-Volatile Organic Compounds																

Location ID Sample ID Sample Date	CAS	Units	RW-8 RW-8 (204-214) (6/25/2010) 6/25/2010	RW-8 RW-8 (163-173) (6/28/2010) 6/28/2010	RW-8 RW-8 (204-214) (6/28/2010) 6/28/2010	RW-8 RW-8 (163-173) (053111) 5/31/2011	RW-8 RW-8 (163-173) (060111) 6/1/2011	RW-8 RW-8 (204-214) (060111) 6/1/2011	RW-8 RW-8(163-173) 5/3/2012	RW-8 RW-8 (163-173) (111513) 11/15/2013	RW-8 RW-8 (204-214) (111513) 11/15/2013	RW-8 RW-8 (204-214) (111413) 11/14/2013	RW-8 RW-8(163-173)(092214) 9/22/2014	RW-8 RW-8(204-214)(092314) 9/23/2014	RW-9 RW-9(20-40) (7/15/2009) 7/15/2009	RW-9 RW-9 (80-100) (7/15/2009) 7/15/2009
4-Chloroaniline	106-47-8	µg/L	NA	NA	NA	NA	< 0.28	NA	< 0.59	< 1.0	NA	NA	< 0.33	NA	< 0.28	< 0.27
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	NA	NA	NA	NA	< 0.38	NA	< 0.35	< 0.61	NA	NA	< 0.41	NA	< 0.39	< 0.38
4-Nitroaniline	100-01-6	µg/L	NA	NA	NA	NA	< 0.19	NA	< 1.9	< 3.2	NA	NA	< 0.33	NA	< 0.2	< 0.19
4-Nitrophenol	100-02-7	µg/L	NA	NA	NA	NA	< 0.9	NA	< 5.8	< 10	NA	NA	< 0.99	NA	< 0.92	< 0.89
Acenaphthene	83-32-9	µg/L	NA	NA	NA	NA	< 0.015	NA	< 0.015	< 0.040	NA	NA	< 0.022	NA	< 0.032	< 0.03
Acenaphthylene	208-96-8	µg/L	NA	NA	NA	NA	< 0.018	NA	< 0.018	< 0.046	NA	NA	< 0.026	NA	< 0.044	< 0.041
Acetophenone	98-86-2	µg/L	NA	NA	NA	NA	< 0.43	NA	< 0.32	< 0.56	NA	NA	< 0.40	NA	< 0.44	< 0.43
Anthracene	120-12-7	µg/L	NA	NA	NA	NA	< 0.011	NA	< 0.011	< 0.040	NA	NA	< 0.022	NA	< 0.028	< 0.027
Atrazine	1912-24-9	µg/L	NA	NA	NA	NA	< 0.43	NA	< 0.55	< 0.96	NA	NA	< 0.46	NA	< 0.43	< 0.42
Benzaldehyde	100-52-7	µg/L	NA	NA	NA	NA	< 0.44	NA	< 3.7	< 6.4	NA	NA	< 0.73	NA	< 0.45	< 0.43
Benzo(a)anthracene	56-55-3	µg/L	NA	NA	NA	NA	< 0.016	NA	< 0.017	< 0.023	NA	NA	< 0.013	NA	< 0.026	< 0.025
Benzo(a)pyrene	50-32-8	µg/L	NA	NA	NA	NA	< 0.0053	NA	< 0.0055	< 0.024	NA	NA	< 0.013	NA	< 0.034	< 0.032
Benzo(b)fluoranthene	205-99-2	µg/L	NA	NA	NA	NA	< 0.018	NA	< 0.018	< 0.020	NA	NA	< 0.011	NA	< 0.04	< 0.037
Benzo(g,h,i)perylene	191-24-2	µg/L	NA	NA	NA	NA	< 0.011	NA	< 0.012	< 0.031	NA	NA	< 0.017	NA	< 0.032	< 0.03
Benzo(k)fluoranthene	207-08-9	µg/L	NA	NA	NA	NA	< 0.014	NA	< 0.014	< 0.029	NA	NA	< 0.016	NA	< 0.031	< 0.029
Benzyl butyl phthalate	85-68-7	µg/L	NA	NA	NA	NA	< 0.27	NA	< 0.32	< 0.57	NA	NA	< 0.24	NA	< 0.28	< 0.27
bis(2-Chloroethoxy)methane	111-91-1	µg/L	NA	NA	NA	NA	< 0.27	NA	< 0.34	< 0.60	NA	NA	< 0.46	NA	< 0.28	< 0.27
bis(2-Chloroethyl)ether	111-44-4	µg/L	NA	NA	NA	NA	< 0.34	NA	< 0.35	< 0.60	NA	NA	< 0.47	NA	< 0.34	< 0.33
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	< 0.42	NA	< 0.51	< 0.89	NA	NA	< 0.44	NA	< 0.43	< 0.42
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	NA	NA	NA	NA	< 0.36	NA	< 0.66	< 1.1	NA	NA	< 0.60	NA	< 0.36	< 0.35
Caprolactam	105-60-2	µg/L	NA	NA	NA	NA	< 0.21	NA	< 0.77	< 1.4	NA	NA	< 0.44	NA	< 0.22	< 0.21
Carbazole	86-74-8	µg/L	NA	NA	NA	NA	< 0.18	NA	< 0.4	< 0.71	NA	NA	< 0.18	NA	< 0.18	< 0.18
Chrysene	218-01-9	µg/L	NA	NA	NA	NA	< 0.025	NA	< 0.026	< 0.023	NA	NA	< 0.013	NA	< 0.024	< 0.023
Dibenzo(a,h)anthracene	53-70-3	µg/L	NA	NA	NA	NA	< 0.024	NA	< 0.025	< 0.033	NA	NA	< 0.018	NA	< 0.025	< 0.023
Dibenzofuran	132-64-9	µg/L	NA	NA	NA	NA	< 0.33	NA	< 0.3	< 0.52	NA	NA	< 0.25	NA	< 0.34	< 0.33
Diethyl phthalate	84-66-2	µg/L	NA	NA	NA	NA	< 0.18	NA	< 0.37	< 0.64	NA	NA	< 0.25	NA	< 0.18	< 0.18
Dimethyl phthalate	131-11-3	µg/L	NA	NA	NA	NA	< 0.24	NA	< 0.32	< 0.55	NA	NA	< 0.28	NA	< 0.25	< 0.24
di-n-butyl phthalate	84-74-2	µg/L	NA	NA	NA	NA	< 0.21	NA	< 0.62	< 1.1	NA	NA	< 2.2 B	NA	< 0.21	< 0.21
di-n-octylphthalate	117-84-0	µg/L	NA	NA	NA	NA	< 0.43	NA	< 0.35	< 0.60	NA	NA	< 0.27	NA	< 0.44	< 0.42
Fluoranthene	206-44-0	µg/L	NA	NA	NA	NA	< 0.01	NA	< 0.011	< 0.026	NA	NA	< 0.014	NA	< 0.027	< 0.025
Fluorene	86-73-7	µg/L	NA	NA	NA	NA	< 0.016	NA	< 0.017	< 0.033	NA	NA	< 0.018	NA	< 0.03	< 0.028
Hexachlorobenzene	118-74-1	µg/L	NA	NA	NA	NA	< 0.0087	NA	< 0.009	< 0.033	NA	NA	< 0.018	NA	< 0.011	< 0.01
Hexachlorobutadiene	87-68-3	µg/L	NA	NA	NA	NA	< 0.14	NA	< 0.58	< 1.0	NA	NA	< 0.42	NA	< 0.41	< 0.4
Hexachlorocyclopentadiene	77-47-4	µg/L	NA	NA	NA	NA	< 0.27	NA	< 8	< 14	NA	NA	< 0.52	NA	< 0.75	< 0.72
Hexachloroethane	67-72-1	µg/L	NA	NA	NA	NA	< 0.23	NA	< 0.62	< 1.1	NA	NA	< 0.31	NA	< 0.29	< 0.28
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NA	NA	NA	NA	< 0.012	NA	< 0.012	< 0.028	NA	NA	< 0.016	NA	< 0.032	< 0.03
Isophorone	78-59-1	µg/L	NA	NA	NA	NA	< 0.27	NA	< 0.31	< 0.54	NA	NA	< 0.37	NA	< 0.28	< 0.27
Naphthalene	91-20-3	µg/L	NA	NA	NA	NA	< 0.018	NA	< 0.018	< 0.070	NA	NA	< 0.039	NA	< 0.021	< 0.019
Nitrobenzene	98-95-3	µg/L	NA	NA	NA	NA	< 0.28	NA	< 0.47	< 0.82	NA	NA	< 0.56	NA	< 0.28	< 0.27
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	NA	NA	NA	NA	< 0.48	NA	< 0.34	< 0.59	NA	NA	< 0.41	NA	< 0.49	< 0.47
N-Nitrosodiphenylamine	86-30-6	µg/L	NA	NA	NA	NA	< 0.23	NA	< 0.34	< 0.60	NA	NA	< 0.22	NA	< 0.24	< 0.23
Pentachlorophenol	87-86-5	µg/L	NA	NA	NA	NA	< 0.31	NA	< 0.11 J	< 0.20	NA	NA	< 0.11	NA	< 0.25	< 0.23
Phenanthrene	85-01-8	µg/L	NA	NA	NA	NA	< 0.017	NA	< 0.018	< 0.041	NA	NA	< 0.023	NA	< 0.04	< 0.038
Phenol	108-95-2	µg/L	NA	NA	NA	NA	< 0.63	NA	< 1.4	< 2.5	NA	NA	< 0.59	NA	< 0.64	< 0.62
Pyrene	129-00-0	µg/L	NA	NA	NA	NA	< 0.0088	NA	< 0.0091	< 0.029	NA	NA	< 0.016	NA	< 0.025	< 0.023
Metals - Total																
Aluminum, total	7429-90-5	µg/L	< 7.8	NA	NA	79.6 B	NA	< 7.2	63.8 B	91.0 B	NA	83.1 J	< 11	< 200 B	< 26	< 26
Antimony, total	7440-36-0	µg/L	< 2.2	NA	NA	< 1.3	NA	< 1.3	< 1.4	< 6.0 B	NA	< 1.8	< 2.6	< 6.0 B	< 4	< 4
Arsenic, total	7440-38-2	µg/L	5.9	NA	NA	2.1 B	NA	5.1	2 J	2.4 B	NA	1.5 B	4.2	3.6	< 2.4	< 2.4
Barium, total	7440-39-3	µg/L	65.9 B	NA	NA	15.7 B	NA	54.5 B	17.4 B	20.2 B	NA	16.0 B	12.7 B	34.6 B	< 200	< 200
Beryllium, total	7440-41-7	µg/L	< 0.24	NA	NA	< 0.24	NA	< 0.13	< 0.44	< 0.17	NA	< 0.17	< 0.40	< 0.40	< 0.4	< 0.4
Cadmium, total	7440-43-9	µg/L	< 0.35	NA	NA	< 0.17	NA	< 0.17	< 3	0.40 B	NA	< 0.24	< 0.70	< 0.70	< 0.4	< 0.4
Calcium, total	7440-70-2	µg/L	91600	NA	NA	38800	NA	90700	39500	42100	NA	20900	38700	57300	26600	33000
Chromium, total	7440-47-3	µg/L	< 10	NA	NA	< 0.9	NA	< 0.9	< 0.91	< 0.92	NA	7.5 B	< 0.89	< 10 B	< 0.9	< 0.9
Cobalt, total	7440-48-4	µg/L	< 0.65	NA	NA	< 0.3	NA	< 0.3	< 0.59	< 0.48	NA	< 0.48	< 0.83	< 0.83	< 0.4	< 0.4
Copper, total	7440-50-8	µg/L	< 2.5	NA	NA	< 0.85	NA	< 0.85	< 10	< 1.0	NA	8.1 B	< 1.2	< 10 B	5 BJ	< 1.6
Iron, total	7439-89-6	µg/L	2220	NA	NA	103	NA	2950	97.5 B	71.5 B	NA	275	41.9 B	627	< 143	317 J
Lead, total	7439-92-1	µg/L	< 1.9	NA	NA	< 0.94	NA	< 0.94	< 1.7	< 3.0 B	NA	< 2.4	< 1.3	2.3 B	< 3	< 1.7
Magnesium, total	7439-95-4	µg/L	19900	NA	NA	6320 J	NA	22900	6200	6410	NA	13300	6710	20100	4080 B	4460 B
Manganese, total	7439-96-5	µg/L	424	NA	NA	36.8	NA	442	30.4	41.8	NA	29.7	19	257	15.3	10.4 BJ
Mercury, total	7439-97-6	µg/L	< 0.082	NA	NA	< 0.088	NA	< 0.088	< 0.075	< 0.089	NA	< 0.089	< 0.20 B	< 0.20 B	< 0.049	< 0.049
Nickel, total	7440-02-0	µg/L	4.4 J	NA	NA	0.6 B	NA	4.1 B	< 0.94	8.8 B	NA	25.2	16	58.9	< 10	< 0.6
Potassium, total	7440-09-7	µg/L	3770 B	NA	NA	3410 B	NA	3810 B	3450 B	3580 B	NA	107000	2640 B	28400	1390 B	1470 B
Selenium, total	7782-49-2	µg/L	3.5 B	NA	NA	< 1.5	NA	< 1.5	< 2.4	< 2.4	NA	< 2.4	< 3.6	< 3.6	< 3.7	< 3.7
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	62400	95700	NA	NA
Silver, total	7440-22-4	µg/L	< 0.53	NA	NA	< 0.72	NA	< 0.72	< 0.85	< 1.5	NA	< 1.5	1.3 B	< 1.2	1.1 BJ	< 1
Sodium, total	7440-23-5	µg/L	21700	NA	NA	48200	NA	58800	59900	74000	NA	70900	57800	88400	1990 B	1750 B
Thallium, total	7440-28-0	µg/L	< 1.8	NA	NA	< 0.17	NA	< 0.17	< 1.7	< 1.3	NA	< 1.3	< 1.8	< 1.8	< 1.5	< 1.5
Vanadium, total	7440-62-2	µg/L	< 0.56	NA	NA	< 0.43	NA	< 0.43	< 0.77	< 0.72	NA	< 0.72	< 0.87	< 50 B	< 0.9	< 0.9
Zinc, total	7440-66-6	µg/L	21.8	NA	NA	4.9 B	NA	< 1.7	< 2.8	10.8 B	NA	21.7	< 7.6	28.5	1100	701
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-9 RW-9(134-154) (7/16/2009) 7/16/2009	RW-9 RW-9 (201-221) 7/16/2009	RW-9 RW-9 (20-40) 11/2/2009	RW-9 RW-9 (206-216) (6/23/2010) 6/23/2010	RW-9 RW-9 (206-216) (6/25/2010) 6/25/2010	RW-9 RW-9 (206-216) 6/28/2010	RW-9 RW-9 (206-216) (052611) 5/26/2011	RW-9 RW-9 (206-216) (052711) 5/27/2011	RW-9 RW-9 (206-216) (042012) 4/20/2012	RW-9 RW-9 (139-149) (112013) 11/20/2013	RW-9 RW-9 (206-216) (112013) 11/20/2013	RW-9 RW-9(206-216)(092514) 9/25/2014	RW-9A RW-9A (85-95) 6/23/2010	RW-9A RW-9A (85-95) (060111) 6/1/2011
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.26	NA	NA	< 0.24	NA	< 0.24	< 0.25 J	< 0.25 J	< 0.32	< 0.26	< 0.24
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.24	NA	NA	< 0.2	NA	< 0.2	< 0.20 J	< 0.20 J	< 0.39	< 0.24	< 0.2
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.23	NA	NA	< 0.23	NA	< 0.23	< 0.21 J	< 0.21 J	< 0.28	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.29 [< 0.29]	< 0.29	< 0.29	< 0.29	NA	NA	< 0.19	NA	< 0.19	< 0.26 J	< 0.26 J	< 0.35	< 0.29	< 0.19
1,1-Dichloroethene	75-35-4	µg/L	< 0.4 [< 0.4]	< 0.4	< 0.4	< 0.4	NA	NA	< 0.28	NA	< 0.28	< 0.34 J	< 0.34 J	< 0.50	< 0.4	< 0.28
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56 [< 0.56]	< 0.56	< 0.56	< 0.56	NA	NA	< 0.15	NA	< 0.15	< 0.22 J	< 0.22 J	< 0.22	< 0.56	< 0.15
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1.1	NA	NA	< 1.3	NA	< 1.3*	< 1.3 J	< 1.3 J	< 1.2	< 1.1	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 0.39 [< 0.39]	< 0.39	< 0.39	< 0.39	NA	NA	< 0.21	NA	< 0.21*	< 0.16 J	< 0.16 J	< 0.23	< 0.39	< 0.21
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.26	NA	NA	< 0.18	NA	< 0.18	< 0.20 J	< 0.20 J	< 0.16	< 0.26	< 0.18
1,2-Dichloroethane	107-06-2	µg/L	< 0.33 [< 0.33]	< 0.33	< 0.33	< 0.33	NA	NA	< 0.18	NA	< 0.18	< 0.22 J	< 0.22 J	< 0.30	< 0.33	< 0.18
1,2-Dichloropropane	78-87-5	µg/L	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.27	NA	NA	< 0.22	NA	< 0.22	< 0.28 J	< 0.28 J	< 0.43	< 0.27	< 0.22
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.25	NA	NA	< 0.29	NA	< 0.29	< 0.31 J	< 0.31 J	< 0.26	< 0.25	< 0.29
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.28	NA	NA	< 0.26	NA	< 0.26	< 0.30 J	< 0.30 J	< 0.24	< 0.28	< 0.26
2-Butanone (MEK)	78-93-3	µg/L	< 1.6 [< 1.6]	< 1.6	< 1.6	< 1.6	NA	NA	< 2.9	NA	< 2.9	< 3.2 J	< 3.2 J	< 2.5	< 1.6	< 2.9
2-Hexanone	591-78-6	µg/L	< 1.4 [< 1.4]	< 1.4	< 1.4	< 1.4	NA	NA	< 3	NA	< 3	< 1.7 J	< 1.7 J	< 1.7	< 1.4	< 3
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86 [< 0.86]	< 0.86	< 0.86	< 0.86	NA	NA	< 1.2	NA	< 1.2	< 1.5 J	< 1.5 J	< 1.1	< 0.86	< 1.2
Acetone	67-64-1	µg/L	< 2.9 [< 2.9]	< 2.9	< 2.9	< 2.9	NA	NA	8 J	NA	< 7.6	5.9 J	< 3.3 J	< 2.6	< 2.9	< 7.6
Benzene	71-43-2	µg/L	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.23	NA	NA	< 0.22	NA	< 0.22	< 0.28 J	< 0.28 J	< 0.21	0.33 J	< 0.22
Bromodichloromethane	75-27-4	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	NA	NA	< 0.23	NA	< 0.23	< 0.21 J	< 0.21 J	< 0.28	< 0.22	< 0.23
Bromoform	75-25-2	µg/L	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.23	NA	NA	< 0.24	NA	< 0.24	< 0.30 J	< 0.30 J	< 0.31	< 0.23	< 0.24
Bromomethane	74-83-9	µg/L	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.3	NA	NA	< 0.31	NA	< 0.31	< 0.56 J	< 0.56 J	< 0.39	< 0.3	< 0.31
Carbon disulfide	75-15-0	µg/L	< 0.74 [< 0.74]	< 0.74	< 0.74	2.2	NA	NA	< 0.18	NA	1.1 J	< 0.18 J	< 0.18 J	< 0.50	4.7	1.4 J
Carbon tetrachloride	56-23-5	µg/L	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.26	NA	NA	< 0.19	NA	< 0.19	< 0.23 J	< 0.23 J	< 0.24	< 0.26	< 0.19
Chlorobenzene	108-90-7	µg/L	< 0.39 [< 0.39]	< 0.39	< 0.39	< 0.39	NA	NA	< 0.22	NA	< 0.22	< 0.35 J	< 0.35 J	< 0.27	< 0.39	< 0.22
Chloroethane	75-00-3	µg/L	< 0.37 [< 0.37]	< 0.37	< 0.37	< 0.37	NA	NA	< 0.37	NA	< 0.37	< 0.39 J	< 0.39 J	< 0.56	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.23	NA	NA	< 0.21	NA	< 0.21	< 0.25 J	< 0.25 J	< 0.20	< 0.23	< 0.21
Chloromethane	74-87-3	µg/L	< 0.29 [< 0.29]	< 0.29	< 0.29	< 0.29	NA	NA	< 0.22	NA	< 0.22	< 0.36 J	< 0.36 J	< 0.33	< 0.29	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	NA	NA	< 0.22	NA	< 0.22	< 0.24 J	< 0.24 J	< 0.33	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.25	NA	NA	< 0.22	NA	< 0.22	< 0.15 J	< 0.15 J	< 0.28	< 0.25	< 0.22
Cyclohexane	110-82-7	µg/L	< 1.9 [< 1.9]	< 1.9	< 1.9	< 1.9	NA	NA	< 0.29	NA	< 0.29	< 0.18 J	< 0.18 J	< 0.37	< 1.9	< 0.29
Dibromochloromethane	124-48-1	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	NA	NA	< 0.2	NA	< 0.2	< 0.19 J	< 0.19 J	< 0.25	< 0.22	< 0.2
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92 [< 0.92]	< 0.92	< 0.92	< 0.92	NA	NA	< 0.31	NA	< 0.31	< 0.63 J	< 0.63 J	< 0.73	< 0.92	< 0.31
Ethylbenzene	100-41-4	µg/L	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.27	NA	NA	< 0.21	NA	< 0.21	< 0.21 J	< 0.21 J	< 0.40	< 0.27	< 0.21
Freon 113	76-13-1	µg/L	< 0.38 [< 0.38]	< 0.38	< 0.38	< 0.38	NA	NA	< 0.49	NA	< 0.49	< 0.77 J	< 0.77 J	< 0.45	< 0.38	< 0.49
Isopropylbenzene	98-82-8	µg/L	< 0.57 [< 0.57]	< 0.57	< 0.57	< 0.57	NA	NA	< 0.19	NA	< 0.19	< 0.22 J	< 0.22 J	< 0.26	< 0.57	< 0.19
Methyl acetate	79-20-9	µg/L	< 1.5 [< 1.5]	< 1.5	< 1.5	< 1.5	NA	NA	< 2.9	NA	< 2.9	< 1.5 J	< 1.5 J	< 3.1	< 1.5	< 2.9
Methyl tert butyl ether	1634-04-4	µg/L	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.23	NA	NA	< 0.18	NA	< 0.18	< 0.29 J	< 0.29 J	< 0.26	< 0.23	< 0.18
Methylcyclohexane	108-87-2	µg/L	< 0.35 [< 0.35]	< 0.35	< 0.35	< 0.35	NA	NA	< 0.18	NA	< 0.18	< 0.15 J	< 0.15 J	< 0.22	< 0.35	< 0.18
Methylene chloride	75-09-2	µg/L	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.3	NA	NA	< 0.2	NA	< 0.2	< 0.86 J	< 0.86 J	< 0.81	< 0.3	< 0.2
o-Xylene	95-47-6	µg/L	< 0.25 [< 0.25]	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	< 0.30 J	< 0.30 J	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.58 [< 0.58]	< 0.58	< 0.58	< 0.58	NA	NA	< 0.23	NA	< 0.23	NA	NA	< 0.26	< 0.58	< 0.23
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25 J	< 0.25 J	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.27	NA	NA	< 0.32	NA	< 0.32	< 0.44 J	< 0.44 J	< 0.35	< 0.27	< 0.32
Toluene	108-88-3	µg/L	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.3	NA	NA	< 0.15	NA	0.22 J	< 0.38 J	< 0.38 J	0.35 J	0.33 J	< 0.15
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.25	NA	NA	< 0.31	NA	< 0.31	< 0.21 J	< 0.21 J	< 0.51	< 0.25	< 0.31
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.21	NA	NA	< 0.19	NA	< 0.19	< 0.50 J	< 0.50 J	< 0.32	< 0.21	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.24	NA	NA	< 0.21	NA	< 0.21	< 0.33 J	< 0.33 J	< 0.25	< 0.24	< 0.21
Trichlorofluoromethane	75-69-4	µg/L	< 0.54 [< 0.54]	< 0.54	< 0.54	< 0.54	NA	NA	< 0.35	NA	< 0.35	< 0.41 J	< 0.41 J	< 0.28	< 0.54	< 0.35
Vinyl Chloride	75-01-4	µg/L	< 0.44 [< 0.44]	< 0.44	< 0.44	< 0.44	NA	NA	< 0.27	NA	< 0.27	NA	NA	< 0.17	< 0.44	< 0.27
Xylene, -m,p	179601-23-1	µg/L	< 0.25 [< 0.25]	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.25	NA	NA	< 0.17	NA	< 0.17	< 0.19 J	< 0.19 J	< 0.20	< 0.25	< 0.17
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.47 [< 0.46]	< 0.53	< 0.43	NA	< 0.42	NA	NA	< 0.49	NA	NA	NA	NA	NA	NA
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.5 [< 1.5]	< 1.7	< 1.4	NA	< 1.3	NA	NA	< 1.5	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4 [< 1.3]	< 1.5	< 1.3	NA	< 1.2	NA	NA	< 1.4	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	120-83-2	µg/L	< 1.4 [< 1.3]	< 1.5	< 1.3	NA	< 1.2	NA	NA	< 1.4	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	105-67-9	µg/L	< 1.8 [< 1.8]	< 2.1	< 1.7	NA	< 1.7	NA	NA	< 1.9	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	51-28-5	µg/L	< 0.82 [< 0.81]	< 0.92	< 0.76	NA	< 0.74 J	NA	NA	< 0.86	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.24 [< 0.24]	< 0.28	< 0.23	NA	< 0.22	NA	NA	< 0.26	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.36 [< 0.36]	< 0.41	< 0.34	NA	< 0.33	NA	NA	< 0.38	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	91-58-7	µg/L	< 0.46 [< 0.46]	< 0.52	< 0.43	NA	< 0.42	NA	NA	< 0.48	NA	NA	NA	NA	NA	NA
2-Chlorophenol	95-57-8	µg/L	< 1.2 [< 1.2]	< 1.3	< 1.1	NA	< 1.1	NA	NA	< 1.2	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	91-57-6	µg/L	< 0.73 [< 0.72]	< 0.82	< 0.68	NA	< 0.66	NA	NA	< 0.77	NA	NA	NA	NA	NA	NA
2-Methylphenol	95-48-7	µg/L	< 1.2 [< 1.2]	< 1.4	< 1.2	NA	< 1.1	NA	NA	< 1.3	NA	NA	NA	NA	NA	NA
2-Nitroaniline	88-74-4	µg/L	< 0.26 [< 0.26]	< 0.29	< 0.24	NA	< 0.24	NA	NA	< 0.27	NA	NA	NA	NA	NA	NA
2-Nitrophenol	88-75-5	µg/L	< 1.4 [< 1.4]	< 1.6	< 1.3	NA	< 1.2	NA	NA	< 1.4	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	12-03-3	µg/L	< 1.2 [< 1.1]	< 1.3	< 1.1	NA	< 1	NA	NA	< 1.2	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.33 [< 0.32]	< 0.37	< 0.3	NA	< 0.3	NA	NA	< 0.34	NA	NA	NA	NA	NA	NA
3-Nitroaniline	99-09-2	µg/L	< 0.32 [< 0.32]	< 0.36	< 0.3	NA	< 0.29	NA	NA	< 0.33	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.57 [< 0.56]	< 0.64	< 0.53	NA	< 0.51	NA	NA	< 0.6	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.39 [< 0.38]	< 0.44	< 0.36	NA	< 0.35	NA	NA	< 0.41	NA	NA	NA	NA	NA	NA
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.2 [< 1.2]	< 1.3	< 1.1	NA	< 1.1	NA	NA	< 1.2	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds																

Location ID Sample ID Sample Date	CAS	Units	RW-9 RW-9(134-154) (7/16/2009) 7/16/2009	RW-9 RW-9 (201-221) 7/16/2009	RW-9 RW-9 (20-40) 11/2/2009	RW-9 RW-9 (206-216) (6/23/2010) 6/23/2010	RW-9 RW-9 (206-216) (6/25/2010) 6/25/2010	RW-9 RW-9 (206-216) 6/28/2010	RW-9 RW-9 (206-216) (052611) 5/26/2011	RW-9 RW-9 (206-216) (052711) 5/27/2011	RW-9 RW-9 (206-216) (042012) 4/20/2012	RW-9 RW-9 (139-149) (112013) 11/20/2013	RW-9 RW-9 (206-216) (112013) 11/20/2013	RW-9 RW-9(206-216)(092514) 9/25/2014	RW-9A RW-9A (85-95) 6/23/2010	RW-9A RW-9A (85-95) (060111) 6/1/2011
4-Chloroaniline	106-47-8	µg/L	< 0.28 [< 0.28]	< 0.32	< 0.26	NA	< 0.25	NA	NA	< 0.29	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.39 [< 0.39]	< 0.44	< 0.36	NA	< 0.35	NA	NA	< 0.41	NA	NA	NA	NA	NA	NA
4-Nitroaniline	100-01-6	µg/L	< 0.2 [< 0.2]	< 0.22	< 0.18	NA	< 0.18	NA	NA	< 0.21	NA	NA	NA	NA	NA	NA
4-Nitrophenol	100-02-7	µg/L	< 0.92 [< 0.91]	< 1	< 0.85	NA	< 0.83	NA	NA	< 0.96	NA	NA	NA	NA	NA	NA
Acenaphthene	83-32-9	µg/L	< 0.032 [< 0.032]	< 0.036	< 0.03	NA	< 0.029	NA	NA	< 0.016	NA	NA	NA	NA	NA	NA
Acenaphthylene	208-96-8	µg/L	< 0.044 [< 0.043]	< 0.049	< 0.041	NA	< 0.039	NA	NA	< 0.019	NA	NA	NA	NA	NA	NA
Acetophenone	98-86-2	µg/L	< 0.44 [< 0.44]	< 0.5	< 0.41	NA	< 0.4	NA	NA	< 0.46	NA	NA	NA	NA	NA	NA
Anthracene	120-12-7	µg/L	< 0.028 [< 0.028]	< 0.032	< 0.026	NA	< 0.026	NA	NA	< 0.012	NA	NA	NA	NA	NA	NA
Atrazine	1912-24-9	µg/L	< 0.43 [< 0.43]	< 0.49	< 0.4	NA	< 0.39	NA	NA	< 0.45	NA	NA	NA	NA	NA	NA
Benzaldehyde	100-52-7	µg/L	< 0.45 [< 0.44]	< 0.51	< 0.42	NA	< 0.4	NA	NA	< 0.47	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	56-55-3	µg/L	< 0.026 [< 0.026]	< 0.03	< 0.024	NA	< 0.024	NA	NA	< 0.018	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	50-32-8	µg/L	< 0.034 [< 0.034]	< 0.039	< 0.032	NA	< 0.031	NA	NA	< 0.0057	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.04 [< 0.039]	< 0.045	< 0.037	NA	< 0.036	NA	NA	< 0.019	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.032 [< 0.032]	< 0.036	< 0.03	NA	< 0.029	NA	NA	< 0.012	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.031 [< 0.031]	< 0.035	< 0.029	NA	< 0.028	NA	NA	< 0.015	NA	NA	NA	NA	NA	NA
Benzyl butyl phthalate	85-68-7	µg/L	< 0.28 [< 0.28]	< 0.31	< 0.26	NA	< 0.25	NA	NA	< 0.29	NA	NA	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.28 [< 0.27]	< 0.31	< 0.26	NA	< 0.25	NA	NA	< 0.29	NA	NA	NA	NA	NA	NA
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.34 [< 0.34]	< 0.39	< 0.32	NA	< 0.31	NA	NA	< 0.36	NA	NA	NA	NA	NA	NA
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.43 [< 0.43]	< 0.49	< 0.4	NA	< 0.39	NA	NA	< 0.45	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	2.5 [2.7]	2.9	< 0.34	NA	< 0.33	NA	NA	< 0.38	NA	NA	NA	NA	NA	NA
Caprolactam	105-60-2	µg/L	< 0.22 [< 0.21]	< 0.24	< 0.2	NA	< 0.2	NA	NA	< 0.23	NA	NA	NA	NA	NA	NA
Carbazole	86-74-8	µg/L	< 0.18 [< 0.18]	< 0.21	< 0.17	NA	< 0.17	NA	NA	< 0.19	NA	NA	NA	NA	NA	NA
Chrysene	218-01-9	µg/L	< 0.024 [< 0.024]	< 0.028	< 0.023	NA	< 0.022	NA	NA	< 0.027	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.025 [< 0.025]	< 0.028	< 0.023	NA	< 0.023	NA	NA	< 0.026	NA	NA	NA	NA	NA	NA
Dibenzofuran	132-64-9	µg/L	< 0.34 [< 0.33]	< 0.38	< 0.31	NA	< 0.3	NA	NA	< 0.35	NA	NA	NA	NA	NA	NA
Diethyl phthalate	84-66-2	µg/L	< 0.18 [< 0.18]	< 0.21	< 0.17	NA	< 0.17	NA	NA	< 0.19	NA	NA	NA	NA	NA	NA
Dimethyl phthalate	131-11-3	µg/L	< 0.25 [< 0.25]	< 0.28	< 0.23	NA	< 0.23	NA	NA	< 0.26	NA	NA	NA	NA	NA	NA
di-n-butyl phthalate	84-74-2	µg/L	< 0.21 [< 0.21]	< 0.24	< 0.2	NA	< 0.19	NA	NA	< 0.22	NA	NA	NA	NA	NA	NA
di-n-octylphthalate	117-84-0	µg/L	< 0.44 [< 0.43]	< 0.49	< 0.41	NA	< 0.4	NA	NA	< 0.46	NA	NA	NA	NA	NA	NA
Fluoranthene	206-44-0	µg/L	< 0.027 [< 0.027]	< 0.03	< 0.025	NA	< 0.024	NA	NA	< 0.011	NA	NA	NA	NA	NA	NA
Fluorene	86-73-7	µg/L	< 0.03 [< 0.03]	< 0.034	< 0.028	NA	< 0.027	NA	NA	< 0.017	NA	NA	NA	NA	NA	NA
Hexachlorobenzene	118-74-1	µg/L	< 0.011 [< 0.011]	< 0.012	< 0.01	NA	< 0.0099	NA	NA	< 0.0093	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	87-68-3	µg/L	< 0.41 [< 0.41]	< 0.47	< 0.38	NA	< 0.13	NA	NA	< 0.15	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.75 [< 0.74]	< 0.84	< 0.69	NA	< 0.24	NA	NA	< 0.28	NA	NA	NA	NA	NA	NA
Hexachloroethane	67-72-1	µg/L	< 0.29 [< 0.29]	< 0.33	< 0.27	NA	< 0.21	NA	NA	< 0.24	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.032 [< 0.032]	< 0.037	< 0.03	NA	< 0.029	NA	NA	< 0.012	NA	NA	NA	NA	NA	NA
Isophorone	78-59-1	µg/L	< 0.28 [< 0.27]	< 0.31	< 0.26	NA	< 0.25	NA	NA	< 0.29	NA	NA	NA	NA	NA	NA
Naphthalene	91-20-3	µg/L	< 0.021 [< 0.02]	< 0.023	< 0.019	NA	< 0.019	NA	NA	< 0.019	NA	NA	NA	NA	NA	NA
Nitrobenzene	98-95-3	µg/L	< 0.28 [< 0.28]	< 0.32	< 0.26	NA	< 0.25	NA	NA	< 0.29	NA	NA	NA	NA	NA	NA
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.49 [< 0.48]	< 0.55	< 0.45	NA	< 0.44	NA	NA	< 0.51	NA	NA	NA	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.24 [< 0.24]	< 0.27	< 0.22	NA	< 0.22	NA	NA	< 0.25	NA	NA	NA	NA	NA	NA
Pentachlorophenol	87-86-5	µg/L	< 0.25 [< 0.25]	< 0.28	< 0.23	NA	< 0.068	NA	NA	< 0.33	NA	NA	NA	NA	NA	NA
Phenanthrene	85-01-8	µg/L	< 0.04 [< 0.04]	< 0.045	< 0.037	NA	< 0.036	NA	NA	< 0.018	NA	NA	NA	NA	NA	NA
Phenol	108-95-2	µg/L	< 0.64 [< 0.63]	< 0.72	< 0.59	NA	< 0.58	NA	NA	< 0.67	NA	NA	NA	NA	NA	NA
Pyrene	129-00-0	µg/L	< 0.025 [< 0.024]	< 0.028	< 0.023	NA	< 0.022	NA	NA	< 0.0094	NA	NA	NA	NA	NA	NA
Metals - Total																
Aluminum, total	7429-90-5	µg/L	110 BJ [94.6 BJ]	< 200	< 26	NA	NA	< 7.8	NA	85.4 J	84.8 B	NA	103 J	119 B	NA	NA
Antimony, total	7440-36-0	µg/L	< 4 [< 4]	< 4	< 2.9	NA	NA	< 2.2	NA	< 1.3	< 1.4	NA	< 1.8	< 2.6	NA	NA
Arsenic, total	7440-38-2	µg/L	< 2.4 [< 2.4]	< 2.4	< 2.4	NA	NA	4.6 J	NA	3.3	< 3	NA	2.2 B	7.3	NA	NA
Barium, total	7440-39-3	µg/L	7.7 B [7.4 B]	5.6 B	3.3 B	NA	NA	63.3 B	NA	26.8 B	63 B	NA	49.5 B	50.0 B	NA	NA
Beryllium, total	7440-41-7	µg/L	< 0.4 [< 0.4]	< 0.4	< 0.4	NA	NA	< 0.24	NA	< 0.24	< 0.44	NA	< 0.17	< 0.40	NA	NA
Cadmium, total	7440-43-9	µg/L	< 0.4 [< 0.4]	< 0.4	< 0.4	NA	NA	< 0.35	NA	< 0.17	< 0.24	NA	< 3.0 B	< 0.70	NA	NA
Calcium, total	7440-70-2	µg/L	51200 [49500]	51200	24000	NA	NA	81300	NA	29700	74500	NA	91200	75400	NA	NA
Chromium, total	7440-47-3	µg/L	< 10 [< 10 J]	< 0.9	1.3 B	NA	NA	< 0.59	NA	< 0.9	4.3 J	NA	< 0.92	< 0.89	NA	NA
Cobalt, total	7440-48-4	µg/L	< 50 [< 50]	< 0.4	< 1.6	NA	NA	< 0.65	NA	< 0.3	< 0.59	NA	< 0.48	< 0.83	NA	NA
Copper, total	7440-50-8	µg/L	< 1.6 [< 1.6]	< 1.6	< 1.6	NA	NA	< 2.5	NA	< 0.85	< 1.3	NA	< 1.0	< 10 B	NA	NA
Iron, total	7439-89-6	µg/L	1330 [1240]	888	365	NA	NA	2380	NA	106	535	NA	1370	622	NA	NA
Lead, total	7439-92-1	µg/L	6.4 J [6.4]	< 1.7	< 1.7	NA	NA	< 1.9	NA	< 0.94	< 1.7	NA	3	< 1.3	NA	NA
Magnesium, total	7439-95-4	µg/L	9990 [9650]	10800	3230 B	NA	NA	12100	NA	10400	21400	NA	25100	21500	NA	NA
Manganese, total	7439-96-5	µg/L	202 [188]	170	13.1 B	NA	NA	357	NA	10 B	183	NA	392	262 J	NA	NA
Mercury, total	7439-97-6	µg/L	< 0.049 J [0.086 BJ]	< 0.049 J	< 0.082	NA	NA	< 0.082	NA	< 0.088	< 0.075	NA	< 0.20 B	< 0.064	NA	NA
Nickel, total	7440-02-0	µg/L	< 10 [< 10]	< 10	< 0.6	NA	NA	1.6 J	NA	< 10	< 10	NA	2.4 B	1.7 J	NA	NA
Potassium, total	7440-09-7	µg/L	3060 B [2930 B]	2490 B	1360 J	NA	NA	3630 B	NA	17800	28200	NA	11800	18300	NA	NA
Selenium, total	7782-49-2	µg/L	< 3.7 [< 3.7]	< 3.7	< 3.7	NA	NA	< 1.9	NA	< 1.5	< 2.4	NA	< 2.4	< 3.6	NA	NA
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	141000	NA	NA
Silver, total	7440-22-4	µg/L	1 B [1 B]	1 B	< 1	NA	NA	0.8 B	NA	< 0.72	< 0.85	NA	< 1.5	< 1.2	NA	NA
Sodium, total	7440-23-5	µg/L	3120 B [3010 B]	3790 B	1510 B	NA	NA	56400	NA	63500	116000	NA	126000	139000	NA	NA
Thallium, total	7440-28-0	µg/L	< 1.5 [< 1.5]	< 1.5	< 1.5	NA	NA	< 1.8	NA	< 0.17	< 1.7	NA	< 2.6	< 3.7	NA	NA
Vanadium, total	7440-62-2	µg/L	< 50 [< 50]	< 0.9	< 0.9	NA	NA	< 0.56	NA	< 0.43	< 0.77	NA	< 50 B	< 0.87	NA	NA
Zinc, total	7440-66-6	µg/L	1220 [1180]	195	893	NA	NA	6.2 J	NA	< 20	3.7 J	NA	< 4.4	< 7.6	NA	NA
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-9A RW-9A (85-95) (042012) 4/20/2012	RW-9A RW-9A (85-95) (112013) 11/20/2013	RW-9A RW-9A(85-95)(092314) 9/23/2014	RW-9A RW-9A(85-95)(092414) 9/24/2014	RW-10 RW-10 (22-42) (7/8/2009) 7/8/2009	RW-10 RW-10 (115-135) (7/9/2009) 7/9/2009	RW-10 RW-10 (180-200) (7/9/2009) 7/9/2009	RW-10 RW-10 (46-66) (7/9/2009) 7/9/2009	RW-10 RW-10 (70-90) (7/9/2009) 7/9/2009	RW-10 RW-10 (22-42) 10/29/2009	RW-10 RW-10 (70-90) 10/29/2009	RW-10 RW-10 (185-195) (6/9/2010) 6/9/2010	RW-10 RW-10 (120-130) (6/23/2010) 6/23/2010
Volatile Organic Compounds															
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.25 J	< 0.32	NA	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.2	< 0.20 J	< 0.39	NA	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.21 J	< 0.28	NA	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.19	< 0.26 J	< 0.35	NA	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
1,1-Dichloroethene	75-35-4	µg/L	< 0.28	< 0.34 J	< 0.50	NA	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.15	< 0.22 J	< 0.22	NA	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3*	< 1.3 J	< 1.2	NA	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.21*	< 0.16 J	< 0.23	NA	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.20 J	< 0.16	NA	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.18	< 0.22 J	< 0.30	NA	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.22	< 0.28 J	< 0.43	NA	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.29	< 0.31 J	< 0.26	NA	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.26	< 0.30 J	< 0.24	NA	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 2.9	< 3.2 J	< 2.5	NA	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
2-Hexanone	591-78-6	µg/L	< 3	< 1.7 J	< 1.7	NA	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	1.7 J
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.2	< 1.5 J	< 1.1	NA	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86
Acetone	67-64-1	µg/L	< 7.6	< 3.3 J	< 2.6	NA	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	8.7 J	83.7
Benzene	71-43-2	µg/L	0.23 J	< 0.28 J	< 0.21	NA	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Bromodichloromethane	75-27-4	µg/L	< 0.23	< 0.21 J	< 0.28	NA	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Bromoform	75-25-2	µg/L	< 0.24	< 0.30 J	< 0.31	NA	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Bromomethane	74-83-9	µg/L	< 0.31	< 0.56 J	< 0.39	NA	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Carbon disulfide	75-15-0	µg/L	1.6 J	0.79 J	< 0.50	NA	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.19	< 0.23 J	< 0.24	NA	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.22	< 0.35 J	< 0.27	NA	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39
Chloroethane	75-00-3	µg/L	< 0.37	< 0.39 J	< 0.56	NA	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.21	< 0.25 J	< 0.20	NA	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Chloromethane	74-87-3	µg/L	< 0.22	< 0.36 J	< 0.33	NA	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.24 J	< 0.33	NA	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.22	< 0.15 J	< 0.28	NA	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Cyclohexane	110-82-7	µg/L	< 0.29	< 0.18 J	< 0.37	NA	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.2	< 0.19 J	< 0.25	NA	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.31	< 0.63 J	< 0.73	NA	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92
Ethylbenzene	100-41-4	µg/L	< 0.21	< 0.21 J	< 0.40	NA	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
Freon 113	76-13-1	µg/L	< 0.49	< 0.77 J	< 0.45	NA	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38
Isopropylbenzene	98-82-8	µg/L	< 0.19	< 0.22 J	< 0.26	NA	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57	< 0.57
Methyl acetate	79-20-9	µg/L	< 2.9	< 1.5 J	< 3.1	NA	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.18	< 0.29 J	< 0.26	NA	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
Methylcyclohexane	108-87-2	µg/L	< 0.18	< 0.15 J	< 0.22	NA	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.2	< 0.86 J	< 0.81	NA	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
o-Xylene	95-47-6	µg/L	NA	< 0.30 J	NA	NA	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	NA	NA
Styrene	100-42-5	µg/L	< 0.23	NA	< 0.26	NA	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	< 0.25 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.32	< 0.44 J	< 0.35	NA	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
Toluene	108-88-3	µg/L	< 0.15	< 0.38 J	< 0.22	NA	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.31	< 0.21 J	< 0.51	NA	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.50 J	< 0.32	NA	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.21	< 0.33 J	< 0.25	NA	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.35	< 0.41 J	< 0.28	NA	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54
Vinyl Chloride	75-01-4	µg/L	< 0.27	NA	< 0.17	NA	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	NA	NA
Xylenes	1330-20-7	µg/L	< 0.17	< 0.19 J	< 0.20	NA	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Semi-Volatile Organic Compounds															
1,1'-Biphenyl	92-52-4	µg/L	< 0.35	NA	NA	< 0.34	< 0.45	< 0.5	< 0.47	< 0.45	< 0.47	< 0.47	< 0.48	< 0.49	NA
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.8	NA	NA	< 2.1	< 1.4	< 1.6	< 1.5	< 1.4	< 1.5	< 1.5	< 1.5	< 1.5	NA
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.5	NA	NA	< 1.9	< 1.3	< 1.4	< 1.4	< 1.3	< 1.4	< 1.4	< 1.4	< 1.4	NA
2,4-Dichlorophenol	120-83-2	µg/L	< 1.3	NA	NA	< 2.0	< 1.3	< 1.4	< 1.4	< 1.3	< 1.4	< 1.4	< 1.4	< 1.4	NA
2,4-Dimethylphenol	105-67-9	µg/L	< 1.8	NA	NA	< 2.3	< 1.8	< 1.9	< 1.8	< 1.8	< 1.8	< 1.9	< 1.9	< 1.9	NA
2,4-Dinitrophenol	51-28-5	µg/L	< 19	NA	NA	< 8.0	< 0.79	< 0.87	< 0.82	< 0.79	< 0.82	< 0.83	< 0.85	< 0.86	NA
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.5	NA	NA	< 0.40	< 0.24	< 0.26	< 0.24	< 0.24	< 0.24	< 0.25	< 0.25	< 0.26	NA
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.54	NA	NA	< 0.31	< 0.35	< 0.38	< 0.36	< 0.35	< 0.36	< 0.37	< 0.37	< 0.38	NA
2-Chloronaphthalene	91-58-7	µg/L	< 0.35	NA	NA	< 0.42	< 0.45	< 0.49	< 0.46	< 0.45	< 0.46	< 0.47	< 0.48	< 0.49	NA
2-Chlorophenol	95-57-8	µg/L	< 1.1	NA	NA	< 1.5	< 1.2	< 1.3	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.3	NA
2-Methylnaphthalene	91-57-6	µg/L	< 0.45	NA	NA	< 0.36	< 0.71	< 0.77	< 0.73	< 0.71	< 0.73	< 0.74	< 0.76	< 0.77	NA
2-Methylphenol	95-48-7	µg/L	< 1.2	NA	NA	< 1.6	< 1.2	< 1.3	< 1.2	< 1.2	< 1.2	< 1.3	< 1.3	< 1.3	NA
2-Nitroaniline	88-74-4	µg/L	< 1.3	NA	NA	< 0.39	< 0.25	< 0.28	< 0.26	< 0.25	< 0.26	< 0.26	< 0.27	< 0.27	NA
2-Nitrophenol	88-75-5	µg/L	< 1.7	NA	NA	< 2.3	< 1.3	< 1.5	< 1.4	< 1.3	< 1.4	< 1.4	< 1.4	< 1.5	NA
3&4-Methylphenol	12-03-3	µg/L	< 1.1	NA	NA	< 1.3	< 1.1	< 1.2	< 1.2	< 1.1	< 1.2	< 1.2	< 1.2	< 1.2	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.42	NA	NA	< 0.69	< 0.32	< 0.35	< 0.33	< 0.32	< 0.33	< 0.33	< 0.34	< 0.35	NA
3-Nitroaniline	99-09-2	µg/L	< 1.5	NA	NA	< 0.32	< 0.31	< 0.34	< 0.32	< 0.31	< 0.32	< 0.32	< 0.33	< 0.34	NA
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.1	NA	NA	< 1.6	< 0.55	< 0.6	< 0.57	< 0.55	< 0.57	< 0.58	< 0.59	< 0.6	NA
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.42	NA	NA	< 0.31	< 0.38	< 0.41	< 0.39	< 0.38	< 0.39	< 0.39	< 0.4	< 0.41	NA
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 2.1	NA	NA	< 1.6	< 1.1	< 1.2	< 1.2	< 1.1	< 1.2	< 1.2	< 1.2	< 1.2	NA
Semi-Volatile Organic Compounds															

Location ID Sample ID Sample Date	CAS	Units	RW-9A RW-9A (85-95) (042012) 4/20/2012	RW-9A RW-9A (85-95) (112013) 11/20/2013	RW-9A RW-9A(85-95)(092314) 9/23/2014	RW-9A RW-9A(85-95)(092414) 9/24/2014	RW-10 RW-10 (22-42) (7/8/2009) 7/8/2009	RW-10 RW-10 (115-135) (7/9/2009) 7/9/2009	RW-10 RW-10 (180-200) (7/9/2009) 7/9/2009	RW-10 RW-10 (46-66) (7/9/2009) 7/9/2009	RW-10 RW-10 (70-90) (7/9/2009) 7/9/2009	RW-10 RW-10 (22-42) 10/29/2009	RW-10 RW-10 (70-90) 10/29/2009	RW-10 RW-10 (185-195) (6/9/2010) 6/9/2010	RW-10 RW-10 (120-130) (6/23/2010) 6/23/2010
4-Chloroaniline	106-47-8	µg/L	< 0.61	NA	NA	< 0.37	< 0.27	< 0.3	< 0.28	< 0.27	< 0.28	< 0.28	< 0.29	< 0.3	NA
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.36	NA	NA	< 0.47	< 0.38	< 0.42	< 0.39	< 0.38	< 0.39	< 0.4	< 0.41	< 0.41	NA
4-Nitroaniline	100-01-6	µg/L	< 1.9	NA	NA	< 0.37	< 0.19	< 0.21	< 0.2	< 0.19	< 0.2	< 0.2	< 0.2	< 0.21	NA
4-Nitrophenol	100-02-7	µg/L	< 6	NA	NA	< 1.1	< 0.89	< 0.97	< 0.92	< 0.89	< 0.92	< 0.93	< 0.95	< 0.97	NA
Acenaphthene	83-32-9	µg/L	< 0.016	NA	NA	< 0.025	< 0.017	< 0.019	< 0.018	< 0.018	< 0.018	< 0.033	< 0.033	< 0.034	NA
Acenaphthylene	208-96-8	µg/L	< 0.019	NA	NA	< 0.029	< 0.0075	< 0.0082	< 0.0078	< 0.0078	< 0.0078	< 0.044	< 0.045	< 0.046	NA
Acetophenone	98-86-2	µg/L	< 0.33	NA	NA	< 0.45	< 0.43	< 0.47	< 0.44	< 0.43	< 0.44	< 0.45	< 0.46	< 0.47	NA
Anthracene	120-12-7	µg/L	< 0.012	NA	NA	< 0.025	< 0.023	< 0.025	< 0.023	< 0.023	< 0.023	< 0.029	< 0.029	< 0.03	NA
Atrazine	1912-24-9	µg/L	< 0.57	NA	NA	< 0.52	< 0.42	< 0.46	< 0.43	< 0.42	< 0.43	< 0.44	< 0.45	< 0.46	NA
Benzaldehyde	100-52-7	µg/L	< 3.8	NA	NA	< 0.83	< 0.43	< 0.48	< 0.45	< 0.43	< 0.45	< 0.45	< 0.46	< 0.47	NA
Benzo(a)anthracene	56-55-3	µg/L	< 0.018	NA	NA	< 0.014	< 0.036	< 0.04	< 0.037	< 0.037	< 0.037	< 0.027	< 0.027	< 0.028	NA
Benzo(a)pyrene	50-32-8	µg/L	< 0.0057	NA	NA	< 0.015	< 0.038	< 0.042	< 0.039	< 0.039	< 0.039	< 0.035	< 0.035	< 0.036	NA
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.019	NA	NA	< 0.012	< 0.018	< 0.02	< 0.019	< 0.019	< 0.019	< 0.04	< 0.041	< 0.042 J	NA
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.012	NA	NA	< 0.019	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.032	< 0.033	< 0.034	NA
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.015	NA	NA	< 0.018	< 0.02	< 0.022	< 0.021	< 0.021	< 0.021	< 0.032	< 0.032	< 0.033 J	NA
Benzyl butyl phthalate	85-68-7	µg/L	< 0.34	NA	NA	< 0.27	< 0.27	< 0.3	< 0.28	< 0.27	< 0.28	< 0.28	< 0.29	< 0.29	NA
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.36	NA	NA	< 0.52	< 0.27	< 0.29	< 0.28	< 0.27	< 0.28	< 0.28	< 0.29	< 0.29	NA
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.36	NA	NA	< 0.54	< 0.33	< 0.36	< 0.34	< 0.33	< 0.34	< 0.35	< 0.36	< 0.36	NA
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.53	NA	NA	< 0.50	< 0.42	< 0.46	< 0.43	< 0.42	< 0.43	< 0.44	< 0.45	< 0.46	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.68	NA	NA	< 0.68	< 0.35	< 0.38	< 0.36	< 0.35	< 0.36	< 0.37	< 0.38	< 0.38	NA
Caprolactam	105-60-2	µg/L	< 0.8	NA	NA	< 0.50	< 0.21	< 0.23	< 0.22	< 0.21	< 0.22	< 0.22	< 0.22	< 0.23	NA
Carbazole	86-74-8	µg/L	< 0.42	NA	NA	< 0.21	< 0.18	< 0.19	< 0.18	< 0.18	< 0.18	< 0.19	< 0.19	< 0.19	NA
Chrysene	218-01-9	µg/L	< 0.027	NA	NA	< 0.015	< 0.019	< 0.021	< 0.02	< 0.02	< 0.02	< 0.025	< 0.025	< 0.026	NA
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.026	NA	NA	< 0.020	< 0.022	< 0.024	< 0.022	< 0.022	< 0.022	< 0.025	< 0.026	< 0.026 J	NA
Dibenzofuran	132-64-9	µg/L	< 0.31	NA	NA	< 0.28	< 0.33	< 0.36	< 0.34	< 0.33	< 0.34	< 0.34	< 0.35	< 0.36	NA
Diethyl phthalate	84-66-2	µg/L	< 0.38	NA	NA	< 0.29	< 0.18	< 0.19	< 0.18	< 0.18	< 0.18	< 0.19	< 0.19	< 0.19	NA
Dimethyl phthalate	131-11-3	µg/L	< 0.33	NA	NA	< 0.32	< 0.24	< 0.26	< 0.25	< 0.24	< 0.25	< 0.25	< 0.26	< 0.26	NA
di-n-butyl phthalate	84-74-2	µg/L	< 0.65	NA	NA	< 0.72	< 0.21	< 0.22	< 0.21	< 0.21	< 0.21	< 0.21	< 0.22	< 0.22	NA
di-n-octylphthalate	117-84-0	µg/L	< 0.36	NA	NA	< 0.31	< 0.42	< 0.46	< 0.44	< 0.42	< 0.44	< 0.44	< 0.45	< 0.46	NA
Fluoranthene	206-44-0	µg/L	< 0.011	NA	NA	< 0.016	< 0.01	< 0.011	< 0.011	< 0.011	< 0.011	< 0.027	< 0.028	< 0.028	NA
Fluorene	86-73-7	µg/L	< 0.017	NA	NA	< 0.021	< 0.021	< 0.023	< 0.022	< 0.022	< 0.022	< 0.03	< 0.031	< 0.031	NA
Hexachlorobenzene	118-74-1	µg/L	< 0.0093	NA	NA	< 0.020	< 0.011	< 0.012	< 0.011	< 0.011	< 0.011	< 0.011	< 0.011	< 0.012	NA
Hexachlorobutadiene	87-68-3	µg/L	< 0.6	NA	NA	< 0.48	< 0.4	< 0.44	< 0.41	< 0.4	< 0.41	< 0.42	< 0.43	< 0.15	NA
Hexachlorocyclopentadiene	77-47-4	µg/L	< 8.3	NA	NA	< 0.60	< 0.72	< 0.79	< 0.75	< 0.72	< 0.75	< 0.76	< 0.77	< 0.29	NA
Hexachloroethane	67-72-1	µg/L	< 0.64	NA	NA	< 0.35	< 0.28	< 0.31	< 0.29	< 0.28	< 0.29	< 0.3	< 0.3	< 0.24	NA
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.012	NA	NA	< 0.018	< 0.015	< 0.017	< 0.016	< 0.016	< 0.016	< 0.033	< 0.034	< 0.034	NA
Isophorone	78-59-1	µg/L	< 0.32	NA	NA	< 0.42	< 0.27	< 0.29	< 0.28	< 0.27	< 0.28	< 0.28	< 0.29	< 0.29	NA
Naphthalene	91-20-3	µg/L	< 0.019	NA	NA	< 0.044	< 0.015	< 0.016	< 0.015	< 0.015	< 0.015	< 0.021	< 0.021	< 0.022	NA
Nitrobenzene	98-95-3	µg/L	< 0.49	NA	NA	< 0.64	< 0.27	< 0.3	< 0.28	< 0.27	< 0.28	< 0.28	< 0.29	< 0.3	NA
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.35	NA	NA	< 0.47	< 0.47	< 0.52	< 0.49	< 0.47	< 0.49	< 0.49	< 0.5	< 0.51	NA
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.35	NA	NA	< 0.25	< 0.23	< 0.25	< 0.24	< 0.23	< 0.24	< 0.24	< 0.25	< 0.25	NA
Pentachlorophenol	87-86-5	µg/L	< 0.12 J	NA	NA	< 0.12	< 0.24	< 0.26	< 0.25	< 0.25	< 0.25	< 0.25	< 0.26	< 0.08 J	NA
Phenanthrene	85-01-8	µg/L	< 0.018	NA	NA	0.185	< 0.018	< 0.02	< 0.019	< 0.019	< 0.019	< 0.041	< 0.041	0.304	NA
Phenol	108-95-2	µg/L	< 1.5	NA	NA	< 0.68	< 0.62	< 0.68	< 0.64	< 0.62	< 0.64	54.1	103	< 0.67	NA
Pyrene	129-00-0	µg/L	< 0.0094	NA	NA	< 0.019	< 0.013	< 0.014	< 0.013	< 0.013	< 0.013	< 0.025	< 0.025	< 0.026	NA
Metals - Total															
Aluminum, total	7429-90-5	µg/L	323	384	< 200 B	NA	104 B	< 254	< 226	< 200	< 200	65.6 BJ	63.2 BJ	231	NA
Antimony, total	7440-36-0	µg/L	< 1.4	< 1.8	< 2.6	NA	< 4	< 4	< 4	< 4	< 4	< 2.9	< 2.9	< 2.2	NA
Arsenic, total	7440-38-2	µg/L	2.8 J	3.4	5.3	NA	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 2.4	< 1.4	NA
Barium, total	7440-39-3	µg/L	26.9 B	21.0 J	14.9 B	NA	7.7 B	8 BJ	8.8 BJ	7.4 BJ	7.2 BJ	8.6 J	8 J	36.5 B	NA
Beryllium, total	7440-41-7	µg/L	< 0.44	< 0.17	< 0.40	NA	< 0.4	< 1	< 1	< 1	< 1	< 0.4	< 0.4	< 0.24	NA
Cadmium, total	7440-43-9	µg/L	< 3	< 3.0 B	< 0.70	NA	0.9 B	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.35	NA
Calcium, total	7440-70-2	µg/L	37800	25100	24700	NA	21100	20800	56900	20400	20600	20600	36200	131000 J	NA
Chromium, total	7440-47-3	µg/L	< 0.91	2.7 B	< 0.89	NA	< 0.9	< 10	< 10	< 0.9	< 0.9	< 0.9	0.9 B	50.7	NA
Cobalt, total	7440-48-4	µg/L	< 0.59	< 50 B	< 0.83	NA	< 0.4	< 50	< 50	< 50	< 50	< 1.6	< 1.6	< 0.65	NA
Copper, total	7440-50-8	µg/L	< 1.3	10.7 J	< 10 B	NA	< 10	< 10	< 1.6	< 1.6	< 1.6	4.3 B	< 1.6	7.3 B	NA
Iron, total	7439-89-6	µg/L	670	682	328	NA	269 J	1540	1410	1090	1620	614	824	72 B	NA
Lead, total	7439-92-1	µg/L	< 1.7	< 2.4	< 1.3	NA	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7	2.2 B	< 1.7	< 1.9	NA
Magnesium, total	7439-95-4	µg/L	7680	5580	5590	NA	7940	8180	13100	7860	7880	7390	12600	610 B	NA
Manganese, total	7439-96-5	µg/L	99.6	55.7	50.5	NA	11.8 B	21.4 J	309	12.7 BJ	16.9 J	15	14.4 B	< 0.46	NA
Mercury, total	7439-97-6	µg/L	< 0.075	< 0.20 B	< 0.20 B	NA	< 0.049	< 0.049	< 0.049	< 0.049	< 0.049	< 0.082	< 0.082	< 0.082	NA
Nickel, total	7440-02-0	µg/L	6.4 J	17.4	4.5 B	NA	< 10	< 10	< 10	< 10	< 10	0.9 B	5.9 B	1.1 B	NA
Potassium, total	7440-09-7	µg/L	3050 B	8580 B	2580 B	NA	1230 B	1290 B	3250 B	1300 B	1210 B	1730 BJ	1710 BJ	27300	NA
Selenium, total	7782-49-2	µg/L	< 2.4	< 2.4	< 3.6	NA	< 3.7	< 3.7	< 3.7	5.5 BJ	< 3.7	< 3.7	< 3.7	4.3 B	NA
Silicon, total	7440-21-3	µg/L	NA	NA	7440 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 0.85	< 1.5	< 1.2	NA	< 1	< 10	< 10	< 1	< 10	< 1	< 1	0.6 B	NA
Sodium, total	7440-23-5	µg/L	32900	11300	7540 B	NA	4770 B	4620 B	5930 B	4530 B	4510 B	4450 J	5460 J	45000	NA
Thallium, total	7440-28-0	µg/L	< 1.7	< 1.3	< 1.8	NA	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.8	NA
Vanadium, total	7440-62-2	µg/L	< 0.77	< 50 B	< 0.87	NA	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	10.2 B	NA
Zinc, total	7440-66-6	µg/L	4.1 J	26.6	< 7.6	NA	1020	3300	1270	7170	5610	1590	1210	< 20 J	NA
Other															
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-10 RW-10 (185-195) (6/23/2010) 6/23/2010	RW-10 RW-10 (120-130) (6/24/2010) 6/24/2010	RW-10 RW-10 (185-195) (6/24/2010) 6/24/2010	RW-10 RW-10 (120-130) (6/25/2010) 6/25/2010	RW-10 RW-10 (185-195) (6/25/2010) 6/25/2010	RW-10 RW-10 (185-195) (6/28/2010) 6/28/2010	RW-10 RW-10 (120-130) (053111) 5/31/2011	RW-10 RW-10 (185-195) (053111) 5/31/2011	RW-10 RW-10 (120-130) (060111) 6/1/2011	RW-10 RW-10(185-195) (041812) 4/18/2012	RW-10 RW-10 (120-130) (041912) 4/19/2012	RW-10 RW-10(120-130) 5/4/2012	RW-10 RW-10(185-195) 5/4/2012	RW-10 RW-10 (185-195) (111313) 11/13/2013
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	NA	NA	NA	NA	NA	< 0.24	< 0.24	NA	< 0.24	< 0.24	NA	NA	< 0.25
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	NA	NA	NA	NA	NA	< 0.2	< 0.2	NA	< 0.2	< 0.2	NA	NA	< 0.20
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	NA	NA	NA	NA	NA	< 0.23	< 0.23	NA	< 0.23	< 0.23	NA	NA	< 0.21
1,1-Dichloroethane	75-34-3	µg/L	< 0.29	NA	NA	NA	NA	NA	< 0.19	< 0.19	NA	< 0.19	< 0.19	NA	NA	< 0.26
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	NA	NA	NA	NA	NA	< 0.28	< 0.28	NA	< 0.28	< 0.28	NA	NA	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	NA	NA	NA	NA	NA	< 0.15	< 0.15	NA	< 0.15	< 0.15	NA	NA	< 0.22
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	NA	NA	NA	NA	NA	< 1.3	< 1.3	NA	< 1.3*	< 1.3*	NA	NA	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	NA	NA	NA	NA	NA	< 0.21	< 0.21	NA	< 0.21*	< 0.21*	NA	NA	< 0.16
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	NA	NA	NA	NA	NA	< 0.18	< 0.18	NA	< 0.18	< 0.18	NA	NA	< 0.20
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	NA	NA	NA	NA	NA	< 0.18	< 0.18	NA	< 0.18	< 0.18	NA	NA	< 0.22
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	NA	NA	NA	NA	NA	< 0.22	< 0.22	NA	< 0.22	< 0.22	NA	NA	< 0.28
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	NA	NA	NA	NA	NA	< 0.29	< 0.29	NA	< 0.29	< 0.29	NA	NA	< 0.31
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	NA	NA	NA	NA	NA	< 0.26	< 0.26	NA	< 0.26	< 0.26	NA	NA	< 0.30
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	NA	NA	NA	NA	NA	6 J	< 2.9	NA	< 2.9	5.2 J	NA	NA	3.4 J
2-Hexanone	591-78-6	µg/L	< 1.4	NA	NA	NA	NA	NA	< 3	< 3	NA	< 3	< 3	NA	NA	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	NA	NA	NA	NA	NA	< 1.2	< 1.2	NA	< 1.2	< 1.2	NA	NA	< 1.5
Acetone	67-64-1	µg/L	46.3	NA	NA	NA	NA	NA	84.3	23.1	NA	26.1	93.3	NA	NA	44.5
Benzene	71-43-2	µg/L	< 0.23	NA	NA	NA	NA	NA	< 0.22	< 0.22	NA	< 0.22	< 0.22	NA	NA	< 0.28
Bromodichloromethane	75-27-4	µg/L	< 0.22	NA	NA	NA	NA	NA	< 0.23	< 0.23	NA	< 0.23	< 0.23	NA	NA	< 0.21
Bromoform	75-25-2	µg/L	< 0.23	NA	NA	NA	NA	NA	< 0.24	< 0.24	NA	< 0.24	< 0.24	NA	NA	< 0.30
Bromomethane	74-83-9	µg/L	< 0.3	NA	NA	NA	NA	NA	< 0.31	< 0.31	NA	< 0.31	< 0.31	NA	NA	< 0.56
Carbon disulfide	75-15-0	µg/L	< 0.74	NA	NA	NA	NA	NA	2.8	0.27 J	NA	0.67 J	1.5 J	NA	NA	3.6
Carbon tetrachloride	56-23-5	µg/L	< 0.26	NA	NA	NA	NA	NA	< 0.19	< 0.19	NA	< 0.19	< 0.19	NA	NA	< 0.23
Chlorobenzene	108-90-7	µg/L	< 0.39	NA	NA	NA	NA	NA	< 0.22	< 0.22	NA	< 0.22	< 0.22	NA	NA	< 0.35
Chloroethane	75-00-3	µg/L	< 0.37	NA	NA	NA	NA	NA	< 0.37	< 0.37	NA	< 0.37	< 0.37	NA	NA	< 0.39
Chloroform	67-66-3	µg/L	< 0.23	NA	NA	NA	NA	NA	< 0.21	< 0.21	NA	< 0.21	< 0.21	NA	NA	< 0.25
Chloromethane	74-87-3	µg/L	< 0.29	NA	NA	NA	NA	NA	< 0.22	< 0.22	NA	< 0.22	< 0.22	NA	NA	< 0.36
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	NA	NA	NA	NA	NA	< 0.22	< 0.22	NA	< 0.22	< 0.22	NA	NA	< 0.24
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	NA	NA	NA	NA	NA	< 0.22	< 0.22	NA	< 0.22	< 0.22	NA	NA	< 0.15
Cyclohexane	110-82-7	µg/L	< 1.9	NA	NA	NA	NA	NA	< 0.29	< 0.29	NA	< 0.29	< 0.29	NA	NA	< 0.18
Dibromochloromethane	124-48-1	µg/L	< 0.22	NA	NA	NA	NA	NA	< 0.2	< 0.2	NA	< 0.2	< 0.2	NA	NA	< 0.19
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	NA	NA	NA	NA	NA	< 0.31	< 0.31	NA	< 0.31	< 0.31	NA	NA	< 0.63
Ethylbenzene	100-41-4	µg/L	< 0.27	NA	NA	NA	NA	NA	< 0.21	< 0.21	NA	< 0.21	< 0.21	NA	NA	< 0.21
Freon 113	76-13-1	µg/L	< 0.38	NA	NA	NA	NA	NA	< 0.49	< 0.49	NA	< 0.49	< 0.49	NA	NA	< 0.77
Isopropylbenzene	98-82-8	µg/L	< 0.57	NA	NA	NA	NA	NA	< 0.19	< 0.19	NA	< 0.19	< 0.19	NA	NA	< 0.22
Methyl acetate	79-20-9	µg/L	< 1.5	NA	NA	NA	NA	NA	< 2.9	< 2.9	NA	< 2.9	< 2.9	NA	NA	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.23	NA	NA	NA	NA	NA	< 0.18	< 0.18	NA	< 0.18	< 0.18	NA	NA	< 0.29
Methylcyclohexane	108-87-2	µg/L	< 0.35	NA	NA	NA	NA	NA	< 0.18	< 0.18	NA	< 0.18	< 0.18	NA	NA	< 0.15
Methylene chloride	75-09-2	µg/L	< 0.3	NA	NA	NA	NA	NA	< 0.2	< 0.2	NA	< 0.2	< 0.2	NA	NA	< 0.86
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.30
Styrene	100-42-5	µg/L	< 0.58	NA	NA	NA	NA	NA	< 0.23	< 0.23	NA	< 0.23	< 0.23	NA	NA	NA
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25
Tetrachloroethene	127-18-4	µg/L	< 0.27	NA	NA	NA	NA	NA	< 0.32	< 0.32	NA	< 0.32	< 0.32	NA	NA	< 0.44
Toluene	108-88-3	µg/L	< 0.3	NA	NA	NA	NA	NA	0.25 J	< 0.15	NA	< 0.15	< 0.15	NA	NA	< 0.38
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	NA	NA	NA	NA	NA	< 0.31	< 0.31	NA	< 0.31	< 0.31	NA	NA	< 0.21
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	NA	NA	NA	NA	NA	< 0.19	< 0.19	NA	< 0.19	< 0.19	NA	NA	< 0.50
Trichloroethene	79-01-6	µg/L	< 0.24	NA	NA	NA	NA	NA	< 0.21	< 0.21	NA	< 0.21	< 0.21	NA	NA	< 0.33 J
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	NA	NA	NA	NA	NA	< 0.35	< 0.35	NA	< 0.35	< 0.35	NA	NA	< 0.41
Vinyl Chloride	75-01-4	µg/L	< 0.44	NA	NA	NA	NA	NA	< 0.27	< 0.27	NA	< 0.27	< 0.27	NA	NA	NA
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.25	NA	NA	NA	NA	NA	< 0.17	< 0.17	NA	< 0.17	< 0.17	NA	NA	< 0.19
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	NA	< 0.48	< 0.46	NA	NA	NA	NA	< 0.46	< 0.58	< 0.37 J	< 0.41	NA	NA	< 0.34
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	NA	< 1.5	< 1.4	NA	NA	NA	NA	< 1.4	< 1.8	< 1.9 J	< 2.1	NA	NA	< 1.7
2,4,6-Trichlorophenol	88-06-2	µg/L	NA	< 1.4	< 1.3	NA	NA	NA	NA	< 1.3	< 1.7	< 1.6 J	< 1.7	NA	NA	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	NA	< 1.4	< 1.3	NA	NA	NA	NA	< 1.3	< 1.7	< 1.4 J	< 1.6	NA	NA	< 1.3
2,4-Dimethylphenol	105-67-9	µg/L	NA	< 1.9	< 1.8	NA	NA	NA	NA	< 1.8	< 2.3	< 1.9 J	< 2.1	NA	NA	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	NA	< 0.85	< 0.8	NA	NA	NA	NA	< 0.8	< 1	< 20 J	< 22	NA	NA	< 18
2,4-Dinitrotoluene	121-14-2	µg/L	NA	< 0.25	< 0.24	NA	NA	NA	NA	< 0.24	< 0.3	< 0.52 J	< 0.58	NA	NA	< 0.47
2,6-Dinitrotoluene	606-20-2	µg/L	NA	< 0.37	< 0.35	NA	NA	NA	NA	< 0.35	< 0.45	< 0.56 J	< 0.62	NA	NA	< 0.51
2-Chloronaphthalene	91-58-7	µg/L	NA	< 0.48	< 0.45	NA	NA	NA	NA	< 0.45	< 0.57	< 0.36 J	< 0.4	NA	NA	< 0.33
2-Chlorophenol	95-57-8	µg/L	NA	< 1.2	< 1.2	NA	NA	NA	NA	< 1.2	< 1.5	< 1.2 J	< 1.3	NA	NA	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	NA	< 0.76	< 0.72	NA	NA	NA	NA	< 0.72	< 0.9	< 0.47 J	< 0.52	NA	NA	< 0.43
2-Methylphenol	95-48-7	µg/L	NA	< 1.3	< 1.2	NA	NA	NA	NA	< 1.2	< 1.5	< 1.3	< 1.4	NA	NA	< 1.2
2-Nitroaniline	88-74-4	µg/L	NA	< 0.27	< 0.26	NA	NA	NA	NA	< 0.26	< 0.32	< 1.4	< 1.5	NA	NA	< 1.2
2-Nitrophenol	88-75-5	µg/L	NA	< 1.4	< 1.3	NA	NA	NA	NA	< 1.3	< 1.7	< 1.8 J	< 2	NA	NA	< 1.7
3&4-Methylphenol	12-03-3	µg/L	NA	< 1.2	< 1.1	NA	NA	NA	NA	< 1.1	< 1.4	< 1.1	< 1.2	NA	NA	< 1.0
3,3'-Dichlorobenzidine	91-94-1	µg/L	NA	< 0.34	< 0.32	NA	NA	NA	NA	< 0.32	< 0.4	< 0.44	< 0.49	NA	NA	< 0.40
3-Nitroaniline	99-09-2	µg/L	NA	< 0.33	< 0.31	NA	NA	NA	NA	< 0.31	< 0.39	< 1.5	< 1.7	NA	NA	< 1.4
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	NA	< 0.59	< 0.56	NA	NA	NA	NA	< 0.56	< 0.7	< 1.2 J	< 1.3	NA	NA	< 1.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	NA	< 0.4	< 0.38	NA	NA	NA	NA	< 0.38	< 0.48	< 0.44 J	< 0.48	NA	NA	< 0.40
4-Chloro-3-Methylphenol	59-50-7	µg/L	NA	< 1.2	< 1.1	NA	NA	NA	NA	< 1.1	< 1.4	< 2.2 J	< 2.5	NA	NA	< 2.0
Semi-Volatile Organic Compounds																

Location ID Sample ID Sample Date	CAS	Units	RW-10 RW-10 (185-195) (6/23/2010) 6/23/2010	RW-10 RW-10 (120-130) (6/24/2010) 6/24/2010	RW-10 RW-10 (185-195) (6/24/2010) 6/24/2010	RW-10 RW-10 (120-130) (6/25/2010) 6/25/2010	RW-10 RW-10 (185-195) (6/25/2010) 6/25/2010	RW-10 RW-10 (185-195) (6/28/2010) 6/28/2010	RW-10 RW-10 (120-130) (053111) 5/31/2011	RW-10 RW-10 (185-195) (053111) 5/31/2011	RW-10 RW-10 (120-130) (060111) 6/1/2011	RW-10 RW-10(185-195) (041812) 4/18/2012	RW-10 RW-10 (120-130) (041912) 4/19/2012	RW-10 RW-10(120-130) 5/4/2012	RW-10 RW-10(185-195) 5/4/2012	RW-10 RW-10 (185-195) (111313) 11/13/2013
4-Chloroaniline	106-47-8	µg/L	NA	< 0.29	< 0.28	NA	NA	NA	NA	< 0.28	< 0.35	< 0.64	< 0.71	NA	NA	< 0.59 J
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	NA	< 0.41	< 0.38	NA	NA	NA	NA	< 0.38	< 0.48	< 0.38 J	< 0.42	NA	NA	< 0.35
4-Nitroaniline	100-01-6	µg/L	NA	< 0.2	< 0.19	NA	NA	NA	NA	< 0.19	< 0.24	< 2	< 2.2	NA	NA	< 1.8
4-Nitrophenol	100-02-7	µg/L	NA	< 0.95	< 0.9	NA	NA	NA	NA	< 0.9	< 1.1	< 6.3 J	< 7	NA	NA	< 5.8
Acenaphthene	83-32-9	µg/L	NA	< 0.033	< 0.032	NA	NA	NA	NA	< 0.015	< 0.019	< 0.017	0.195	NA	NA	< 0.023
Acenaphthylene	208-96-8	µg/L	NA	< 0.045	< 0.043	NA	NA	NA	NA	< 0.018	< 0.022	< 0.02	0.17	NA	NA	< 0.026
Acetophenone	98-86-2	µg/L	NA	3.1 J	1.9 J	NA	NA	NA	NA	0.91 J	2.2 J	< 0.35	2.2 J	NA	NA	0.66 J
Anthracene	120-12-7	µg/L	NA	< 0.029	< 0.028	NA	NA	NA	NA	< 0.011	< 0.014	< 0.012	< 0.014	NA	NA	< 0.023
Atrazine	1912-24-9	µg/L	NA	< 0.45	< 0.43	NA	NA	NA	NA	< 0.43	< 0.54	< 0.6	< 0.66	NA	NA	< 0.54
Benzaldehyde	100-52-7	µg/L	NA	< 0.46	< 0.44	NA	NA	NA	NA	< 0.44	< 0.55	< 4	< 4.4	NA	NA	< 3.6
Benzo(a)anthracene	56-55-3	µg/L	NA	< 0.027	< 0.026	NA	NA	NA	NA	< 0.016	< 0.021	< 0.018	< 0.02	NA	NA	< 0.013
Benzo(a)pyrene	50-32-8	µg/L	NA	< 0.035	< 0.033	NA	NA	NA	NA	< 0.0053	< 0.0067	< 0.006	< 0.0066	NA	NA	< 0.014
Benzo(b)fluoranthene	205-99-2	µg/L	NA	< 0.041	< 0.039	NA	NA	NA	NA	< 0.018	< 0.022	< 0.02	< 0.022	NA	NA	< 0.011
Benzo(g,h,i)perylene	191-24-2	µg/L	NA	< 0.033	< 0.031	NA	NA	NA	NA	< 0.011	< 0.014	< 0.013	< 0.014	NA	NA	< 0.017
Benzo(k)fluoranthene	207-08-9	µg/L	NA	< 0.032	< 0.031	NA	NA	NA	NA	< 0.014	< 0.017	< 0.015	< 0.017	NA	NA	< 0.016
Benzyl butyl phthalate	85-68-7	µg/L	NA	< 0.29	< 0.27	NA	NA	NA	NA	< 0.27	< 0.34	< 0.35 J	< 0.39	NA	NA	< 0.32
bis(2-Chloroethoxy)methane	111-91-1	µg/L	NA	< 0.29	< 0.27	NA	NA	NA	NA	< 0.27	< 0.34	< 0.37 J	< 0.41	NA	NA	< 0.34
bis(2-Chloroethyl)ether	111-44-4	µg/L	NA	< 0.36	< 0.34	NA	NA	NA	NA	< 0.34	< 0.42	< 0.38	< 0.42	NA	NA	< 0.34
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	< 0.45	< 0.42	NA	NA	NA	NA	< 0.42	< 0.53	< 0.55	< 0.61	NA	NA	< 0.50
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	NA	< 0.38	< 0.36	NA	NA	NA	NA	< 0.36	< 0.45	< 0.71	< 0.79	NA	NA	< 0.65
Caprolactam	105-60-2	µg/L	NA	< 0.22	< 0.21	NA	NA	NA	NA	< 0.21	< 0.27	< 0.84	< 0.93	NA	NA	< 0.77
Carbazole	86-74-8	µg/L	NA	< 0.19	< 0.18	NA	NA	NA	NA	< 0.18	< 0.23	< 0.44 J	< 0.49	NA	NA	< 0.40
Chrysene	218-01-9	µg/L	NA	< 0.025	< 0.024	NA	NA	NA	NA	< 0.025	< 0.032	< 0.028	< 0.031	NA	NA	< 0.013
Dibenzo(a,h)anthracene	53-70-3	µg/L	NA	< 0.026	< 0.024	NA	NA	NA	NA	< 0.024	< 0.031	< 0.027	< 0.03	NA	NA	< 0.018
Dibenzofuran	132-64-9	µg/L	NA	< 0.35	< 0.33	NA	NA	NA	NA	< 0.33	< 0.42	< 0.32 J	< 0.36	NA	NA	< 0.29
Diethyl phthalate	84-66-2	µg/L	NA	< 0.19	< 0.18	NA	NA	NA	NA	< 0.18	< 0.23	< 0.4 J	< 0.44	NA	NA	< 0.36
Dimethyl phthalate	131-11-3	µg/L	NA	< 0.26	< 0.24	NA	NA	NA	NA	< 0.24	< 0.31	< 0.35	< 0.38	NA	NA	< 0.31
di-n-butyl phthalate	84-74-2	µg/L	NA	< 0.22	< 0.21	NA	NA	NA	NA	< 0.21	< 0.26	< 0.68 J	< 0.75	NA	NA	< 0.62
di-n-octylphthalate	117-84-0	µg/L	NA	< 0.45	< 0.43	NA	NA	NA	NA	< 0.43	< 0.54	< 0.38	< 0.42	NA	NA	< 0.34
Fluoranthene	206-44-0	µg/L	NA	< 0.028	< 0.026	NA	NA	NA	NA	< 0.01	< 0.013	< 0.012	< 0.013	NA	NA	< 0.015
Fluorene	86-73-7	µg/L	NA	< 0.031	< 0.029	NA	NA	NA	NA	< 0.016	< 0.02	< 0.018	0.265	NA	NA	< 0.019
Hexachlorobenzene	118-74-1	µg/L	NA	< 0.011	< 0.011	NA	NA	NA	NA	< 0.0087	< 0.011	< 0.0098 J	< 0.011	NA	NA	< 0.018
Hexachlorobutadiene	87-68-3	µg/L	NA	< 0.15	< 0.14	NA	NA	NA	NA	< 0.14	< 0.17	< 0.62	< 0.69	NA	NA	< 0.57
Hexachlorocyclopentadiene	77-47-4	µg/L	NA	< 0.28	< 0.27	NA	NA	NA	NA	< 0.27	< 0.33	< 8.7	< 9.6	NA	NA	< 7.9
Hexachloroethane	67-72-1	µg/L	NA	< 0.24	< 0.23	NA	NA	NA	NA	< 0.23	< 0.29	< 0.67	< 0.74	NA	NA	< 0.61
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NA	< 0.034	< 0.032	NA	NA	NA	NA	< 0.012	< 0.015	< 0.013	< 0.014	NA	NA	< 0.016
Isophorone	78-59-1	µg/L	NA	2.9 J	< 0.27	NA	NA	NA	NA	< 0.27	2 J	< 0.33 J	2 J	NA	NA	< 0.30
Naphthalene	91-20-3	µg/L	NA	< 0.021	< 0.02	NA	NA	NA	NA	< 0.018	< 0.022	< 0.02	0.289	NA	NA	< 0.039
Nitrobenzene	98-95-3	µg/L	NA	< 0.29	< 0.28	NA	NA	NA	NA	< 0.28	< 0.35	< 0.51 J	< 0.57	NA	NA	< 0.47
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	NA	< 0.5	< 0.48	NA	NA	NA	NA	< 0.48	< 0.6	< 0.37	< 0.41	NA	NA	< 0.34
N-Nitrosodiphenylamine	86-30-6	µg/L	NA	< 0.25	< 0.23	NA	NA	NA	NA	< 0.23	< 0.29	< 0.37 J	< 0.41	NA	NA	< 0.34
Pentachlorophenol	87-86-5	µg/L	NA	< 0.078	< 0.074	NA	NA	NA	NA	< 0.31	< 0.39	< 0.12 J	1.47 J	NA	NA	< 0.11
Phenanthrene	85-01-8	µg/L	NA	0.251	0.401	NA	NA	NA	NA	0.197	0.53	0.284	0.608	NA	NA	0.261
Phenol	108-95-2	µg/L	NA	< 0.66	< 0.63	NA	NA	NA	NA	< 0.63	3.4	< 1.6	2.5 J	NA	NA	3
Pyrene	129-00-0	µg/L	NA	< 0.025	< 0.024	NA	NA	NA	NA	< 0.0088	< 0.011	< 0.0099 J	< 0.011	NA	NA	< 0.017
Metals - Total																
Aluminum, total	7429-90-5	µg/L	NA	NA	NA	400	518	NA	360	881	NA	528	327	NA	NA	480
Antimony, total	7440-36-0	µg/L	NA	NA	NA	< 2.2	< 2.2	NA	< 1.3	< 1.3	NA	< 1.4	< 1.4	NA	NA	< 1.8
Arsenic, total	7440-38-2	µg/L	NA	NA	NA	4.3	2.2 B	NA	4.8	< 0.92	NA	3.6 J	3.7 J	NA	NA	7.9
Barium, total	7440-39-3	µg/L	NA	NA	NA	93.4 B	47.4 B	NA	35.3 B	28.2 B	NA	15.5 B	23 B	NA	NA	8.9 B
Beryllium, total	7440-41-7	µg/L	NA	NA	NA	< 0.24	< 0.24	NA	< 0.24	< 0.13	NA	< 0.44	< 0.44	NA	NA	< 0.17
Cadmium, total	7440-43-9	µg/L	NA	NA	NA	< 0.35	< 0.35	NA	< 0.17	< 0.17	NA	< 3	< 3	NA	NA	< 3.0 B
Calcium, total	7440-70-2	µg/L	NA	NA	NA	119000	131000	NA	54100	74000	NA	54800	41200	NA	NA	41500
Chromium, total	7440-47-3	µg/L	NA	NA	NA	113	39.7	NA	25.7	0.9 B	NA	2.8 B	< 10	NA	NA	< 0.92
Cobalt, total	7440-48-4	µg/L	NA	NA	NA	< 0.65	< 0.65	NA	< 0.3	< 0.3	NA	< 0.59	< 0.59	NA	NA	< 0.48
Copper, total	7440-50-8	µg/L	NA	NA	NA	10.7	7.4 B	NA	< 10	< 10	NA	< 10	< 1.3	NA	NA	2.3 B
Iron, total	7439-89-6	µg/L	NA	NA	NA	266	116	NA	187	132	NA	< 24	95.2 J	NA	NA	< 100 B
Lead, total	7439-92-1	µg/L	NA	NA	NA	< 1.9	< 1.9	NA	2.5 B	1 B	NA	< 1.7	< 1.7	NA	NA	< 4.2 B
Magnesium, total	7439-95-4	µg/L	NA	NA	NA	< 5000	< 5000	NA	< 17	276 B	NA	376 B	< 16	NA	NA	341 B
Manganese, total	7439-96-5	µg/L	NA	NA	NA	< 0.46	< 0.46	NA	< 0.18	0.3 J	NA	< 0.12	< 0.12	NA	NA	< 0.18
Mercury, total	7439-97-6	µg/L	NA	NA	NA	< 0.082	< 0.082	NA	< 0.088	< 0.088	NA	< 0.075	< 0.075	NA	NA	< 0.089
Nickel, total	7440-02-0	µg/L	NA	NA	NA	4.3 J	2.7 J	NA	12.7	4.4 B	NA	5.6 J	19.4	NA	NA	1.6 B
Potassium, total	7440-09-7	µg/L	NA	NA	NA	108000	35700	NA	64100	22700	NA	17900	44300	NA	NA	15300
Selenium, total	7782-49-2	µg/L	NA	NA	NA	5.1 B	4.8 B	NA	5.2 B	1.6 B	NA	< 10	6.1 J	NA	NA	4.3 B
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	NA	NA	NA	< 0.53	< 0.53	NA	< 0.72	< 0.72	NA	1.8 J	< 0.85	NA	NA	< 1.5
Sodium, total	7440-23-5	µg/L	NA	NA	NA	90700	103000	NA	98000	70300	NA	61500	82700	NA	NA	58900
Thallium, total	7440-28-0	µg/L	NA	NA	NA	< 1.8	< 1.8	NA	< 2	< 0.17	NA	< 1.7	< 1.7	NA	NA	< 1.3
Vanadium, total	7440-62-2	µg/L	NA	NA	NA	6.3 J	11.5 B	NA	36.6 B	16.8 B	NA	5.7 J	42 B	NA	NA	4.7 B
Zinc, total	7440-66-6	µg/L	NA	NA	NA	1.9 B	< 1.4	NA	4.5 B	3.1 B	NA	< 2.8	< 2.8	NA	NA	< 4.4
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-10 RW-10 (120-130) (111513) 11/15/2013	RW-10 RW-10(120-130)(091714) 9/17/2014	RW-10 RW-10(185-195)(091714) 9/17/2014	RW-10A RW-10A (75-85) (6/9/2010) 6/9/2010	RW-10A RW-10A (75-85) (6/23/2010) 6/23/2010	RW-10A RW-10A (75-85) 6/28/2010	RW-10A RW-10A (51-61) (060211) 6/2/2011	RW-10A RW-10A (75-85) (060211) 6/2/2011	RW-10A RW-10A(51-61) (041812) 4/18/2012	RW-10A RW-10A(75-85) (041812) 4/18/2012	RW-10A RW-10A(51-61) (050712) 5/7/2012	RW-10A RW-10A(75-85) (050712) 5/7/2012	RW-10A RW-10A (75-85) (111413) 11/14/2013
Volatile Organic Compounds															
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.25 J	< 0.32	< 0.32	< 0.26	< 0.26	NA	< 0.24	< 0.24	< 0.24	< 0.24 [< 0.24]	NA	NA	< 0.25 J
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.20 J	< 0.39	< 0.39	< 0.24	< 0.24	NA	< 0.2	< 0.2	< 0.2	< 0.2 [< 0.2]	NA	NA	< 0.20 J
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.21 J	< 0.28	< 0.28	< 0.23	< 0.23	NA	< 0.23	< 0.23	< 0.23	< 0.23 [< 0.23]	NA	NA	< 0.21 J
1,1-Dichloroethane	75-34-3	µg/L	< 0.26 J	< 0.35	< 0.35	< 0.29	< 0.29	NA	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]	NA	NA	< 0.26 J
1,1-Dichloroethene	75-35-4	µg/L	< 0.34 J	< 0.50	< 0.50	< 0.4	< 0.4	NA	< 0.28	< 0.28	< 0.28	< 0.28 [< 0.28]	NA	NA	< 0.34 J
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.22 J	< 0.22	< 0.22	< 0.56	< 0.56	NA	< 0.15	< 0.15	< 0.15	< 0.15 [< 0.15]	NA	NA	< 0.22 J
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3 J	< 1.2	< 1.2	< 1.1	< 1.1	NA	< 1.3	< 1.3	< 1.3*	< 1.3* [< 1.3*]	NA	NA	< 1.3 J
1,2-Dibromoethane	106-93-4	µg/L	< 0.16 J	< 0.23	< 0.23	< 0.39	< 0.39	NA	< 0.21	< 0.21	< 0.21*	< 0.21* [< 0.21*]	NA	NA	< 0.16 J
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.20 J	< 0.16	< 0.16	< 0.26	< 0.26	NA	< 0.18	< 0.18	< 0.18	< 0.18 [< 0.18]	NA	NA	< 0.20 J
1,2-Dichloroethane	107-06-2	µg/L	< 0.22 J	< 0.30	< 0.30	< 0.33	< 0.33	NA	< 0.18	< 0.18	< 0.18	< 0.18 [< 0.18]	NA	NA	< 0.22 J
1,2-Dichloropropane	78-87-5	µg/L	< 0.28 J	< 0.43	< 0.43	< 0.27	< 0.27	NA	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	NA	NA	< 0.28 J
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.31 J	< 0.26	< 0.26	< 0.25	< 0.25	NA	< 0.29	< 0.29	< 0.29	< 0.29 [< 0.29]	NA	NA	< 0.31 J
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.30 J	< 0.24	< 0.24	< 0.28	< 0.28	NA	< 0.26	< 0.26	< 0.26	< 0.26 [< 0.26]	NA	NA	< 0.30 J
2-Butanone (MEK)	78-93-3	µg/L	3.5 J	< 2.5	< 2.5	< 1.6	< 1.6	NA	< 2.9	< 2.9	< 2.9	< 2.9 [< 2.9]	NA	NA	< 3.2 J
2-Hexanone	591-78-6	µg/L	< 1.7 J	< 1.7	< 1.7	< 1.4	< 1.4	NA	< 3	< 3	< 3	< 3 [< 3]	NA	NA	< 1.7 J
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.5 J	< 1.1	< 1.1	< 0.86	< 0.86	NA	< 1.2	< 1.2	< 1.2	< 1.2 [< 1.2]	NA	NA	< 1.5 J
Acetone	67-64-1	µg/L	45.5 J	29.1	29.3	< 2.9	19.9	NA	< 7.6	< 7.6	< 7.6	< 7.6 [< 7.6]	NA	NA	< 3.3 J
Benzene	71-43-2	µg/L	< 0.28 J	< 0.21	< 0.21	< 0.23	< 0.23	NA	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	NA	NA	< 0.28 J
Bromodichloromethane	75-27-4	µg/L	< 0.21 J	< 0.28	< 0.28	< 0.22	< 0.22	NA	< 0.23	< 0.23	< 0.23	< 0.23 [< 0.23]	NA	NA	< 0.21 J
Bromoform	75-25-2	µg/L	< 0.30 J	< 0.31	< 0.31	< 0.23	< 0.23	NA	< 0.24	< 0.24	< 0.24	< 0.24 [< 0.24]	NA	NA	< 0.30 J
Bromomethane	74-83-9	µg/L	< 0.56 J	< 0.39	< 0.39	< 0.3	< 0.3	NA	< 0.31	< 0.31	< 0.31	< 0.31 [< 0.31]	NA	NA	< 0.56 J
Carbon disulfide	75-15-0	µg/L	4.9 J	5.5	2.7	< 0.74	< 0.74	NA	0.28 J	< 0.18	0.97 J	< 0.18 [< 0.18]	NA	NA	< 0.18 J
Carbon tetrachloride	56-23-5	µg/L	< 0.23 J	< 0.24	< 0.24	< 0.26	< 0.26	NA	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]	NA	NA	< 0.23 J
Chlorobenzene	108-90-7	µg/L	< 0.35 J	< 0.27	< 0.27	< 0.39	< 0.39	NA	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	NA	NA	< 0.35 J
Chloroethane	75-00-3	µg/L	< 0.39 J	< 0.56	< 0.56	< 0.37	< 0.37	NA	< 0.37	< 0.37	< 0.37	< 0.37 [< 0.37]	NA	NA	< 0.39 J
Chloroform	67-66-3	µg/L	< 0.25 J	< 0.20	< 0.20	< 0.23	< 0.23	NA	< 0.21	< 0.21	< 0.21	< 0.21 [< 0.21]	NA	NA	< 0.25 J
Chloromethane	74-87-3	µg/L	< 0.36 J	< 0.33	< 0.33	< 0.29	< 0.29	NA	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	NA	NA	< 0.36 J
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.24 J	< 0.33	< 0.33	< 0.22	< 0.22	NA	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	NA	NA	< 0.24 J
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15 J	< 0.28	< 0.28	< 0.25	< 0.25	NA	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	NA	NA	< 0.15 J
Cyclohexane	110-82-7	µg/L	< 0.18 J	< 0.37	< 0.37	< 1.9	< 1.9	NA	< 0.29	< 0.29	< 0.29	< 0.29 [< 0.29]	NA	NA	< 0.18 J
Dibromochloromethane	124-48-1	µg/L	< 0.19 J	< 0.25	< 0.25	< 0.22	< 0.22	NA	< 0.2	< 0.2	< 0.2	< 0.2 [< 0.2]	NA	NA	< 0.19 J
Dichlorodifluoromethane	75-71-8	µg/L	< 0.63 J	< 0.73	< 0.73	< 0.92	< 0.92	NA	< 0.31	< 0.31	< 0.31	< 0.31 [< 0.31]	NA	NA	< 0.63 J
Ethylbenzene	100-41-4	µg/L	< 0.21 J	< 0.40	< 0.40	< 0.27	< 0.27	NA	< 0.21	< 0.21	< 0.21	< 0.21 [< 0.21]	NA	NA	< 0.21 J
Freon 113	76-13-1	µg/L	< 0.77 J	< 0.45	< 0.45	< 0.38	< 0.38	NA	< 0.49	< 0.49	< 0.49	< 0.49 [< 0.49]	NA	NA	< 0.77 J
Isopropylbenzene	98-82-8	µg/L	< 0.22 J	< 0.26	< 0.26	< 0.57	< 0.57	NA	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]	NA	NA	< 0.22 J
Methyl acetate	79-20-9	µg/L	< 1.5 J	< 3.1	< 3.1	< 1.5	< 1.5	NA	< 2.9	< 2.9	< 2.9	< 2.9 [< 2.9]	NA	NA	< 1.5 J
Methyl tert butyl ether	1634-04-4	µg/L	< 0.29 J	< 0.26	< 0.26	< 0.23	< 0.23	NA	< 0.18	< 0.18	< 0.18	< 0.18 [< 0.18]	NA	NA	< 0.29 J
Methylcyclohexane	108-87-2	µg/L	< 0.15 J	< 0.22	< 0.22	< 0.35	< 0.35	NA	< 0.18	< 0.18	< 0.18	< 0.18 [< 0.18]	NA	NA	< 0.15 J
Methylene chloride	75-09-2	µg/L	< 0.86 J	< 0.81	< 0.81	< 0.3	< 0.3	NA	< 0.2	< 0.2	< 0.2	< 0.2 [< 0.2]	NA	NA	< 0.86 J
o-Xylene	95-47-6	µg/L	< 0.30 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.30 J
Styrene	100-42-5	µg/L	NA	< 0.26	< 0.26	< 0.58	< 0.58	NA	< 0.23	< 0.23	< 0.23	< 0.23 [< 0.23]	NA	NA	NA
Tertiary Butyl Alcohol	75-65-0	µg/L	< 0.25 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25 J
Tetrachloroethene	127-18-4	µg/L	< 0.44 J	< 0.35	< 0.35	< 0.27	< 0.27	NA	< 0.32	< 0.32	< 0.32	< 0.32 [< 0.32]	NA	NA	< 0.44 J
Toluene	108-88-3	µg/L	< 0.38 J	0.23 J	< 0.22	< 0.3	< 0.3	NA	< 0.15	< 0.15	< 0.15	< 0.15 [< 0.15]	NA	NA	< 0.38 J
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.21 J	< 0.51	< 0.51	< 0.25	< 0.25	NA	< 0.31	< 0.31	< 0.31	< 0.31 [< 0.31]	NA	NA	< 0.21 J
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.50 J	< 0.32	< 0.32	< 0.21	< 0.21	NA	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]	NA	NA	< 0.50 J
Trichloroethene	79-01-6	µg/L	< 0.33 J	< 0.25	< 0.25	< 0.24	< 0.24	NA	< 0.21	< 0.21	< 0.21	< 0.21 [< 0.21]	NA	NA	< 0.33 J
Trichlorofluoromethane	75-69-4	µg/L	< 0.41 J	< 0.28	< 0.28	< 0.54	< 0.54	NA	< 0.35	< 0.35	< 0.35	< 0.35 [< 0.35]	NA	NA	< 0.41 J
Vinyl Chloride	75-01-4	µg/L	NA	< 0.17	< 0.17	< 0.44	< 0.44	NA	< 0.27	< 0.27	< 0.27	< 0.27 [< 0.27]	NA	NA	NA
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.19 J	< 0.20	< 0.20	< 0.25	< 0.25	NA	< 0.17	< 0.17	< 0.17	< 0.17 [< 0.17]	NA	NA	< 0.19 J
Semi-Volatile Organic Compounds															
1,1'-Biphenyl	92-52-4	µg/L	NA	< 0.29	< 0.28 J	< 0.46	NA	< 0.47	< 0.47	< 0.47	< 0.34	< 0.35 [< 0.34]	NA	NA	< 0.33
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	NA	< 1.8	< 1.7 J	< 1.4	NA	< 1.5	< 1.5	< 1.5	< 1.8	< 1.8 [< 1.8]	NA	NA	< 1.7
2,4,6-Trichlorophenol	88-06-2	µg/L	NA	< 1.6	< 1.6 J	< 1.3	NA	< 1.4	< 1.4	< 1.4	< 1.5	< 1.5 [< 1.5]	NA	NA	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	NA	< 1.7	< 1.6 J	< 1.3	NA	< 1.4	< 1.4	< 1.4	< 1.3	< 1.3 [< 1.3]	NA	NA	< 1.3
2,4-Dimethylphenol	105-67-9	µg/L	NA	< 1.9	< 1.9 J	< 1.8	NA	< 1.9	< 1.8	< 1.8	< 1.7	< 1.8 [< 1.7]	NA	NA	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	NA	< 6.8	< 6.6 J	< 0.81	NA	< 0.83	< 0.82	< 0.82	< 19	< 19 [< 19]	NA	NA	< 18
2,4-Dinitrotoluene	121-14-2	µg/L	NA	< 0.33	< 0.33 J	< 0.24	NA	< 0.25	< 0.24	< 0.24	< 0.48	< 0.5 [< 0.48]	NA	NA	< 0.46
2,6-Dinitrotoluene	606-20-2	µg/L	NA	< 0.27	< 0.26 J	< 0.36	NA	< 0.37	< 0.36	< 0.36	< 0.52	< 0.54 [< 0.52]	NA	NA	< 0.50
2-Chloronaphthalene	91-58-7	µg/L	NA	< 0.36	< 0.35 J	< 0.45	NA	< 0.47	< 0.46	< 0.46	< 0.34	< 0.35 [< 0.34]	NA	NA	< 0.32
2-Chlorophenol	95-57-8	µg/L	NA	< 1.3	< 1.3 J	< 1.2	NA	< 1.2	< 1.2	< 1.2	< 1.1	< 1.1 [< 1.1]	NA	NA	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	NA	< 0.30	< 0.30 J	< 0.72	NA	< 0.74	< 0.73	< 0.73	< 0.44	< 0.45 [< 0.44]	NA	NA	< 0.42
2-Methylphenol	95-48-7	µg/L	NA	< 1.3	< 1.3 J	< 1.2	NA	< 1.3	< 1.2	< 1.2	< 1.2	< 1.2 [< 1.2]	NA	NA	< 1.1
2-Nitroaniline	88-74-4	µg/L	NA	< 0.33	< 0.32 J	< 0.26	NA	< 0.26	< 0.26	< 0.26	< 1.3	< 1.3 [< 1.3]	NA	NA	< 1.2
2-Nitrophenol	88-75-5	µg/L	NA	< 1.9	< 1.9 J	< 1.4	NA	< 1.4	< 1.4	< 1.4	< 1.7	< 1.7 [< 1.7]	NA	NA	< 1.6
3&4-Methylphenol	12-03-3	µg/L	NA	< 1.1	< 1.1 J	< 1.1	NA	< 1.2	< 1.2	< 1.2	< 1.1	< 1.1 [< 1.1]	NA	NA	< 1.0
3,3'-Dichlorobenzidine	91-94-1	µg/L	NA	< 0.58 J	< 0.57 J	< 0.32	NA	< 0.33	< 0.33	< 0.33	< 0.41	< 0.42 [< 0.41]	NA	NA	< 0.39
3-Nitroaniline	99-09-2	µg/L	NA	< 0.27	< 0.27 J	< 0.31	NA	< 0.32	< 0.32	< 0.32	< 1.4	< 1.5 [< 1.4]	NA	NA	< 1.4
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	NA	< 1.4	< 1.4 J	< 0.56	NA	< 0.58	< 0.57	< 0.57	< 1.1	< 1.1 [< 1.1]	NA	NA	< 1.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	NA	< 0.26	< 0.25 J	< 0.38	NA	< 0.39	< 0.39	< 0.39	< 0.41	< 0.42 [< 0.41]	NA	NA	< 0.39
4-Chloro-3-Methylphenol	59-50-7	µg/L	NA	< 1.4	< 1.3 J	< 1.1	NA	< 1.2	< 1.2	< 1.2	< 2.1	< 2.1 [< 2.1]	NA	NA	< 2.0
Semi-Volatile Organic Compounds															

Location ID			RW-10	RW-10	RW-10	RW-10A	RW-10A	RW-10A	RW-10A	RW-10A	RW-10A	RW-10A	RW-10A	RW-10A
Sample ID			RW-10 (120-130) (111513)	RW-10(120-130)(091714)	RW-10(185-195)(091714)	RW-10A (75-85) (6/9/2010)	RW-10A (75-85) (6/23/2010)	RW-10A (75-85)	RW-10A (51-61) (060211)	RW-10A (75-85) (060211)	RW-10A(51-61) (041812)	RW-10A(75-85) (041812)	RW-10A(51-61) (050712)	RW-10A(75-85) (050712)	RW-10A (75-85) (111413)
Sample Date	CAS	Units	11/15/2013	9/17/2014	9/17/2014	6/9/2010	6/23/2010	6/28/2010	6/2/2011	6/2/2011	4/18/2012	4/18/2012	5/7/2012	5/7/2012	11/14/2013
4-Chloroaniline	106-47-8	µg/L	NA	< 0.31	< 0.30 J	< 0.28	NA	< 0.28	< 0.28	< 0.28	< 0.6	< 0.61 [< 0.6]	NA	NA	< 0.57
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	NA	< 0.40	< 0.39 J	< 0.39	NA	< 0.4	< 0.39	< 0.39	< 0.35	< 0.36 [< 0.35]	NA	NA	< 0.34
4-Nitroaniline	100-01-6	µg/L	NA	< 0.31	< 0.31 J	< 0.19	NA	< 0.2	< 0.2	< 0.2	< 1.9	< 1.9 [< 1.9]	NA	NA	< 1.8
4-Nitrophenol	100-02-7	µg/L	NA	< 0.94	< 0.92 J	< 0.9	NA	< 0.93	< 0.92	< 0.92	< 5.9	< 6 [< 5.9]	NA	NA	< 5.7
Acenaphthene	83-32-9	µg/L	NA	< 0.021	< 0.021 J	< 0.032	NA	< 0.033	< 0.015	< 0.015	< 0.016	< 0.016 [< 0.016]	NA	NA	< 0.022
Acenaphthylene	208-96-8	µg/L	NA	< 0.025	< 0.024 J	< 0.043	NA	< 0.044	< 0.018	< 0.018	< 0.018	< 0.019 [< 0.018]	NA	NA	< 0.026
Acetophenone	98-86-2	µg/L	NA	1.4 J	0.56 J	< 0.44	NA	< 0.45	< 0.44	< 0.44	< 0.32	< 0.33 [< 0.32]	NA	NA	< 0.31
Anthracene	120-12-7	µg/L	NA	< 0.021	< 0.021 J	< 0.028	NA	< 0.029	< 0.011	< 0.011	< 0.011	< 0.012 [< 0.011]	NA	NA	< 0.022
Atrazine	1912-24-9	µg/L	NA	< 0.44	< 0.43 J	< 0.43	NA	< 0.44	< 0.43	< 0.43	< 0.55	< 0.57 [< 0.55]	NA	NA	< 0.53
Benzaldehyde	100-52-7	µg/L	NA	< 0.70 J	< 0.68 J	< 0.44	NA	< 0.45	< 0.45	< 0.45	< 3.7	< 3.8 [< 3.7]	NA	NA	< 3.5
Benzo(a)anthracene	56-55-3	µg/L	NA	< 0.012	< 0.012 J	< 0.026	NA	< 0.027	< 0.017	< 0.017	< 0.017	< 0.018 [< 0.017]	NA	NA	< 0.013
Benzo(a)pyrene	50-32-8	µg/L	NA	< 0.013	< 0.012 J	< 0.034	NA	< 0.035	< 0.0054	< 0.0054	< 0.0056	< 0.0057 [< 0.0056]	NA	NA	< 0.013
Benzo(b)fluoranthene	205-99-2	µg/L	NA	< 0.011	< 0.010 J	< 0.039	NA	< 0.04	< 0.018	< 0.018	< 0.019	< 0.019 [< 0.019]	NA	NA	< 0.011
Benzo(g,h,i)perylene	191-24-2	µg/L	NA	< 0.016	< 0.016 J	< 0.031	NA	< 0.032	< 0.011	< 0.011	< 0.012	< 0.012 [< 0.012]	NA	NA	< 0.017
Benzo(k)fluoranthene	207-08-9	µg/L	NA	< 0.015	< 0.015 J	< 0.031	NA	< 0.032	< 0.014	< 0.014	< 0.014	< 0.015 [< 0.014]	NA	NA	< 0.016
Benzyl butyl phthalate	85-68-7	µg/L	NA	< 0.23	< 0.23 J	< 0.27	NA	< 0.28	< 0.28	< 0.28	< 0.33	< 0.34 [< 0.33]	NA	NA	< 0.31
bis(2-Chloroethoxy)methane	111-91-1	µg/L	NA	< 0.44	< 0.43 J	< 0.27	NA	< 0.28	< 0.28	< 0.28	< 0.35	< 0.36 [< 0.35]	NA	NA	< 0.33
bis(2-Chloroethyl)ether	111-44-4	µg/L	NA	< 0.45	< 0.44 J	< 0.34	NA	< 0.35	< 0.34	< 0.34	< 0.35	< 0.36 [< 0.35]	NA	NA	< 0.33
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	< 0.42	< 0.41 J	< 0.43	NA	< 0.44	< 0.43	< 0.43	< 0.52	< 0.53 [< 0.52]	NA	NA	< 0.49
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	NA	< 6.1 B	< 5.1 BJ	< 0.36	NA	< 0.37	< 0.36	156	2.6	6.8 [< 0.67]	NA	NA	< 0.64
Caprolactam	105-60-2	µg/L	NA	< 0.42 J	< 0.41 J	< 0.21	NA	< 0.22	< 0.22	< 0.22	< 0.78	< 0.8 [< 0.78]	NA	NA	< 0.75
Carbazole	86-74-8	µg/L	NA	< 0.18	< 0.17 J	< 0.18	NA	< 0.19	< 0.18	< 0.18	< 0.41	< 0.42 [< 0.41]	NA	NA	< 0.39
Chrysene	218-01-9	µg/L	NA	< 0.012	< 0.012 J	< 0.024	NA	< 0.025	< 0.026	< 0.026	< 0.026	< 0.027 [< 0.026]	NA	NA	< 0.013
Dibenzo(a,h)anthracene	53-70-3	µg/L	NA	< 0.017	< 0.017 J	< 0.025 J	NA	< 0.025	< 0.025	< 0.025	< 0.026	< 0.026 [< 0.026]	NA	NA	< 0.018
Dibenzofuran	132-64-9	µg/L	NA	< 0.24	< 0.23 J	< 0.33	NA	< 0.34	< 0.34	< 0.34	< 0.3	< 0.31 [< 0.3]	NA	NA	< 0.29
Diethyl phthalate	84-66-2	µg/L	NA	< 0.24	< 0.24 J	< 0.18	NA	< 0.19	< 0.18	< 0.18	< 0.37	< 0.38 [< 0.37]	NA	NA	< 0.36
Dimethyl phthalate	131-11-3	µg/L	NA	< 0.27	< 0.27 J	< 0.25	NA	< 0.25	< 0.25	< 0.25	< 0.32	< 0.33 [< 0.32]	NA	NA	< 0.31
di-n-butyl phthalate	84-74-2	µg/L	NA	< 2.8 B	< 3.9 BJ	< 0.21	NA	< 0.21	< 0.21	< 0.21	< 0.63	< 0.65 [< 0.63]	NA	NA	< 0.60
di-n-octylphthalate	117-84-0	µg/L	NA	< 0.26	< 0.25 J	< 0.43	NA	< 0.44	< 0.44	< 0.44	< 0.35	< 0.36 [< 0.35]	NA	NA	< 0.33
Fluoranthene	206-44-0	µg/L	NA	< 0.014	< 0.014 J	< 0.027	NA	< 0.027	< 0.011	< 0.011	< 0.011	< 0.011 [< 0.011]	NA	NA	< 0.014
Fluorene	86-73-7	µg/L	NA	< 0.018	< 0.017 J	< 0.029	NA	< 0.03	< 0.017	< 0.017	< 0.017	< 0.017 [< 0.017]	NA	NA	< 0.018
Hexachlorobenzene	118-74-1	µg/L	NA	< 0.017	< 0.017 J	< 0.011	NA	< 0.011	< 0.0089	< 0.0089	< 0.0091	< 0.0093 [< 0.0091]	NA	NA	< 0.018
Hexachlorobutadiene	87-68-3	µg/L	NA	< 0.40	< 0.39 J	< 0.14	NA	< 0.14	< 0.14	< 0.14	< 0.58	< 0.6 [< 0.58]	NA	NA	< 0.56
Hexachlorocyclopentadiene	77-47-4	µg/L	NA	< 0.50	< 0.49 J	< 0.27	NA	< 0.27	< 0.27	< 0.27	< 8.1	< 8.3 [< 8.1]	NA	NA	< 7.7
Hexachloroethane	67-72-1	µg/L	NA	< 0.30	< 0.29 J	< 0.23	NA	< 0.23	< 0.23	< 0.23	< 0.62	< 0.64 [< 0.62]	NA	NA	< 0.60
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NA	< 0.015	< 0.015 J	< 0.032	NA	< 0.033	< 0.012	< 0.012	< 0.012	< 0.012 [< 0.012]	NA	NA	< 0.016
Isophorone	78-59-1	µg/L	NA	< 0.35	< 0.34 J	< 0.27	NA	< 0.28	< 0.28	< 0.28	< 0.31	< 0.32 [< 0.31]	NA	NA	< 0.30
Naphthalene	91-20-3	µg/L	NA	< 0.037	< 0.036 J	< 0.02	NA	< 0.021	< 0.018	< 0.018	< 0.018	< 0.019 [< 0.018]	NA	NA	< 0.039
Nitrobenzene	98-95-3	µg/L	NA	< 0.54	< 0.53 J	< 0.28	NA	< 0.28	< 0.28	< 0.28	< 0.48	< 0.49 [< 0.48]	NA	NA	< 0.46
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	NA	< 0.39	< 0.38 J	< 0.48	NA	< 0.49	< 0.49	< 0.49	< 0.34	< 0.35 [< 0.34]	NA	NA	< 0.33
N-Nitrosodiphenylamine	86-30-6	µg/L	NA	< 0.21	< 0.21 J	< 0.23	NA	< 0.24	< 0.24	< 0.24	< 0.35	< 0.35 [< 0.35]	NA	NA	< 0.33
Pentachlorophenol	87-86-5	µg/L	NA	< 0.10	< 0.10 J	< 0.074 J	NA	< 0.076	< 0.32	< 0.32	< 0.11 J	< 0.12 J [< 0.11 J]	NA	NA	< 0.11
Phenanthrene	85-01-8	µg/L	NA	< 0.502 B	0.296 J	< 0.039	NA	< 0.041	< 0.017	< 0.017	< 0.018	< 0.018 [< 0.018]	NA	NA	< 0.023
Phenol	108-95-2	µg/L	NA	10.8	3.6 J	< 0.63	NA	< 0.65	< 0.64	< 0.64	< 1.5	< 1.5 [< 1.5]	NA	NA	< 1.4
Pyrene	129-00-0	µg/L	NA	< 0.016	< 0.015 J	< 0.024	NA	< 0.025	< 0.009	< 0.009	< 0.0092	< 0.0094 [< 0.0092]	NA	NA	< 0.016
Metals - Total															
Aluminum, total	7429-90-5	µg/L	238	263	316	263	NA	1480	< 200	< 200	< 16	32.5 J [< 200]	NA	NA	103 J
Antimony, total	7440-36-0	µg/L	< 6.0 B	< 2.6	< 2.6	< 2.2	NA	< 2.2	< 1.3	< 1.3	< 1.4	< 1.4 [< 1.4]	NA	NA	< 1.8
Arsenic, total	7440-38-2	µg/L	9.5	8.2	7.9	< 1.4	NA	< 1.4	< 0.92	< 0.92	< 3	< 0.97 [< 0.97]	NA	NA	< 1.5
Barium, total	7440-39-3	µg/L	18.3 B	18.9 B	11.1 B	17.3 B	NA	56.8 B	29 B	7.3 J	24.6 B	9.2 B [9.1 B]	NA	NA	8.9 B
Beryllium, total	7440-41-7	µg/L	< 0.17	< 0.40	< 0.40	< 0.24	NA	< 1	< 0.24	< 0.24	< 0.44	< 0.44 [< 0.44]	NA	NA	< 0.17
Cadmium, total	7440-43-9	µg/L	0.70 B	< 0.70	< 0.70	< 0.35	NA	< 3	< 0.17	< 0.17	< 3	< 3 [< 3]	NA	NA	0.30 B
Calcium, total	7440-70-2	µg/L	43700	47600	43100	41200 J	NA	53300	70900	47100	61600	52100 [52100]	NA	NA	55200
Chromium, total	7440-47-3	µg/L	< 0.92	< 0.89	< 0.89	< 0.59	NA	< 10	< 0.9	< 0.9	< 0.91	< 0.91 [< 0.91]	NA	NA	< 0.92
Cobalt, total	7440-48-4	µg/L	< 0.48	< 0.83	< 0.83	< 0.65	NA	< 0.65	< 0.3	< 0.3	< 50	< 0.59 [< 0.59]	NA	NA	< 0.48
Copper, total	7440-50-8	µg/L	< 1.0	5.5 B	< 10 B	14.4	NA	6.4 J	< 0.85	< 10	< 10	< 10 [< 10]	NA	NA	8.1 B
Iron, total	7439-89-6	µg/L	128	60.2 B	< 12	188	NA	1360	255	< 100	432	< 100 [< 24]	NA	NA	40.1 B
Lead, total	7439-92-1	µg/L	5.0 J	6.3	3.5	< 1.9	NA	4 J	< 3	< 3	< 1.7	< 1.7 [< 1.7]	NA	NA	< 2.4
Magnesium, total	7439-95-4	µg/L	< 23	51.2 B	257 B	11100	NA	15000	18700	12900	15400	14400 [14500]	NA	NA	16600
Manganese, total	7439-96-5	µg/L	6.0 B	< 0.48	< 0.48	19.1	NA	75.4	114	10.7 J	2210	< 15 [< 15]	NA	NA	7.2 B
Mercury, total	7439-97-6	µg/L	< 0.089	< 0.064	< 0.064	< 0.082	NA	< 0.082	0.11 B	< 0.088	< 0.075	< 0.075 [< 0.075]	NA	NA	< 0.089
Nickel, total	7440-02-0	µg/L	14.1	13.2	4.8 J	4 B	NA	7.4 J	< 10	12.7	9.9 B	4 J [3 J]	NA	NA	7.7 B
Potassium, total	7440-09-7	µg/L	32500	32000	14500	1680 B	NA	2170 B	4800 B	1870 B	4220 B	2170 B [2150 B]	NA	NA	2380 B
Selenium, total	7782-49-2	µg/L	3.9 B	< 10 B	< 3.6	< 1.9	NA	< 1.9	< 1.5	< 1.5	< 2.4	< 10 [< 10]	NA	NA	< 2.4
Silicon, total	7440-21-3	µg/L	NA	72700	48200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.5	3.8 B	3.3 B	< 0.53	NA	< 0.53	< 0.72	< 0.72	1.2 J	1.3 J [1.2 J]	NA	NA	< 1.5
Sodium, total	7440-23-5	µg/L	75800	71300	54400	5740 B	NA	6630 B	29300	5250 B	33200	5890 B [5870 B]	NA	NA	5630 B
Thallium, total	7440-28-0	µg/L	1.6 B	< 1.8	< 1.8	< 1.8	NA	< 1.8	< 2	< 0.17	< 1.7	< 1.7 [< 1.7]	NA	NA	< 1.3
Vanadium, total	7440-62-2	µg/L	2.1 J	3.9 J	2.3 B	< 0.56	NA	< 50	< 0.43	< 0.43	< 0.77	< 0.77 [< 0.77]	NA	NA	< 0.72
Zinc, total	7440-66-6	µg/L	< 4.4	13.8 B	< 7.6	< 20 J	NA	10.6 J	< 1.7	< 20	< 2.8	< 20 [< 20]	NA	NA	< 4.4
Other															
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-10A RW-10A (51-61) (111513) 11/15/2013	RW-10A RW-10A(51-61)(091814) 9/18/2014	RW-10A RW-10A(75-85)(091814) 9/18/2014	RW-11 RW-11 (100-125) (6/7/2010) 6/7/2010	RW-11 RW-11 (142-167) (6/7/2010) 6/7/2010	RW-11 RW-11 (221-246) (6/8/2010) 6/8/2010	RW-11 RW-11 (252-272) (6/8/2010) 6/8/2010	RW-11 RW-11 (221-246) 5/25/2011	RW-11 RW-11 (252-272) 5/25/2011	RW-11 RW-11 (100-125) 5/26/2011	RW-11 RW-11 (142-167) 5/26/2011	RW-11D RW-11D (262-267) (050112) 5/1/2012	RW-11D RW-11D(262-267) 5/2/2012
Volatile Organic Compounds															
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.25 J	< 0.32	< 0.32	< 0.26	< 0.26	< 0.26	< 0.26	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	NA
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.20 J	< 0.39	< 0.39	< 0.24	< 0.24	< 0.24	< 0.24	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	NA
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.21 J	< 0.28	< 0.28	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA
1,1-Dichloroethane	75-34-3	µg/L	< 0.26 J	< 0.35	< 0.35	< 0.29	< 0.29	< 0.29	< 0.29	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NA
1,1-Dichloroethene	75-35-4	µg/L	< 0.34 J	< 0.50	< 0.50	< 0.4	< 0.4	< 0.4	< 0.4	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	NA
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.22 J	< 0.22	< 0.22	< 0.56	< 0.56	< 0.56	< 0.56	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	NA
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3 J	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3*	NA
1,2-Dibromoethane	106-93-4	µg/L	< 0.16 J	< 0.23	< 0.23	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21*	NA
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.20 J	< 0.16	< 0.16	< 0.26	< 0.26	< 0.26	< 0.26	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	NA
1,2-Dichloroethane	107-06-2	µg/L	< 0.22 J	< 0.30	< 0.30	< 0.33	< 0.33	< 0.33	< 0.33	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	NA
1,2-Dichloropropane	78-87-5	µg/L	< 0.28 J	< 0.43	< 0.43	< 0.27	< 0.27	< 0.27	< 0.27	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.31 J	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.25	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	NA
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.30 J	< 0.24	< 0.24	< 0.28	< 0.28	< 0.28	< 0.28	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	NA
2-Butanone (MEK)	78-93-3	µg/L	< 3.2 J	< 2.5	< 2.5	< 1.6	< 1.6	< 1.6	< 1.6	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	NA
2-Hexanone	591-78-6	µg/L	< 1.7 J	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.4	< 3 J	< 3 J	< 3	< 3	< 3	NA
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.5 J	< 1.1	< 1.1	< 0.86	< 0.86	< 0.86	< 0.86	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	NA
Acetone	67-64-1	µg/L	< 3.3 J	< 2.6	< 2.6	< 2.9	< 2.9	< 2.9	< 2.9	< 7.6	< 7.6	< 7.6	< 7.6	< 5	NA
Benzene	71-43-2	µg/L	< 0.28 J	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23	< 0.23	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA
Bromodichloromethane	75-27-4	µg/L	< 0.21 J	< 0.28	< 0.28	< 0.22	< 0.22	< 0.22	< 0.22	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA
Bromoform	75-25-2	µg/L	< 0.30 J	< 0.31	< 0.31	< 0.23	< 0.23	< 0.23	< 0.23	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	NA
Bromomethane	74-83-9	µg/L	< 0.56 J	< 0.39	< 0.39	< 0.3	< 0.3	< 0.3	< 0.3	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	NA
Carbon disulfide	75-15-0	µg/L	< 0.18 J	< 0.50	< 0.50	< 0.74	< 0.74	< 0.74	< 0.74	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	NA
Carbon tetrachloride	56-23-5	µg/L	< 0.23 J	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.26	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NA
Chlorobenzene	108-90-7	µg/L	< 0.35 J	< 0.27	< 0.27	< 0.39	< 0.39	< 0.39	< 0.39	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA
Chloroethane	75-00-3	µg/L	< 0.39 J	< 0.56	< 0.56	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	NA
Chloroform	67-66-3	µg/L	< 0.25 J	< 0.20	< 0.20	< 0.23	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	NA
Chloromethane	74-87-3	µg/L	< 0.36 J	< 0.33	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.24 J	< 0.33	< 0.33	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15 J	< 0.28	< 0.28	< 0.25	< 0.25	< 0.25	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA
Cyclohexane	110-82-7	µg/L	< 0.18 J	< 0.37	< 0.37	< 1.9	< 1.9	< 1.9	< 1.9	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	NA
Dibromochloromethane	124-48-1	µg/L	< 0.19 J	< 0.25	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	NA
Dichlorodifluoromethane	75-71-8	µg/L	< 0.63 J	< 0.73	< 0.73	< 0.92	< 0.92	< 0.92	< 0.92	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	NA
Ethylbenzene	100-41-4	µg/L	< 0.21 J	< 0.40	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	NA
Freon 113	76-13-1	µg/L	< 0.77 J	< 0.45	< 0.45	< 0.38	< 0.38	< 0.38	< 0.38	< 0.49	< 0.49	< 0.49	< 0.49	< 0.49	NA
Isopropylbenzene	98-82-8	µg/L	< 0.22 J	< 0.26	< 0.26	< 0.57	< 0.57	< 0.57	< 0.57	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NA
Methyl acetate	79-20-9	µg/L	< 1.5 J	< 3.1	< 3.1	< 1.5	< 1.5	< 1.5	< 1.5	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	NA
Methyl tert butyl ether	1634-04-4	µg/L	< 0.29 J	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.23	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	NA
Methylcyclohexane	108-87-2	µg/L	< 0.15 J	< 0.22	< 0.22	< 0.35	< 0.35	< 0.35	< 0.35	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	NA
Methylene chloride	75-09-2	µg/L	< 0.86 J	< 0.81	< 0.81	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	NA
o-Xylene	95-47-6	µg/L	< 0.30 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	NA	< 0.26	< 0.26	< 0.58	< 0.58	< 0.58	< 0.58	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA
Tertiary Butyl Alcohol	75-65-0	µg/L	< 0.25 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.44 J	< 0.35	< 0.35	< 0.27	< 0.27	< 0.27	< 0.27	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	NA
Toluene	108-88-3	µg/L	< 0.38 J	< 0.22	< 0.22	< 0.3	< 0.3	< 0.3	< 0.3	< 0.15	< 0.15	< 0.15	< 0.15	0.22 J	NA
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.21 J	< 0.51	< 0.51	< 0.25	< 0.25	< 0.25	< 0.25	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	NA
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.50 J	< 0.32	< 0.32	< 0.21	< 0.21	< 0.21	< 0.21	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	NA
Trichloroethene	79-01-6	µg/L	< 0.33 J	< 0.25	< 0.25	< 0.24	< 0.24	< 0.24	< 0.24	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	NA
Trichlorofluoromethane	75-69-4	µg/L	< 0.41 J	< 0.28	< 0.28	< 0.54	< 0.54	< 0.54	< 0.54	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	NA
Vinyl Chloride	75-01-4	µg/L	NA	< 0.17	< 0.17	< 0.44	< 0.44	< 0.44	< 0.44	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	NA
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.19 J	< 0.20	< 0.20	< 0.25	< 0.25	< 0.25	< 0.25	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	NA
Semi-Volatile Organic Compounds															
1,1'-Biphenyl	92-52-4	µg/L	NA	< 0.29 J	< 0.27 J	< 0.51	< 0.47	< 0.48	< 0.5	< 0.47	< 0.47	< 0.45	< 0.44	NA	NA
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	NA	< 1.8 J	< 1.7 J	< 1.6	< 1.5	< 1.5	< 1.6	< 1.5	< 1.5	< 1.4	< 1.4	NA	NA
2,4,6-Trichlorophenol	88-06-2	µg/L	NA	< 1.7 J	< 1.5 J	< 1.5	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.3	< 1.3	NA	NA
2,4-Dichlorophenol	120-83-2	µg/L	NA	< 1.7 J	< 1.6 J	< 1.5	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.3	< 1.3	NA	NA
2,4-Dimethylphenol	105-67-9	µg/L	NA	< 2.0 J	< 1.8 J	< 2	< 1.8	< 1.9	< 1.9	< 1.8	< 1.8	< 1.8	< 1.7	NA	NA
2,4-Dinitrophenol	51-28-5	µg/L	NA	< 7.0 J	< 6.5 J	< 0.89	< 0.82	< 0.85	< 0.87	< 0.82	< 0.82	< 0.79	< 0.78	NA	NA
2,4-Dinitrotoluene	121-14-2	µg/L	NA	< 0.35 J	< 0.32 J	< 0.27	< 0.24	< 0.25	< 0.26	< 0.24	< 0.24	< 0.24	< 0.23	NA	NA
2,6-Dinitrotoluene	606-20-2	µg/L	NA	< 0.27 J	< 0.26 J	< 0.39	< 0.36	< 0.37	< 0.38	< 0.36	< 0.36	< 0.35	< 0.34	NA	NA
2-Chloronaphthalene	91-58-7	µg/L	NA	< 0.37 J	< 0.34 J	< 0.5	< 0.46	< 0.48	< 0.49	< 0.46	< 0.46	< 0.45	< 0.44	NA	NA
2-Chlorophenol	95-57-8	µg/L	NA	< 1.3 J	< 1.3 J	< 1.3	< 1.2	< 1.2	< 1.3	< 1.2	< 1.2	< 1.2	< 1.1	NA	NA
2-Methylnaphthalene	91-57-6	µg/L	NA	< 0.31 J	< 0.29 J	< 0.79	< 0.73	< 0.76	< 0.77	< 0.73	< 0.73	< 0.71	< 0.69	NA	NA
2-Methylphenol	95-48-7	µg/L	NA	< 1.4 J	< 1.3 J	< 1.3	< 1.2	< 1.3	< 1.3	< 1.2	< 1.2	< 1.2	< 1.2	NA	NA
2-Nitroaniline	88-74-4	µg/L	NA	< 0.34 J	< 0.32 J	< 0.28	< 0.26	< 0.27	< 0.28	< 0.26	< 0.26	< 0.25	< 0.25	NA	NA
2-Nitrophenol	88-75-5	µg/L	NA	< 2.0 J	< 1.9 J	< 1.5	< 1.4	< 1.4	< 1.5	< 1.4	< 1.4	< 1.3	< 1.3	NA	NA
3&4-Methylphenol	12-03-3	µg/L	NA	< 1.2 J	< 1.1 J	< 1.3	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.1	< 1.1	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	NA	< 0.60 J	< 0.56 J	< 0.36	< 0.33	< 0.34	< 0.35	< 0.33	< 0.33	< 0.32	< 0.31	NA	NA
3-Nitroaniline	99-09-2	µg/L	NA	< 0.28 J	< 0.26 J	< 0.35	< 0.32	< 0.33	< 0.34	< 0.32	< 0.32	< 0.31	< 0.3	NA	NA
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	NA	< 1.4 J	< 1.3 J	< 0.62	< 0.57	< 0.59	< 0.6	< 0.57	< 0.57	< 0.55	< 0.54	NA	NA
4-Bromophenyl phenyl ether	101-55-3	µg/L	NA	< 0.27 J	< 0.25 J	< 0.42	< 0.39	< 0.4	< 0.41	< 0.39	< 0.39	< 0.38	< 0.37	NA	NA
4-Chloro-3-Methylphenol	59-50-7	µg/L	NA	< 1.4 J	< 1.3 J	< 1.3	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.1	< 1.1	NA	NA
Semi-Volatile Organic Compounds															

Location ID Sample ID Sample Date	CAS	Units	RW-10A RW-10A (51-61) (111513) 11/15/2013	RW-10A RW-10A(51-61)(091814) 9/18/2014	RW-10A RW-10A(75-85)(091814) 9/18/2014	RW-11 RW-11 (100-125) (6/7/2010) 6/7/2010	RW-11 RW-11 (142-167) (6/7/2010) 6/7/2010	RW-11 RW-11 (221-246) (6/8/2010) 6/8/2010	RW-11 RW-11 (252-272) (6/8/2010) 6/8/2010	RW-11 RW-11 (221-246) 5/25/2011	RW-11 RW-11 (252-272) 5/25/2011	RW-11 RW-11 (100-125) 5/26/2011	RW-11 RW-11 (142-167) 5/26/2011	RW-11D RW-11D (262-267) (050112) 5/1/2012	RW-11D RW-11D(262-267) 5/2/2012
4-Chloroaniline	106-47-8	µg/L	NA	< 0.32 J	< 0.30 J	< 0.3	< 0.28	< 0.29	< 0.3	< 0.28	< 0.28	< 0.27	< 0.27	NA	NA
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	NA	< 0.41 J	< 0.38 J	< 0.43	< 0.39	< 0.41	< 0.42	< 0.39	< 0.39	< 0.38	< 0.37	NA	NA
4-Nitroaniline	100-01-6	µg/L	NA	< 0.32 J	< 0.30 J	< 0.21	< 0.2	< 0.2	< 0.21	< 0.2	< 0.2	< 0.19	< 0.19	NA	NA
4-Nitrophenol	100-02-7	µg/L	NA	< 0.98 J	< 0.91 J	< 1	< 0.92	< 0.95	< 0.97	< 0.92	< 0.92	< 0.89	< 0.87	NA	NA
Acenaphthene	83-32-9	µg/L	NA	< 0.022 J	< 0.020 J	< 0.035	< 0.032	< 0.033	< 0.034	< 0.015	< 0.015	< 0.015	< 0.014	NA	NA
Acenaphthylene	208-96-8	µg/L	NA	< 0.025 J	< 0.024 J	< 0.047	< 0.044	< 0.045	< 0.046	< 0.018	< 0.018	< 0.017	< 0.017	NA	NA
Acetophenone	98-86-2	µg/L	NA	< 0.39 J	< 0.36 J	< 0.48	< 0.44	< 0.46	< 0.47	< 2.2	< 1.7	< 0.43	< 0.42	NA	NA
Anthracene	120-12-7	µg/L	NA	< 0.022 J	< 0.020 J	< 0.031	< 0.028	< 0.029	< 0.03	< 0.011	< 0.011	< 0.011	< 0.011	NA	NA
Atrazine	1912-24-9	µg/L	NA	< 0.45 J	< 0.42 J	< 0.47	< 0.43	< 0.45	< 0.46	< 0.43	< 0.43	< 0.42	< 0.41	NA	NA
Benzaldehyde	100-52-7	µg/L	NA	< 0.72 J	< 0.67 J	< 0.49	< 0.45	< 0.46	< 0.48	< 0.45	< 0.45	< 0.43	< 0.43	NA	NA
Benzo(a)anthracene	56-55-3	µg/L	NA	< 0.012 J	< 0.012 J	< 0.029	< 0.026	< 0.027	< 0.028	< 0.017	< 0.017	< 0.016	< 0.016	NA	NA
Benzo(a)pyrene	50-32-8	µg/L	NA	< 0.013 J	< 0.012 J	< 0.037	< 0.034	< 0.035	< 0.036	< 0.0054	< 0.0054	< 0.0053	< 0.0052	NA	NA
Benzo(b)fluoranthene	205-99-2	µg/L	NA	< 0.011 J	< 0.010 J	< 0.043 J	< 0.04 J	< 0.041	< 0.042	< 0.018	< 0.018	< 0.018	< 0.017	NA	NA
Benzo(g,h,i)perylene	191-24-2	µg/L	NA	< 0.017 J	< 0.016 J	< 0.035	< 0.032	< 0.033	< 0.034	< 0.011	< 0.011	< 0.011	< 0.011	NA	NA
Benzo(k)fluoranthene	207-08-9	µg/L	NA	< 0.016 J	< 0.015 J	< 0.034	< 0.031	< 0.032	< 0.033	< 0.014	< 0.014	< 0.013	< 0.013	NA	NA
Benzyl butyl phthalate	85-68-7	µg/L	NA	< 0.24 J	< 0.22 J	< 0.3	< 0.28	< 0.29	< 0.3	< 0.28	< 0.28	< 0.27	< 0.26	NA	NA
bis(2-Chloroethoxy)methane	111-91-1	µg/L	NA	< 0.45 J	< 0.42 J	< 0.3	< 0.28	< 0.29	< 0.29	< 0.28	< 0.28	< 0.27	< 0.26	NA	NA
bis(2-Chloroethyl)ether	111-44-4	µg/L	NA	< 0.47 J	< 0.43 J	< 0.37	< 0.34	< 0.36	< 0.36	< 0.34	< 0.34	< 0.33	< 0.33	NA	NA
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	< 0.44 J	< 0.41 J	< 0.47	< 0.43	< 0.45	< 0.46	< 0.43	< 0.43	< 0.42	< 0.41	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	NA	< 2.4 BJ	< 0.55 J	< 0.39	< 0.36	< 0.38	< 0.38	1.6 J	< 0.36	1.3 J	< 0.34	NA	NA
Caprolactam	105-60-2	µg/L	NA	< 0.44 J	< 0.41 J	< 0.23	< 0.22	< 0.22	< 0.23	< 0.22	< 0.22	< 0.21	< 0.21	NA	NA
Carbazole	86-74-8	µg/L	NA	< 0.18 J	< 0.17 J	< 0.2	< 0.18	< 0.19	< 0.19	< 0.18	< 0.18	< 0.18	< 0.17	NA	NA
Chrysene	218-01-9	µg/L	NA	< 0.013 J	< 0.012 J	< 0.027	< 0.024	< 0.025	< 0.026	< 0.026	< 0.026	< 0.025	< 0.024	NA	NA
Dibenzo(a,h)anthracene	53-70-3	µg/L	NA	< 0.018 J	< 0.017 J	< 0.027	< 0.025	< 0.026	< 0.026	< 0.025	< 0.025	< 0.024	< 0.024	NA	NA
Dibenzofuran	132-64-9	µg/L	NA	< 0.25 J	< 0.23 J	< 0.37	< 0.34	< 0.35	< 0.36	< 0.34	< 0.34	< 0.33	< 0.32	NA	NA
Diethyl phthalate	84-66-2	µg/L	NA	< 0.25 J	< 0.23 J	< 0.2	< 0.18	< 0.19	< 0.19	< 0.18	< 0.18	< 0.18	< 0.17	NA	NA
Dimethyl phthalate	131-11-3	µg/L	NA	< 0.28 J	< 0.26 J	< 0.27	< 0.25	< 0.26	< 0.26	< 0.25	< 0.25	< 0.24	< 0.24	NA	NA
di-n-butyl phthalate	84-74-2	µg/L	NA	< 2.2 BJ	< 0.58 J	< 0.23	< 0.21	< 0.22	< 0.22	< 0.21	< 0.21	< 0.21	< 0.2	NA	NA
di-n-octylphthalate	117-84-0	µg/L	NA	< 0.27 J	< 0.25 J	< 0.48	< 0.44	< 0.45	< 0.46	< 0.44	< 0.44	< 0.42	< 0.42	NA	NA
Fluoranthene	206-44-0	µg/L	NA	< 0.014 J	< 0.013 J	< 0.029	< 0.027	< 0.028	< 0.029	< 0.011	< 0.011	< 0.01	< 0.01	NA	NA
Fluorene	86-73-7	µg/L	NA	< 0.018 J	< 0.017 J	< 0.032	< 0.03	< 0.031	< 0.032	< 0.017	< 0.017	< 0.016	< 0.016	NA	NA
Hexachlorobenzene	118-74-1	µg/L	NA	< 0.018 J	< 0.017 J	< 0.012	< 0.011	< 0.011	< 0.012	< 0.0089	< 0.0089	< 0.0086	< 0.0084	NA	NA
Hexachlorobutadiene	87-68-3	µg/L	NA	< 0.42 J	< 0.39 J	< 0.15	< 0.14	< 0.15	< 0.15	< 0.14	< 0.14	< 0.14	< 0.13	NA	NA
Hexachlorocyclopentadiene	77-47-4	µg/L	NA	< 0.52 J	< 0.48 J	< 0.29	< 0.27	< 0.28	< 0.29	< 0.27	< 0.27	< 0.26	< 0.26	NA	NA
Hexachloroethane	67-72-1	µg/L	NA	< 0.31 J	< 0.29 J	< 0.25	< 0.23	< 0.24	< 0.25	< 0.23	< 0.23	< 0.22	< 0.22	NA	NA
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NA	< 0.015 J	< 0.014 J	< 0.035	< 0.032	< 0.034	< 0.034	< 0.012	< 0.012	< 0.011	< 0.011	NA	NA
Isophorone	78-59-1	µg/L	NA	< 0.36 J	< 0.34 J	< 0.3	< 0.28	< 0.29	< 0.29	< 0.28	< 0.28	< 0.27	< 0.26	NA	NA
Naphthalene	91-20-3	µg/L	NA	< 0.038 J	< 0.036 J	< 0.022	< 0.021	< 0.021	< 0.022	< 1.03	< 1.02	< 0.017	< 0.017	NA	NA
Nitrobenzene	98-95-3	µg/L	NA	< 0.56 J	< 0.52 J	< 0.3	< 0.28	< 0.29	< 0.3	< 0.28	< 0.28	< 0.27	< 0.27	NA	NA
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	NA	< 0.41 J	< 0.38 J	< 0.53	< 0.49	< 0.5	< 0.52	< 0.49	< 0.49	< 0.47	< 0.46	NA	NA
N-Nitrosodiphenylamine	86-30-6	µg/L	NA	< 0.22 J	< 0.21 J	< 0.26	< 0.24	< 0.25	< 0.25	< 0.24	< 0.24	< 0.23	< 0.23	NA	NA
Pentachlorophenol	87-86-5	µg/L	NA	< 0.11 J	< 0.10 J	< 0.082 J	< 0.076 J	< 0.078	< 0.08	< 0.32	< 0.32	< 0.31	< 0.3	NA	NA
Phenanthrene	85-01-8	µg/L	NA	< 0.022 J	< 0.021 J	< 0.043	< 0.04	< 0.041	< 0.042	< 0.017	< 0.017	< 0.017	< 0.017	NA	NA
Phenol	108-95-2	µg/L	NA	< 0.59 J	< 0.55 J	< 0.7	< 0.64	< 0.66	< 0.68	< 0.64	< 0.64	< 0.62	< 0.61	NA	NA
Pyrene	129-00-0	µg/L	NA	< 0.016 J	< 0.015 J	< 0.027	< 0.025	< 0.025	< 0.026	< 0.009	< 0.009	< 0.0087	< 0.0085	NA	NA
Metals - Total															
Aluminum, total	7429-90-5	µg/L	126 B	47.3 B	49.8 B	< 200	< 200	< 200	< 200	53.1 J	41.6 J	52 J	60.7 J	NA	NA
Antimony, total	7440-36-0	µg/L	< 6.0 B	< 2.6	< 2.6	< 2.2	< 2.2	< 2.2	< 2.2	< 1.3	< 1.3	< 1.3	< 1.3	NA	NA
Arsenic, total	7440-38-2	µg/L	2.1 B	< 2.6	< 2.6	< 1.4	< 1.4	< 1.4	< 1.4	< 0.92	< 0.92	< 0.92	< 0.92	NA	NA
Barium, total	7440-39-3	µg/L	25.5 B	15.0 B	7.1 B	< 200	< 200	14.6 B	14.4 B	4.1 J	4.3 J	4.5 B	4.2 B	NA	NA
Beryllium, total	7440-41-7	µg/L	< 0.17	< 0.40	< 0.40	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	NA	NA
Cadmium, total	7440-43-9	µg/L	0.90 B	< 0.70	< 0.70	< 0.35	< 0.35	< 0.35	< 0.35	< 0.17	< 0.17	< 0.17	< 0.17	NA	NA
Calcium, total	7440-70-2	µg/L	51900	61100	51900	4350 J	4570 J	21500	22500	3430 B	4290 B	3330 B	3180 B	NA	NA
Chromium, total	7440-47-3	µg/L	1.1 B	< 0.89	< 0.89	< 0.59	< 0.59	< 10	< 0.59	< 10	< 0.9	1.8 J	1.4 J	NA	NA
Cobalt, total	7440-48-4	µg/L	< 0.48	4.3 B	< 0.83	< 0.65	< 0.65	< 0.65	< 0.65	< 0.3	< 0.3	< 0.3	< 0.3	NA	NA
Copper, total	7440-50-8	µg/L	< 1.0	2.9 B	1.3 B	6 B	4.1 B	10.3	9.8 B	1.9 B	3.1 B	1.8 B	2.8 B	NA	NA
Iron, total	7439-89-6	µg/L	571	1030	22.1 B	1690	771	636	606	833	362	1540	891	NA	NA
Lead, total	7439-92-1	µg/L	< 3.1 B	< 3.0 B	3	< 1.9	< 1.9	< 1.9	< 1.9	< 3	< 3	< 3	< 0.94	NA	NA
Magnesium, total	7439-95-4	µg/L	14700	15200	14100	1340 B	1350 B	2820 B	2920 B	1170 B	1210 B	1180 B	1100 B	NA	NA
Manganese, total	7439-96-5	µg/L	714	2880	9.0 B	13 J	15.5 J	125	126	46.2	15.7	40.9	39	NA	NA
Mercury, total	7439-97-6	µg/L	< 0.089	< 0.064	< 0.20 B	< 0.082	< 0.082	< 0.082	< 0.082	< 0.088	< 0.088	< 0.088	< 0.088	NA	NA
Nickel, total	7440-02-0	µg/L	14.5	27.7	10.4	< 10	< 0.51	< 10	< 10	1.5 J	1.6 J	< 10	< 10	NA	NA
Potassium, total	7440-09-7	µg/L	4020 B	3420 B	1970 B	510 B	487 B	1730 B	1790 B	473 J	541 B	459 B	447 B	NA	NA
Selenium, total	7782-49-2	µg/L	< 2.4	< 3.6	< 3.6	< 1.9	< 1.9	< 1.9	< 1.9	< 1.5	< 1.5	< 1.5	< 1.5	NA	NA
Silicon, total	7440-21-3	µg/L	NA	28700	5050 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.5	2.1 B	2.1 B	< 0.53	< 0.53	< 0.53	< 0.53	< 0.72	< 0.72	< 0.72	< 0.72	NA	NA
Sodium, total	7440-23-5	µg/L	53900	30600	5030 B	2210 J	2070 J	4680 B	4900 B	1570 B	1650 B	1580 B	1510 B	NA	NA
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 0.17	< 0.17	< 2	< 0.17	NA	NA
Vanadium, total	7440-62-2	µg/L	< 0.72	< 50 B	< 50 B	< 0.56	< 0.56	< 50	< 0.56	< 0.43	< 0.43	< 0.43	< 0.43	NA	NA
Zinc, total	7440-66-6	µg/L	9.3 B	< 7.6	< 7.6	140 J	78.8 J	196	531	713	138 J	1540	1380	NA	NA
Other															
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-11D RW-11D (262-267) (111413) 11/14/2013	RW-11D RW-11D(262-267)(091514) 9/15/2014	RW-11S RW-11S (236-241) (050112) 5/1/2012	RW-11S RW-11S (236-241) (111313) 11/13/2013	RW-11S RW-11S (236-241)(091214) & DUP 9/12/2014	OB-2 OB-2-081215 8/12/2015	OB-3 OB-3-081015 8/10/2015	OB-4 OB-4-081015 8/10/2015	OB-5 OB-5-081015 8/10/2015	OB-12 OB-12-081015 8/10/2015	OB-13 OB-13-081015 8/10/2015	RW-2 (279-289) RW-2 (279-289)-082115 8/21/2015
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.25 J	< 0.32	< 0.24	< 0.25	< 0.32 [< 0.32]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.20 J	< 0.39	< 0.2	< 0.20	< 0.39 [< 0.39]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.21 J	< 0.28	< 0.23	< 0.21	< 0.28 [< 0.28]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,1-Dichloroethane	75-34-3	µg/L	< 0.26 J	< 0.35	< 0.19	< 0.26	< 0.35 [< 0.35]	< 1	< 1	< 1	0.37	< 1	< 1 [< 1]	< 1
1,1-Dichloroethene	75-35-4	µg/L	< 0.34 J	< 0.50	< 0.28	< 0.34	< 0.50 [< 0.50]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.22 J	< 0.22	< 0.15	< 0.22	< 0.22 [< 0.22]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3 J	< 1.2	< 1.3*	< 1.3	< 1.2 [< 1.2]	< 10	< 10	< 0.02	< 10	< 0.02	< 10 [< 0.02]	< 0.02
1,2-Dibromoethane	106-93-4	µg/L	< 0.16 J	< 0.23	< 0.21*	< 0.16	< 0.23 [< 0.23]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 0.03
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.20 J	< 0.16	< 0.18	< 0.20	< 0.16 [< 0.16]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,2-Dichloroethane	107-06-2	µg/L	< 0.22 J	< 0.30	< 0.18	< 0.22	< 0.30 [< 0.30]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,2-Dichloropropane	78-87-5	µg/L	< 0.28 J	< 0.43	< 0.22	< 0.28	< 0.43 [< 0.43]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.31 J	< 0.26	< 0.29	< 0.31	< 0.26 [< 0.26]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.30 J	< 0.24	< 0.26	< 0.30	< 0.24 [< 0.24]	< 1	< 1	< 1	0.2	< 1	< 1 [< 1]	0.24
2-Butanone (MEK)	78-93-3	µg/L	27.7 J	21.4	< 2.9	< 3.2	< 2.5 [< 2.5]	< 50	< 50	< 50	< 50	< 50	< 50 [< 50]	3.2
2-Hexanone	591-78-6	µg/L	1.9 J	< 1.7	< 3	< 1.7	< 1.7 [< 1.7]	< 10	< 10	< 10	< 10	< 10	< 10 [< 10]	< 10
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.5 J	< 1.1	< 1.2	< 1.5	< 1.1 [< 1.1]	< 10	< 10	< 10	< 10	< 10	< 10 [< 10]	< 10
Acetone	67-64-1	µg/L	76.9 J	86.1	< 5	< 3.3	< 2.6 [< 2.6]	< 25	< 25	< 25	< 25	< 25	< 25 [< 25]	12
Benzene	71-43-2	µg/L	0.56 J	2	< 0.22	< 0.28	< 0.21 [< 0.21]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	0.22
Bromodichloromethane	75-27-4	µg/L	< 0.21 J	< 0.28	< 0.23	< 0.21	< 0.28 [< 0.28]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Bromoform	75-25-2	µg/L	< 0.30 J	< 0.31	< 0.24	< 0.30	< 0.31 [< 0.31]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Bromomethane	74-83-9	µg/L	< 0.56 J	< 0.39	< 0.31	< 0.56	< 0.39 [< 0.39]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Carbon disulfide	75-15-0	µg/L	11.2 J	5.7	< 0.18	< 0.18	< 0.50 [< 0.50]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Carbon tetrachloride	56-23-5	µg/L	< 0.23 J	< 0.24	< 0.19	< 0.23	< 0.24 [< 0.24]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Chlorobenzene	108-90-7	µg/L	< 0.35 J	< 0.27	< 0.22	< 0.35	< 0.27 [< 0.27]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	2.3
Chloroethane	75-00-3	µg/L	< 0.39 J	< 0.56	< 0.37	< 0.39	< 0.56 [< 0.56]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Chloroform	67-66-3	µg/L	< 0.25 J	< 0.20	< 0.21	< 0.25	< 0.20 [< 0.20]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Chloromethane	74-87-3	µg/L	< 0.36 J	< 0.33	< 0.22	< 0.36	< 0.33 [< 0.33]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.24 J	< 0.33	< 0.22	< 0.24	< 0.33 [< 0.33]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15 J	< 0.28	< 0.22	< 0.15	< 0.28 [< 0.28]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Cyclohexane	110-82-7	µg/L	< 0.18 J	< 0.37	< 0.29	< 0.18	< 0.37 [< 0.37]	< 5	< 5	< 5	< 5	< 5	< 5 [< 5]	< 5
Dibromochloromethane	124-48-1	µg/L	< 0.19 J	< 0.25	< 0.2	< 0.19	< 0.25 [< 0.25]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Dichlorodifluoromethane	75-71-8	µg/L	< 0.63 J	< 0.73	< 0.31	< 0.63	< 0.73 [< 0.73]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Ethylbenzene	100-41-4	µg/L	< 0.21 J	< 0.40	< 0.21	< 0.21	< 0.40 [< 0.40]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Freon 113	76-13-1	µg/L	< 0.77 J	< 0.45	< 0.49	< 0.77	< 0.45 [< 0.45]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Isopropylbenzene	98-82-8	µg/L	< 0.22 J	< 0.26	< 0.19	< 0.22	< 0.26 [< 0.26]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Methyl acetate	79-20-9	µg/L	< 1.5 J	< 3.1	< 2.9	< 1.5	< 3.1 [< 3.1]	< 10	< 10	< 10	< 10	< 10	< 10 [< 10]	< 10
Methyl tert butyl ether	1634-04-4	µg/L	< 0.29 J	< 0.26	< 0.18	< 0.29	< 0.26 [< 0.26]	< 1	< 1	< 1	0.27	< 1	< 1 [< 1]	0.25
Methylcyclohexane	108-87-2	µg/L	< 0.15 J	< 0.22	< 0.18	< 0.15	< 0.22 [< 0.22]	< 5	< 5	< 5	< 5	< 5	< 5 [< 5]	< 5
Methylene chloride	75-09-2	µg/L	< 0.86 J	< 0.81	< 0.2	< 0.86	< 0.81 [< 0.81]	0.22	< 5	< 5	< 5	< 5	< 5 [< 5]	< 5
o-Xylene	95-47-6	µg/L	< 0.30 J	NA	NA	< 0.30	NA	NA	NA	NA	NA	NA	NA [NA]	NA
Styrene	100-42-5	µg/L	NA	< 0.26	< 0.23	NA	< 0.26 [< 0.26]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Tertiary Butyl Alcohol	75-65-0	µg/L	< 0.25 J	NA	NA	R	NA	NA	NA	NA	NA	NA	NA [NA]	NA
Tetrachloroethene	127-18-4	µg/L	< 0.44 J	< 0.35	< 0.32	< 0.44	< 0.35 [< 0.35]	< 6	< 6	< 6	< 6	< 6	< 6 [< 6]	< 6
Toluene	108-88-3	µg/L	< 0.38 J	< 0.22	< 0.15	< 0.38	< 0.22 [< 0.22]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	0.83
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.21 J	< 0.51	< 0.31	< 0.21	< 0.51 [< 0.51]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.50 J	< 0.32	< 0.19	< 0.50	< 0.32 [< 0.32]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Trichloroethene	79-01-6	µg/L	< 0.33 J	< 0.25	< 0.21	< 0.33	< 0.25 [< 0.25]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Trichlorofluoromethane	75-69-4	µg/L	< 0.41 J	< 0.28	< 0.35	< 0.41	< 0.28 [< 0.28]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Vinyl Chloride	75-01-4	µg/L	NA	< 0.17	< 0.27	NA	< 0.17 [< 0.17]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]	NA
Xylenes	1330-20-7	µg/L	< 0.19 J	< 0.20	< 0.17	< 0.19	< 0.20 [< 0.20]	< 3	< 3	< 3	< 3	< 3	< 3 [< 3]	< 3
Semi-Volatile Organic Compounds														
1,1'-Biphenyl	92-52-4	µg/L	NA	< 0.30 J	< 0.3	< 0.33	< 0.29 [< 0.30]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	< 10	< 10	< 10	0.35	< 10	< 10 [< 10]	10
2,4,5-Trichlorophenol	95-95-4	µg/L	NA	R	< 1.6	< 1.7	< 1.8 [< 1.9]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2,4,6-Trichlorophenol	88-06-2	µg/L	NA	R	< 1.3	< 1.4	< 1.7 [< 1.7]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2,4-Dichlorophenol	120-83-2	µg/L	NA	R	< 1.2	< 1.3	< 1.7 [< 1.8]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2,4-Dimethylphenol	105-67-9	µg/L	NA	R	< 1.5	< 1.7	< 2.0 [< 2.0]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2,4-Dinitrophenol	51-28-5	µg/L	NA	R	< 17 J	< 18	< 7.0 [< 7.1]	< 25	< 6.4	< 6.4	< 6.4	< 6.4	< 6.3 [< 6.6]	< 25
2,4-Dinitrotoluene	121-14-2	µg/L	NA	< 0.36 J	< 0.43	< 0.46	< 0.35 [< 0.35]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2,6-Dinitrotoluene	606-20-2	µg/L	NA	< 0.28 J	< 0.46	< 0.50	< 0.27 [< 0.28]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2-Chloronaphthalene	91-58-7	µg/L	NA	< 0.38 J	< 0.3	< 0.32	< 0.37 [< 0.37]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2-Chlorophenol	95-57-8	µg/L	NA	R	< 0.97	< 1.1	< 1.3 [< 1.4]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2-Methylnaphthalene	91-57-6	µg/L	NA	< 0.32 J	< 0.38	< 0.42	< 0.31 [< 0.32]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
2-Methylphenol	95-48-7	µg/L	NA	R	< 1	< 1.1	< 1.4 [< 1.4]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
2-Nitroaniline	88-74-4	µg/L	NA	< 0.35 J	< 1.1	< 1.2	< 0.34 [< 0.34]	< 25	< 6.4	< 6.4	< 6.4	< 6.4	< 6.3 [< 6.6]	< 25
2-Nitrophenol	88-75-5	µg/L	NA	R	< 1.5	< 1.6	< 2.0 [< 2.0]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
3&4-Methylphenol	12-03-3	µg/L	NA	R	< 0.93	< 1.0	< 1.2 [< 1.2]	NA	NA	NA	NA	NA	NA [NA]	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	NA	< 0.62 J	< 0.36	< 0.39	< 0.60 [< 0.61]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
3-Nitroaniline	99-09-2	µg/L	NA	< 0.29 J	< 1.3	< 1.4	< 0.28 [< 0.28]	< 25	< 6.4	< 6.4	< 6.4	< 6.4	< 6.3 [< 6.6]	< 25
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	NA	R	< 0.99	< 1.1	< 1.4 [< 1.4]	< 25	< 6.4	< 6.4	< 6.4	< 6.4	< 6.3 [< 6.6]	< 25
4-Bromophenyl phenyl ether	101-55-3	µg/L	NA	< 0.28 J	< 0.36	< 0.39	< 0.27 [< 0.27]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
4-Chloro-3-Methylphenol	59-50-7	µg/L	NA	R	< 1.8	< 2.0	< 1.4 [< 1.4]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Semi-Volatile Organic Compounds														

Location ID			RW-11D	RW-11D	RW-11S	RW-11S	RW-11S	OB-2	OB-3	OB-4	OB-5	OB-12	OB-13	RW-2 (279-289)
Sample ID			RW-11D (262-267) (111413)		RW-11S (236-241) (050112)	RW-11S (236-241) (111313)		OB-2-081215	OB-3-081015	OB-4-081015	OB-5-081015	OB-12-081015	OB-13-081015	RW-2 (279-289)-082115
Sample Date	CAS	Units	11/14/2013	RW-11D(262-267)(091514) 9/15/2014	5/1/2012	11/13/2013	RW-11S (236-241)(091214) & DUP 9/12/2014	8/12/2015	8/10/2015	8/10/2015	8/10/2015	8/10/2015	8/10/2015	8/21/2015
4-Chloroaniline	106-47-8	µg/L	NA	< 0.33 J	< 0.53	< 0.57 J	< 0.32 [< 0.33]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	NA	< 0.42 J	< 0.31	< 0.34	< 0.41 [< 0.41]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
4-Nitroaniline	100-01-6	µg/L	NA	< 0.33 J	< 1.7	< 1.8	< 0.32 [< 0.33]	< 25	< 6.4	< 6.4	< 6.4	< 6.4	< 6.3 [< 6.6]	< 25
4-Nitrophenol	100-02-7	µg/L	NA	R	< 5.2	< 5.7	< 0.98 [< 0.99]	< 25	< 6.4	< 6.4	< 6.4	< 6.4	< 6.3 [< 6.6]	< 25
Acenaphthene	83-32-9	µg/L	NA	< 0.023 J	< 0.014	< 0.022	< 0.022 [< 0.022]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Acenaphthylene	208-96-8	µg/L	NA	< 0.026 J	< 0.016	< 0.026	< 0.025 [< 0.026]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Acetophenone	98-86-2	µg/L	NA	1.2 J	< 0.29	< 0.31	< 0.39 [< 0.40]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Anthracene	120-12-7	µg/L	NA	< 0.023 J	< 0.01	< 0.022	< 0.022 [< 0.022]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Atrazine	1912-24-9	µg/L	NA	< 0.47 J	< 0.49	< 0.53	< 0.45 [< 0.46]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Benzaldehyde	100-52-7	µg/L	NA	< 0.75 J	< 3.3	< 3.5	< 0.72 [< 0.73]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Benzo(a)anthracene	56-55-3	µg/L	NA	< 0.013 J	< 0.015	< 0.013	< 0.012 [< 0.013]	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05 [< 0.05]	< 0.05
Benzo(a)pyrene	50-32-8	µg/L	NA	< 0.014 J	< 0.0049	< 0.013	< 0.013 [< 0.013]	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05 [< 0.05]	< 0.05
Benzo(b)fluoranthene	205-99-2	µg/L	NA	< 0.011 J	< 0.016	< 0.011	< 0.011 [< 0.011]	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05 [< 0.05]	< 0.05
Benzo(g,h,i)perylene	191-24-2	µg/L	NA	< 0.017 J	< 0.01	< 0.017	< 0.017 J [< 0.017 J]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Benzo(k)fluoranthene	207-08-9	µg/L	NA	< 0.016 J	< 0.013	< 0.016	< 0.016 [< 0.016]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Benzyl butyl phthalate	85-68-7	µg/L	NA	< 0.25 J	< 0.29	< 0.31	< 0.24 [< 0.24]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
bis(2-Chloroethoxy)methane	111-91-1	µg/L	NA	< 0.47 J	< 0.31	< 0.33	< 0.45 [< 0.46]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
bis(2-Chloroethyl)ether	111-44-4	µg/L	NA	< 0.48 J	< 0.31	< 0.33	< 0.47 [< 0.47]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	< 0.45 J	< 0.45	< 0.49	< 0.44 [< 0.44]	NA	NA	NA	NA	NA	NA [NA]	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	NA	< 17.1 BJ	< 0.59	< 0.64	< 2.2 B [< 2.2 B]	< 10	6.3	1.7	2.2	3.7	3.1 [3.6]	< 9.8
Caprolactam	105-60-2	µg/L	NA	< 0.45 J	< 0.69	< 0.75	< 0.44 [< 0.44]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Carbazole	86-74-8	µg/L	NA	< 0.19 J	< 0.36	< 0.39	< 0.18 [< 0.18]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Chrysene	218-01-9	µg/L	NA	< 0.013 J	< 0.023	< 0.013	< 0.013 [< 0.013]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Dibenzo(a,h)anthracene	53-70-3	µg/L	NA	< 0.018 J	< 0.023	< 0.018	< 0.018 J [< 0.018 J]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Dibenzofuran	132-64-9	µg/L	NA	< 0.25 J	< 0.27	< 0.29	< 0.25 [< 0.25]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Diethyl phthalate	84-66-2	µg/L	NA	< 0.26 J	< 0.33	< 0.36	< 0.25 [< 0.25]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Dimethyl phthalate	131-11-3	µg/L	NA	< 0.29 J	< 0.28	< 0.31	< 0.28 [< 0.28]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
di-n-butyl phthalate	84-74-2	µg/L	NA	1.2 J	< 2	< 0.60	< 2.5 B [< 3.6 B]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
di-n-octylphthalate	117-84-0	µg/L	NA	< 0.28 J	< 0.31	< 0.33	< 0.27 [< 0.27]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Fluoranthene	206-44-0	µg/L	NA	< 0.015 J	< 0.0096	< 0.014	< 0.014 [< 0.014]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Fluorene	86-73-7	µg/L	NA	< 0.019 J	< 0.015	< 0.018	< 0.018 [< 0.018]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Hexachlorobenzene	118-74-1	µg/L	NA	< 0.018 J	< 0.008	< 0.018	< 0.018 [< 0.018]	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02 [< 0.02]	< 0.02
Hexachlorobutadiene	87-68-3	µg/L	NA	< 0.43 J	< 0.51	< 0.56	< 0.42 [< 0.42]	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4 [< 0.4]	< 0.4
Hexachlorocyclopentadiene	77-47-4	µg/L	NA	< 0.54 J	< 7.1	< 7.7	< 0.52 [< 0.52]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Hexachloroethane	67-72-1	µg/L	NA	< 0.32 J	< 0.55	< 0.60	< 0.31 [< 0.31]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	NA	< 0.016 J	< 0.011	< 0.016	< 0.015 J [< 0.016 J]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Isophorone	78-59-1	µg/L	NA	< 0.38 J	< 0.27	< 0.30	< 0.36 [< 0.37]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Naphthalene	91-20-3	µg/L	NA	< 0.039 J	< 0.016	< 0.039	< 0.038 [< 0.039]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Nitrobenzene	98-95-3	µg/L	NA	< 0.58 J	< 0.42	< 0.46	< 0.56 [< 0.56]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	NA	< 0.42 J	< 0.3	< 0.33	< 0.41 [< 0.41]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
N-Nitrosodiphenylamine	86-30-6	µg/L	NA	< 0.23 J	< 0.31	< 0.33	< 0.22 [< 0.22]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	< 9.8
Pentachlorophenol	87-86-5	µg/L	NA	R	< 0.1	< 0.11	< 0.11 [< 0.11]	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3 [< 0.3]	< 0.3
Phenanthrene	85-01-8	µg/L	NA	< 0.023 J	< 0.016	< 0.023	< 0.022 [< 0.023]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Phenol	108-95-2	µg/L	NA	R	< 1.3	< 1.4	< 0.59 [< 0.59]	< 10	< 2.6	< 2.6	< 2.6	< 2.6	< 2.5 [< 2.6]	1.7
Pyrene	129-00-0	µg/L	NA	< 0.017 J	< 0.0081	< 0.016	< 0.016 [< 0.016]	< 2	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51 [< 0.53]	< 2
Metals - Total														
Aluminum, total	7429-90-5	µg/L	530	2940	27.7 B	58.7 B	< 200 B [< 200 B]	46	< 20	9.6	< 20	21	20 [19]	250
Antimony, total	7440-36-0	µg/L	< 1.8	< 2.6	< 6	< 1.8	< 2.6 [< 2.6]	< 2	< 2	< 2	< 2	< 2	< 2 [< 2]	< 2
Arsenic, total	7440-38-2	µg/L	< 1.5	< 3.0 B	< 0.97	< 1.5	< 2.6 [< 2.6]	1.2	< 2	< 2	< 2	< 2	< 2 [< 2]	1.9
Barium, total	7440-39-3	µg/L	1570	1050 J	10.2 B	13.8 B	15.8 J [14.1 J]	5.2	2.9	90	26	3	4.6 [4.9]	32
Beryllium, total	7440-41-7	µg/L	< 0.17	< 0.40	< 0.44	< 0.17	< 0.40 [< 0.40]	< 2	< 2	< 2	< 2	< 2	< 2 [< 2]	< 2
Cadmium, total	7440-43-9	µg/L	0.40 B	0.80 B	< 0.24	< 3.0 B	< 3.0 B [< 0.70]	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1
Calcium, total	7440-70-2	µg/L	458000	457000	9760	13100	13800 [13800]	12100	17300	86700	82000	9800	7900 [8200]	132000
Chromium, total	7440-47-3	µg/L	10	18.7	< 0.91	< 0.92	< 10 B [< 0.89]	< 2	< 2	< 2	< 2	0.56	< 2 [< 2]	< 2
Cobalt, total	7440-48-4	µg/L	< 50 B	< 0.83	< 0.59	< 0.48	< 50 B [< 0.83]	< 2	< 2	1.1	5.2	< 2	< 2 [< 2]	< 2
Copper, total	7440-50-8	µg/L	8.1 B	6.1 B	19	7.3 B	< 10 B [< 10 B]	2	< 2	< 2	< 2	4.6	< 2 [< 2]	< 2
Iron, total	7439-89-6	µg/L	109	963	43.6 B	35.3 B	267 J [195 J]	120	1800	13500	31300	61	20 [20]	15
Lead, total	7439-92-1	µg/L	3.3	< 1.3	< 1.7	< 2.4	< 1.3 [< 1.3]	< 2	< 2	< 2	< 2	< 2	< 2 [< 2]	< 2
Magnesium, total	7439-95-4	µg/L	< 23	500 B	1560 B	1850 B	1950 B [1930 B]	4500	4900	25000	39500	3700	3000 [3200]	< 1000
Manganese, total	7439-96-5	µg/L	0.90 B	16.8	37.2	20.1	74.1 [71.5 J]	5.4	130	2600	2200	1.9	4.5 [4.9]	< 2
Mercury, total	7439-97-6	µg/L	< 0.089	< 0.064	< 0.075	< 0.089	< 0.20 B [< 0.20 B]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2 [< 0.2]	< 0.2
Nickel, total	7440-02-0	µg/L	22.6	23.5	20.2	31.1	12.3 J [9.1 J]	0.7	< 2	0.87	2	< 2	0.61 [< 2]	2.9
Potassium, total	7440-09-7	µg/L	235000	146000 J	857 B	1240 B	1260 B [1270 B]	NA	NA	NA	NA	NA	NA [NA]	NA
Selenium, total	7782-49-2	µg/L	5.2 B	< 3.6	< 2.4	< 2.4	< 3.6 [< 3.6]	< 2	< 2	< 2	< 2	< 2	< 2 [< 2]	0.86
Silicon, total	7440-21-3	µg/L	NA	279000 J	NA	NA	3030 B [3140 B]	NA	NA	NA	NA	NA	NA [NA]	NA
Silver, total	7440-22-4	µg/L	< 1.5	< 1.2	< 0.85	< 1.5	1.6 B [1.7 B]	< 2	< 2	< 2	< 2	< 2	< 2 [< 2]	< 2
Sodium, total	7440-23-5	µg/L	315000	245000 J	3560 B	3190 B	3420 B [3280 B]	3600	3500	109000	32100	3200	3200 [3200]	134000
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.8	< 1.7	< 1.3	< 1.8 [< 1.8]	< 2	< 2	< 2	< 2	< 2	< 2 [< 2]	< 2
Vanadium, total	7440-62-2	µg/L	1.8 B	2.5 B	< 0.77	< 0.72	< 50 B [< 0.87]	1.5	1.1	1.7	1.2	1.1	1.4 [1.5]	18
Zinc, total	7440-66-6	µg/L	5.1 B	19.6 B	14 B	14.4 B	17.3 J [13.6 J]	< 25	< 25	< 25	< 25	< 25	< 25 [< 25]	< 25
Other														
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	< 10	< 10	10	< 10	< 10	< 10 [< 10]	< 10
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-2 (452-462) RW-2 (452-462)-082515 8/25/2015	RW-3 (77-87) RW-3 (77-87)-080615 8/6/2015	RW-3DD (175-180) RW-3DD (175-180)-081015 8/10/2015	RW-3DS (155-160) RW-3DS (155-160)-082515 8/25/2015	RW-4 (333-343) RW-4 (333-343)-082415 8/24/2015	RW-4 (393-403) RW-4 (393-403)-081015 8/10/2015	RW-4A (113-123) RW-4A (113-123)-082415 8/24/2015	RW-4A (62-72) RW-4A (62-72)-081015 8/10/2015	RW-5 RW-5-080515 8/5/2015	RW-5A RW-5A-082415 8/24/2015	RW-6 RW-6-080515 8/5/2015
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	79-00-5	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	75-34-3	µg/L	< 1	0.26	1.9	1 [1]	< 1	< 1	< 1	< 1	< 1	< 1	0.62
1,1-Dichloroethene	75-35-4	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.02	< 10	< 0.02	< 0.02 [< 10]	< 0.02	< 0.02	< 0.02	< 10	< 0.02	< 0.02	< 0.02
1,2-Dibromoethane	106-93-4	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 0.03	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	95-50-1	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	107-06-2	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	78-87-5	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	541-73-1	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	106-46-7	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2-Butanone (MEK)	78-93-3	µg/L	< 50	< 50	5.5	< 50 [< 50]	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone	591-78-6	µg/L	< 10	< 10	< 10	< 10 [< 10]	< 10	< 10	< 10	< 10	< 10	< 10	< 10
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 10	< 10	< 10	< 10 [< 10]	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Acetone	67-64-1	µg/L	16	< 25	12	< 25 [3]	< 25	< 25	< 25	< 25	4.9	< 25	< 25
Benzene	71-43-2	µg/L	0.24	< 1	0.44	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	0.22	1.2
Bromodichloromethane	75-27-4	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	75-25-2	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	74-83-9	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon disulfide	75-15-0	µg/L	1.8	< 1	3.7	11 [12]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon tetrachloride	56-23-5	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	108-90-7	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroethane	75-00-3	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	1.4	< 1	3.3
Chloroform	67-66-3	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	74-87-3	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	156-59-2	µg/L	< 1	< 1	0.22	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cyclohexane	110-82-7	µg/L	< 5	< 5	< 5	< 5 [< 5]	< 5	< 5	< 5	< 5	< 5	< 5	0.48
Dibromochloromethane	124-48-1	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorodifluoromethane	75-71-8	µg/L	0.19	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	100-41-4	µg/L	< 1	< 1	< 1	0.26 [0.23]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Freon 113	76-13-1	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene	98-82-8	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl acetate	79-20-9	µg/L	< 10	< 10	< 10	< 10 [< 10]	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methyl tert butyl ether	1634-04-4	µg/L	0.3	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methylcyclohexane	108-87-2	µg/L	< 5	< 5	< 5	< 5 [< 5]	< 5	< 5	< 5	< 5	< 5	< 5	0.33
Methylene chloride	75-09-2	µg/L	< 5	< 5	< 5	< 5 [< 5]	< 5	< 5	< 5	< 5	< 5	< 5	< 5
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 6	< 6	< 6	< 6 [< 6]	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Toluene	108-88-3	µg/L	0.71	< 1	< 1	0.6 [0.48]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trans-1,2-dichloroethene	156-60-5	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethene	79-01-6	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichlorofluoromethane	75-69-4	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl Chloride	75-01-4	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 3	< 3	< 3	< 3 [< 3]	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Semi-Volatile Organic Compounds													
1,1'-Biphenyl	92-52-4	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
1,4-Dioxane	123-91-1	µg/L	4.7	9	20	38 [9.6]	< 10	< 10	< 10	< 10	6.7	< 10	1.5
2,4,5-Trichlorophenol	95-95-4	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2,4,6-Trichlorophenol	88-06-2	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2,4-Dichlorophenol	120-83-2	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2,4-Dimethylphenol	105-67-9	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2,4-Dinitrophenol	51-28-5	µg/L	6.5	< 25	< 6.6	6.6 [6.8]	< 25	< 6.3	< 25	< 6.5	< 25	< 22	< 25
2,4-Dinitrotoluene	121-14-2	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2,6-Dinitrotoluene	606-20-2	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2-Chloronaphthalene	91-58-7	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2-Chlorophenol	95-57-8	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2-Methylnaphthalene	91-57-6	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
2-Methylphenol	95-48-7	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
2-Nitroaniline	88-74-4	µg/L	< 25	< 25	< 6.6	< 25 [< 25]	< 25	< 6.3	< 25	< 6.5	< 25	< 22	< 25
2-Nitrophenol	88-75-5	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
3-Nitroaniline	99-09-2	µg/L	< 25	< 25	< 6.6	< 25 [< 25]	< 25	< 6.3	< 25	< 6.5	< 25	< 22	< 25
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 25	< 25	< 6.6	< 25 [< 25]	< 25	< 6.3	< 25	< 6.5	< 25	< 22	< 25
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Semi-Volatile Organic Compounds													

Location ID Sample ID Sample Date	CAS	Units	RW-2 (452-462) RW-2 (452-462)-082515 8/25/2015	RW-3 (77-87) RW-3 (77-87)-080615 8/6/2015	RW-3DD (175-180) RW-3DD (175-180)-081015 8/10/2015	RW-3DS (155-160) RW-3DS (155-160)-082515 8/25/2015	RW-4 (333-343) RW-4 (333-343)-082415 8/24/2015	RW-4 (393-403) RW-4 (393-403)-081015 8/10/2015	RW-4A (113-123) RW-4A (113-123)-082415 8/24/2015	RW-4A (62-72) RW-4A (62-72)-081015 8/10/2015	RW-5 RW-5-080515 8/5/2015	RW-5A RW-5A-082415 8/24/2015	RW-6 RW-6-080515 8/5/2015
4-Chloroaniline	106-47-8	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
4-Nitroaniline	100-01-6	µg/L	< 25	< 25	< 6.6	< 25 [< 25]	< 25	< 6.3	< 25	< 6.5	< 25	< 22	< 25
4-Nitrophenol	100-02-7	µg/L	< 25	< 25	< 6.6	< 25 [< 25]	< 25	< 6.3	< 25	< 6.5	< 25	< 22	< 25
Acenaphthene	83-32-9	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Acenaphthylene	208-96-8	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Acetophenone	98-86-2	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Anthracene	120-12-7	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Atrazine	1912-24-9	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Benzaldehyde	100-52-7	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Benzo(a)anthracene	56-55-3	µg/L	< 0.05	< 0.05	< 0.05	< 0.05 [< 0.05]	< 0.046	< 0.05	< 0.046	< 0.05	< 0.05	< 0.045	< 0.05
Benzo(a)pyrene	50-32-8	µg/L	< 0.05	< 0.05	< 0.05	< 0.05 [< 0.05]	< 0.046	< 0.05	< 0.046	< 0.05	< 0.05	< 0.045	< 0.05
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.05	< 0.05	< 0.05	< 0.05 [< 0.05]	< 0.046	< 0.05	< 0.046	< 0.05	< 0.05	< 0.045	< 0.05
Benzo(g,h,i)perylene	191-24-2	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Benzo(k)fluoranthene	207-08-9	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Benzyl butyl phthalate	85-68-7	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 10	< 10	2.8	< 10 [< 10]	< 10	2.4	< 10	< 2.6	< 10	< 8.6	< 10
Caprolactam	105-60-2	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Carbazole	86-74-8	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Chrysene	218-01-9	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Dibenzofuran	132-64-9	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Diethyl phthalate	84-66-2	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Dimethyl phthalate	131-11-3	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
di-n-butyl phthalate	84-74-2	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
di-n-octylphthalate	117-84-0	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Fluoranthene	206-44-0	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Fluorene	86-73-7	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Hexachlorobenzene	118-74-1	µg/L	< 0.02	< 0.02	< 0.02	< 0.02 [< 0.02]	< 0.019	< 0.02	< 0.019	< 0.02	< 0.02	< 0.018	< 0.02
Hexachlorobutadiene	87-68-3	µg/L	< 0.4	< 0.4	< 0.4	< 0.4 [< 0.4]	< 0.37	< 0.4	< 0.37	< 0.4	< 0.4	< 0.36	< 0.4
Hexachlorocyclopentadiene	77-47-4	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Hexachloroethane	67-72-1	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Isophorone	78-59-1	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Naphthalene	91-20-3	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Nitrobenzene	98-95-3	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
N-Nitrosodiphenylamine	86-30-6	µg/L	< 10	< 10	< 2.6	< 10 [< 10]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Pentachlorophenol	87-86-5	µg/L	< 0.3	< 0.3	< 0.3	< 0.3 [< 0.3]	< 0.28	< 0.3	< 0.28	< 0.3	< 0.3	< 0.27	< 0.3
Phenanthrene	85-01-8	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Phenol	108-95-2	µg/L	10	< 10	3.6	3 [2.7]	< 10	< 2.5	< 10	< 2.6	< 10	< 8.6	< 10
Pyrene	129-00-0	µg/L	< 2	< 2	< 0.53	< 2 [< 2]	< 2	< 0.5	< 2	< 0.52	< 2	< 1.7	< 2
Metals - Total													
Aluminum, total	7429-90-5	µg/L	100	13	110	82 [77]	860	1600	16	86	400	55	12
Antimony, total	7440-36-0	µg/L	< 2	< 2	< 2	0.51 [< 2]	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Arsenic, total	7440-38-2	µg/L	5.4	0.88	20	12 [12]	0.9	0.59	< 2	< 2	8.9	3.3	1.5
Barium, total	7440-39-3	µg/L	59	50	6.4	13 [13]	19	23	14	4.1	9.4	25	440
Beryllium, total	7440-41-7	µg/L	< 2	< 2	< 2	< 2 [< 2]	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Cadmium, total	7440-43-9	µg/L	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Calcium, total	7440-70-2	µg/L	132000	58800	21800	46600 [45200]	51400	23500	12900	9800	17700	76300	77000
Chromium, total	7440-47-3	µg/L	0.58	< 2	< 2	3.5 [3.2]	36	1.4	< 2	0.61	3.7	< 2	2.9
Cobalt, total	7440-48-4	µg/L	< 2	< 2	< 2	< 2 [< 2]	< 2	< 2	< 2	< 2	< 2	1.2	1.6
Copper, total	7440-50-8	µg/L	1	0.9	< 2	< 2 [< 2]	1.1	1.3	< 2	0.81	8.9	0.5	< 2
Iron, total	7439-89-6	µg/L	21	82	14	12 [27]	< 25	900	28	140	2300	4300	36300
Lead, total	7439-92-1	µg/L	0.2	0.26	< 2	< 2 [< 2]	< 2	1.8	< 2	0.44	6.6	< 2	0.25
Magnesium, total	7439-95-4	µg/L	< 1000	15600	720	< 1000 [< 1000]	< 1000	7500	4700	4000	3200	8400	13600
Manganese, total	7439-96-5	µg/L	< 2	96	0.99	0.59 [0.8]	< 2	8.4	1.6	2.1	290	1000	7400
Mercury, total	7439-97-6	µg/L	< 0.2	< 0.2	< 0.2	< 0.2 [< 0.2]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Nickel, total	7440-02-0	µg/L	8.3	9.4	3.5	5.6 [5.4]	< 2	3.1	15	27	3.6	0.85	1.1
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	3.6	< 2	< 2	4.2 [3.9]	0.8	0.65	< 2	< 2	< 2	< 2	< 2
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 2	< 2	< 2	< 2 [< 2]	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Sodium, total	7440-23-5	µg/L	371000	7700	53700	219000 [221000]	15800	8900	5700	5700	44000	7700	6800
Thallium, total	7440-28-0	µg/L	0.51	< 2	< 2	0.7 [0.24]	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Vanadium, total	7440-62-2	µg/L	40	2	7.9	5.8 [5.6]	12	1.8	1.9	1.7	4.9	2.2	2.7
Zinc, total	7440-66-6	µg/L	< 25	16	< 25	< 25 [< 25]	< 25	< 25	< 25	< 25	220	< 25	< 25
Other													
Cyanide, total	57-12-5	µg/L	< 10	< 10	< 10	< 10 [< 10]	< 10	< 10	16	< 10	< 10	< 10	7.2
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA

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Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-6A RW-6A-080415 8/4/2015	RW-8 (163-173) RW-8 (163-173)- 081815 8/18/2015	RW-8 (204-214) RW-8 (204-214)-082015 8/20/2015	RW-9 (206-216) RW-9 (206-216)-082115 8/21/2015	RW-9A (85-95) RW-9A (85-95)-082115 8/21/2015	RW-10 (120-130) RW-10 (120-130)-081915 8/19/2015	RW-10 (185-195) RW-10 (185-195)- 081815 8/18/2015	RW-10A (51-61) RW-10A (51-61)-082015 8/20/2015	RW-10A (75-85) RW-10A (75-85)- 081815 8/18/2015	RW-11D (262-267) RW-11D (262-267)-082615 8/26/2015
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	79-00-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	75-34-3	µg/L	0.42	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethene	75-35-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 10	< 0.02	< 0.02	< 10	< 0.02	< 0.02	< 0.02	< 0.02	< 10	< 0.02
1,2-Dibromoethane	106-93-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.03
1,2-Dichlorobenzene	95-50-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	107-06-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	78-87-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	541-73-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	106-46-7	µg/L	0.27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
2-Butanone (MEK)	78-93-3	µg/L	< 50	< 50	< 50	< 50	11	5.3	< 50	< 50	< 50	29
2-Hexanone	591-78-6	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Acetone	67-64-1	µg/L	< 25	< 25	4.1	5.6	3.9	43	24	< 25	< 25	45
Benzene	71-43-2	µg/L	7.7	0.27	0.57	< 1	< 1	< 1	< 1	< 1	< 1	1.6
Bromodichloromethane	75-27-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	75-25-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Bromomethane	74-83-9	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Carbon disulfide	75-15-0	µg/L	< 1	< 1	< 1	< 1	< 1	3.2	1.6	< 1	< 1	63
Carbon tetrachloride	56-23-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	108-90-7	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.22
Chloroethane	75-00-3	µg/L	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloroform	67-66-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chloromethane	74-87-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	156-59-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cyclohexane	110-82-7	µg/L	4.1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane	124-48-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dichlorodifluoromethane	75-71-8	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	100-41-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Freon 113	76-13-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene	98-82-8	µg/L	4.6	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methyl acetate	79-20-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Methyl tert butyl ether	1634-04-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Methylcyclohexane	108-87-2	µg/L	0.74	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methylene chloride	75-09-2	µg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Toluene	108-88-3	µg/L	< 1	< 1	< 1	0.2	< 1	0.22	< 1	< 1	< 1	< 1
Trans-1,2-dichloroethene	156-60-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichloroethene	79-01-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Trichlorofluoromethane	75-69-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Vinyl Chloride	75-01-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	12	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
Semi-Volatile Organic Compounds												
1,1'-Biphenyl	92-52-4	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
1,4-Dioxane	123-91-1	µg/L	2.7	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	9.5
2,4,5-Trichlorophenol	95-95-4	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2,4,6-Trichlorophenol	88-06-2	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2,4-Dichlorophenol	120-83-2	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2,4-Dimethylphenol	105-67-9	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2,4-Dinitrophenol	51-28-5	µg/L	< 25	< 25	< 23	< 25	< 23	< 25	< 25	< 31	< 25	6.6
2,4-Dinitrotoluene	121-14-2	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2,6-Dinitrotoluene	606-20-2	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2-Chloronaphthalene	91-58-7	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2-Chlorophenol	95-57-8	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2-Methylnaphthalene	91-57-6	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
2-Methylphenol	95-48-7	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
2-Nitroaniline	88-74-4	µg/L	< 25	< 25	< 23	< 25	< 23	< 25	< 25	< 31	< 25	< 25
2-Nitrophenol	88-75-5	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
3-Nitroaniline	99-09-2	µg/L	< 25	< 25	< 23	< 25	< 23	< 25	< 25	< 31	< 25	< 25
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 25	< 25	< 23	< 25	< 23	< 25	< 25	< 31	< 25	< 25
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Semi-Volatile Organic Compounds												

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Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-6A RW-6A-080415 8/4/2015	RW-8 (163-173) RW-8 (163-173)- 081815 8/18/2015	RW-8 (204-214) RW-8 (204-214)-082015 8/20/2015	RW-9 (206-216) RW-9 (206-216)-082115 8/21/2015	RW-9A (85-95) RW-9A (85-95)-082115 8/21/2015	RW-10 (120-130) RW-10 (120-130)-081915 8/19/2015	RW-10 (185-195) RW-10 (185-195)- 081815 8/18/2015	RW-10A (51-61) RW-10A (51-61)-082015 8/20/2015	RW-10A (75-85) RW-10A (75-85)- 081815 8/18/2015	RW-11D (262-267) RW-11D (262-267)-082615 8/26/2015
4-Chloroaniline	106-47-8	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
4-Nitroaniline	100-01-6	µg/L	< 25	< 25	< 23	< 25	< 23	< 25	< 25	< 31	< 25	< 25
4-Nitrophenol	100-02-7	µg/L	< 25	< 25	< 23	< 25	< 23	< 25	< 25	< 31	< 25	< 25
Acenaphthene	83-32-9	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Acenaphthylene	208-96-8	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Acetophenone	98-86-2	µg/L	2.4	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Anthracene	120-12-7	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Atrazine	1912-24-9	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Benzaldehyde	100-52-7	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Benzo(a)anthracene	56-55-3	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.047	< 0.043	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	50-32-8	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.047	< 0.043	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.047	< 0.043	< 0.05	< 0.05	< 0.05
Benzo(g,h,i)perylene	191-24-2	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Benzo(k)fluoranthene	207-08-9	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Benzyl butyl phthalate	85-68-7	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
bis(2-Chloroethyl)ether	111-44-4	µg/L	3.4	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Caprolactam	105-60-2	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Carbazole	86-74-8	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Chrysene	218-01-9	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Dibenzofuran	132-64-9	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Diethyl phthalate	84-66-2	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Dimethyl phthalate	131-11-3	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
di-n-butyl phthalate	84-74-2	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
di-n-octylphthalate	117-84-0	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Fluoranthene	206-44-0	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Fluorene	86-73-7	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Hexachlorobenzene	118-74-1	µg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.019	< 0.017	< 0.02	< 0.02	< 0.02
Hexachlorobutadiene	87-68-3	µg/L	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.38	< 0.34	< 0.4	< 0.4	< 0.4
Hexachlorocyclopentadiene	77-47-4	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Hexachloroethane	67-72-1	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Isophorone	78-59-1	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Naphthalene	91-20-3	µg/L	8.1	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Nitrobenzene	98-95-3	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
N-Nitrosodiphenylamine	86-30-6	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	< 10	< 10	< 13	< 10	< 10
Pentachlorophenol	87-86-5	µg/L	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.28	< 0.26	< 0.3	< 0.3	< 0.3
Phenanthrene	85-01-8	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Phenol	108-95-2	µg/L	< 10	< 10	< 9.1	< 10	< 9.3	8.6	3.3	< 13	< 10	2.3
Pyrene	129-00-0	µg/L	< 2	< 2	< 1.8	< 2	< 1.9	< 2	< 2	< 2.5	< 2	< 2
Metals - Total												
Aluminum, total	7429-90-5	µg/L	9.8	< 20	< 20	100	59	170	170	< 20	< 20	730
Antimony, total	7440-36-0	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Arsenic, total	7440-38-2	µg/L	1.4	3.6	2	3	3.2	7.5	6.7	2.1	2	2.4
Barium, total	7440-39-3	µg/L	48	12	37	35	12	17	11	16	7.1	540
Beryllium, total	7440-41-7	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Cadmium, total	7440-43-9	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Calcium, total	7440-70-2	µg/L	85500	37500	67500	27600	26500	50800	47700	61400	51400	383000
Chromium, total	7440-47-3	µg/L	0.8	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	40
Cobalt, total	7440-48-4	µg/L	19	< 2	< 2	< 2	< 2	< 2	< 2	3.8	< 2	< 2
Copper, total	7440-50-8	µg/L	0.71	< 2	1.1	< 2	< 2	< 2	< 2	< 2	4	3.2
Iron, total	7439-89-6	µg/L	22200	29	1500	92	340	28	14	700	29	490
Lead, total	7439-92-1	µg/L	< 2	< 2	0.97	< 2	< 2	< 2	< 2	< 2	0.82	0.69
Magnesium, total	7439-95-4	µg/L	19300	6200	20000	17600	5600	< 1000	440	14600	14000	< 1000
Manganese, total	7439-96-5	µg/L	15700	15	310	4.6	46	< 2	< 2	2100	1.9	6.3
Mercury, total	7439-97-6	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Nickel, total	7440-02-0	µg/L	3.3	19	35	0.57	4.9	13	3.7	29	5.9	17
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 2	< 2	< 2	< 2	< 2	3.3	1.1	< 2	< 2	1
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Sodium, total	7440-23-5	µg/L	8200	52400	87500	162000	5900	65800	39000	27600	5000	210000
Thallium, total	7440-28-0	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Vanadium, total	7440-62-2	µg/L	3.3	1.2	1.4	1.5	1.4	8.8	2.4	1.7	1.4	2.4
Zinc, total	7440-66-6	µg/L	< 25	< 25	22	< 25	< 25	< 25	< 25	< 25	13	< 25
Other												
Cyanide, total	57-12-5	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-11S (236-241) RW-11S (236-241)-081715 8/17/2015	RW-12 (130-140) RW-12(130-140)-081215 8/12/2015	RW-12 (55-65) RW-12 (55-65)-081715 8/17/2015	RW-13 (100-120) RW-13 (100-120)- 081315 8/13/2015	RW-13 (150-170) RW-13(150-170)-081215 8/12/2015	RW-13 (71-91) RW-13 (71-91)-082415 8/24/2015	OB-02 OB-2-081716 8/17/2016	OB-03 OB-3-081616 8/16/2016	OB-04 OB-4-081716 8/17/2016	OB-05 OB-5-081816 8/18/2016	OB-12 OB-12-081716 8/17/2016	OB-13 OB-13-081616 8/16/2016
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.19	< 0.19	< 0.19	< 0.19 J	< 0.19	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 10	< 10	< 0.02	< 10	< 0.02	< 10	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
1,2-Dibromoethane	106-93-4	µg/L	< 0.03	< 1	< 1	< 1	< 1	< 1	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
1,2-Dichlorobenzene	95-50-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	< 50	< 50	< 50	3.2	< 50	< 50	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 10	< 10	1	< 10	< 10	< 10	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	< 25	< 25	8.3	41	< 25	< 25	< 1.1	19	< 1.1	< 1.1	< 1.1	< 1.1
Benzene	71-43-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Bromodichloromethane	75-27-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.18 J	< 0.18	< 0.18 J	< 0.18	< 0.18 J	< 0.18
Bromomethane	74-83-9	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	< 1	0.27	3.4	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 5	0.66	0.17	0.14	< 5	< 5	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Dibromochloromethane	124-48-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Freon 113	76-13-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
Methyl acetate	79-20-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.13	< 0.13	< 0.13	0.17 J	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 5	< 5	< 5	< 5	< 5	< 5	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Methylene chloride	75-09-2	µg/L	< 5	0.22	< 5	< 5	0.34	< 5	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 1	< 1	3.6	0.65	< 1	< 1	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Trans-1,2-dichloroethene	156-60-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Vinyl Chloride	75-01-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 3	< 3	< 3	< 3	< 3	< 3	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Semi-Volatile Organic Compounds														
1,1'-Biphenyl	92-52-4	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.64	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66
1,4-Dioxane	123-91-1	µg/L	1.1	< 10	< 10	< 10	< 10	< 10	< 0.0765	< 0.0735	0.079 J	0.165	< 0.0735	< 0.075
2,4,5-Trichlorophenol	95-95-4	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.5	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
2,4,6-Trichlorophenol	88-06-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.54	< 0.55	< 0.56	< 0.55	< 0.55	< 0.55
2,4-Dichlorophenol	120-83-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.64	< 0.66	< 0.66	< 0.66	< 0.66	< 0.66
2,4-Dimethylphenol	105-67-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.93	< 0.95	< 0.96	< 0.95	< 0.95	< 0.95
2,4-Dinitrophenol	51-28-5	µg/L	< 25	< 25	< 25	< 25	< 25	< 23	< 2.4	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,4-Dinitrotoluene	121-14-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
2,6-Dinitrotoluene	606-20-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.9	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92
2-Chloronaphthalene	91-58-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.62	< 0.64	< 0.64	< 0.64	< 0.64	< 0.64
2-Chlorophenol	95-57-8	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.76	< 0.77	< 0.78	< 0.77	< 0.77	< 0.77
2-Methylnaphthalene	91-57-6	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.9	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92
2-Methylphenol	95-48-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 1.3	< 1.3 J	< 1.4	< 1.3 J	< 1.3	< 1.3 J
2-Nitroaniline	88-74-4	µg/L	< 25	< 25	< 25	< 25	< 25	< 23	< 0.66	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68
2-Nitrophenol	88-75-5	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.6	< 0.61	< 0.62	< 0.61	< 0.61	< 0.61
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
3-Nitroaniline	99-09-2	µg/L	< 25	< 25	< 25	< 25	< 25	< 23	< 0.84	< 0.85	< 0.86	< 0.85	< 0.85	< 0.85
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 25	< 25	< 25	< 25	< 25	< 23	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.78	< 0.79	< 0.8	< 0.79	< 0.79	< 0.79
Semi-Volatile Organic Compounds														

Location ID Sample ID Sample Date	CAS	Units	RW-11S (236-241) RW-11S (236-241)-081715 8/17/2015	RW-12 (130-140) RW-12(130-140)-081215 8/12/2015	RW-12 (55-65) RW-12 (55-65)-081715 8/17/2015	RW-13 (100-120) RW-13 (100-120)- 081315 8/13/2015	RW-13 (150-170) RW-13(150-170)-081215 8/12/2015	RW-13 (71-91) RW-13 (71-91)-082415 8/24/2015	OB-02 OB-2-081716 8/17/2016	OB-03 OB-3-081616 8/16/2016	OB-04 OB-4-081716 8/17/2016	OB-05 OB-5-081816 8/18/2016	OB-12 OB-12-081716 8/17/2016	OB-13 OB-13-081616 8/16/2016
4-Chloroaniline	106-47-8	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.74	< 0.76	< 0.77	< 0.76	< 0.76	< 0.76
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.98	< 1	< 1	< 1	< 1	< 1
4-Nitroaniline	100-01-6	µg/L	< 25	< 25	< 25	< 25	< 25	< 23	< 0.49	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	100-02-7	µg/L	< 25	< 25	< 25	< 25	< 25	< 23	< 4.7	< 4.8	< 4.9	< 4.8	< 4.8	< 4.8
Acenaphthene	83-32-9	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.9	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92
Acenaphthylene	208-96-8	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.66	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68
Acetophenone	98-86-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Anthracene	120-12-7	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.58	< 0.59	< 0.6	< 0.59	< 0.59	< 0.59
Atrazine	1912-24-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.79	< 0.8	< 0.81	< 0.8	< 0.8	1.4 J
Benzaldehyde	100-52-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.88	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Benzo(a)anthracene	56-55-3	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.043	< 0.038	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039
Benzo(a)pyrene	50-32-8	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.043	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.043	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Benzo(g,h,i)perylene	191-24-2	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.77	< 0.78	< 0.79	< 0.78	< 0.78	< 0.78
Benzo(k)fluoranthene	207-08-9	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.18	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzyl butyl phthalate	85-68-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.61	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.7	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.0092	< 0.0094	< 0.0095	< 0.0094	< 0.0094	< 0.0094
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.73	< 0.75	< 0.76	< 0.75	< 0.75	< 0.75
Caprolactam	105-60-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Carbazole	86-74-8	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.87	< 0.89	< 0.89	< 0.89	< 0.89	< 0.89
Chrysene	218-01-9	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.68	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.022	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023
Dibenzofuran	132-64-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.87	< 0.89	< 0.89	< 0.89	< 0.89	< 0.89
Diethyl phthalate	84-66-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 1	< 1	< 1.1	< 1	< 1	< 1
Dimethyl phthalate	131-11-3	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 1	< 1	< 1	< 1	< 1	< 1
di-n-butyl phthalate	84-74-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.84	< 0.85	< 0.86	< 0.85	< 0.85	< 0.85
di-n-octylphthalate	117-84-0	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.7	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
Fluoranthene	206-44-0	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.73	< 0.75	< 0.76	< 0.75	< 0.75	< 0.75
Fluorene	86-73-7	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.82	< 0.83	< 0.84	< 0.83	< 0.83	< 0.83
Hexachlorobenzene	118-74-1	µg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.017	< 0.0092	< 0.0094	< 0.0095	< 0.0094	< 0.0094	< 0.0094
Hexachlorobutadiene	87-68-3	µg/L	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.34	< 0.78	< 0.79	< 0.8	< 0.79	< 0.79	< 0.79
Hexachlorocyclopentadiene	77-47-4	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.62	< 0.64	< 0.64	< 0.64	< 0.64	< 0.64
Hexachloroethane	67-72-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.092	< 0.094	< 0.095	< 0.094	< 0.094	< 0.094
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028
Isophorone	78-59-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.68	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Naphthalene	91-20-3	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.82	< 0.83	< 0.84	< 0.83	< 0.83	< 0.83
Nitrobenzene	98-95-3	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.5	< 0.51	< 0.51	< 0.51	< 0.51	< 0.51
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.85	< 0.86	< 0.87	< 0.86	< 0.86	< 0.86
N-Nitrosodiphenylamine	86-30-6	µg/L	< 10	< 10	< 10	< 10	< 10	< 9.3	< 0.76	< 0.77	< 0.78	< 0.77	< 0.77	< 0.77
Pentachlorophenol	87-86-5	µg/L	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.26	< 0.079	0.1 J	0.1 J	0.11 J	< 0.08	< 0.08
Phenanthrene	85-01-8	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.66	< 0.68	< 0.68	< 0.68	< 0.68	< 0.68
Phenol	108-95-2	µg/L	< 10	< 10	3	6.6	< 10	< 9.3	< 0.42	< 0.43	< 0.43	< 0.43	< 0.43	< 0.43
Pyrene	129-00-0	µg/L	< 2	< 2	< 2	< 2	< 2	< 1.9	< 0.85	< 0.86	< 0.87	< 0.86	< 0.86	< 0.86
Metals - Total														
Aluminum, total	7429-90-5	µg/L	< 20	900	280	5600	530	1700	52	< 13.5	27.9 J	< 13.5	33.9 J	27 J
Antimony, total	7440-36-0	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Arsenic, total	7440-38-2	µg/L	1	13	13	3.2	4.6	2.9	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71
Barium, total	7440-39-3	µg/L	15	15	25	24	31	59	5.3	3.1 J	52.2	28.4	2.3 J	5.7
Beryllium, total	7440-41-7	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29
Cadmium, total	7440-43-9	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
Calcium, total	7440-70-2	µg/L	16100	44700	72700	24900	31900	49600	12000	16800	43200	74200	6410	9770
Chromium, total	7440-47-3	µg/L	< 2	< 2	< 2	55	0.9	8	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Cobalt, total	7440-48-4	µg/L	< 2	< 2	< 2	< 2	< 2	0.59	< 1.5	< 1.5	2.1 J	6.2	< 1.5	< 1.5
Copper, total	7440-50-8	µg/L	7	< 2	< 2	19	0.74	4.8	4.1	< 1.6	< 1.6	< 1.6	4.2	< 1.6
Iron, total	7439-89-6	µg/L	57	110	19	380	650	4300	133	1060	5850	21100	54.6 J	< 49.1
Lead, total	7439-92-1	µg/L	< 2	< 2	< 2	< 2	0.33	2.3	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44
Magnesium, total	7439-95-4	µg/L	2200	140	< 1000	< 1000	6800	14800	4930	5190	14800	39200	2680	4230
Manganese, total	7439-96-5	µg/L	220	2.7	< 2	0.6	92	56	16	5 J	1400	2430	< 3	< 3
Mercury, total	7439-97-6	µg/L	0.18	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Nickel, total	7440-02-0	µg/L	3.9	2.4	3.3	2.8	8.4	3	< 1.6	< 1.6	< 1.6	2.3 J	< 1.6	< 1.6
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 2	3.8	9.9	12	< 2	3.1	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Sodium, total	7440-23-5	µg/L	3100	98800	170000	246000	9900	19400	3920	3750	92700	34800	2490	3680
Thallium, total	7440-28-0	µg/L	< 2	< 2	< 2	0.9	< 2	0.2	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31	< 0.31
Vanadium, total	7440-62-2	µg/L	2.4	15	6.8	39	2	6.7	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Zinc, total	7440-66-6	µg/L	15	< 25	< 25	< 25	< 25	< 25	< 6.5	< 6.5	< 6.5	< 6.5	< 6.5	< 6.5
Other														
Cyanide, total	57-12-5	µg/L	< 10	< 10	< 10	< 10	< 10	7.2	< 2	< 2	< 2	< 2	< 2	< 2
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-10 (120-130) RW-10S (120-130)-082916 8/29/2016	RW-10 (185-195) RW-10(185-195)-082616 8/26/2016	RW-10A (51-61) RW-10A(51-61)-082916 8/29/2016	RW-10A (75-85) RW-10A(75-85)-082616 8/26/2016	RW-11D (262-267) RW-11D(262-267)-082316 8/23/2016	RW-11S (236-241) RW-11S(236-241)-082316 8/23/2016	RW-12 (130-140) RW-12(130-140)-082516 8/25/2016	RW-12 (55-65) RW-12(55-65)-082216 8/22/2016	RW-13 (100-120) RW-13(100-120)-082616 8/26/2016
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.28	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08 [< 0.08]	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34 [< 0.34]	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.27	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.007	< 0.007 [< 0.007]	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
1,2-Dibromoethane	106-93-4	µg/L	< 0.006	< 0.006 [< 0.006]	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 0.25	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.33	< 0.33 [< 0.33]	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.33	< 0.33 [< 0.33]	< 0.33	< 0.33	0.83 J	< 0.33	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	4.7 J	< 2.2 [< 2.2]	< 2.2	< 2.2	8.2	< 2.2	< 2.2	< 2.2	3.6 J
2-Hexanone	591-78-6	µg/L	0.75 J	< 0.72 [< 0.72]	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63 [< 0.63]	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	48 B	20 B [20 B]	5 B	7 B	46 B	10 B	6.5 B	12 B	25
Benzene	71-43-2	µg/L	< 0.09	< 0.09 [< 0.09]	< 0.09	< 0.09	6.4	< 0.09	< 0.09	< 0.09	< 0.09
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15 [< 0.15]	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 0.18	< 0.18 J [< 0.18 J]	< 0.18	< 0.18 J	< 0.18	< 0.18	< 0.18 J	< 0.18 J	< 0.18 J
Bromomethane	74-83-9	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	0.53 J	0.62 J [0.74 J]	< 0.22	< 0.22	12	< 0.22	0.6 J	1.1	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 0.33	< 0.33 [< 0.33]	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.24	4.6	< 0.24	< 0.24	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37 [< 0.37]	< 0.37	< 0.37	8.6	< 0.37	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16 [< 0.16]	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.26	0.31 J	< 0.26	0.54 J	< 0.26	0.45 J
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14	< 0.14 J [< 0.14 J]	< 0.14	< 0.14 J	< 0.14	< 0.14	< 0.14 J	< 0.14	< 0.14 J
Ethylbenzene	100-41-4	µg/L	< 0.3	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Freon 113	76-13-1	µg/L	< 0.34	< 0.34 [< 0.34]	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32 [< 0.32]	< 0.32	< 0.32	1.2	< 0.32	< 0.32	< 0.32	< 0.32
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58 [< 0.58]	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13 [< 0.13]	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.21	< 0.21 [< 0.21]	< 0.21	< 0.21	0.28 J	0.63 J	< 0.21	< 0.21	0.24 UB
o-Xylene	95-47-6	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.17	< 0.17 [< 0.17]	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12 [< 0.12]	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 0.25	< 0.25 [< 0.25]	< 0.25	< 0.25	0.28 J	< 0.25	< 0.25	1.9	0.99 J
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.37 J
Trichlorofluoromethane	75-69-4	µg/L	< 0.15	< 0.15 J [< 0.15 J]	< 0.15	< 0.15 J	< 0.15	< 0.15	< 0.15 J	< 0.15	< 0.15 J
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06 [< 0.06]	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.28	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Semi-Volatile Organic Compounds											
1,1'-Biphenyl	92-52-4	µg/L	< 0.67	< 0.67 [< 0.67]	< 0.67	< 0.67	< 0.66	< 0.66	< 0.66	< 0.66	< 0.67
1,4-Dioxane	123-91-1	µg/L	0.0883 J	< 79.8 [< 81.5]	< 0.0798	< 75	73.4	1.08	< 78.1	< 0.0815	97.2 J
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.52	< 0.52 [< 0.52]	< 0.52	< 0.52	< 0.51	< 0.51	< 0.51	< 0.51	< 0.52
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.56	< 0.56 [< 0.56]	< 0.56	< 0.56	< 0.55	< 0.55	< 0.55	< 0.55	< 0.57
2,4-Dichlorophenol	120-83-2	µg/L	< 0.67	< 0.67 [< 0.67]	< 0.67	< 0.67	< 0.66	< 0.66	< 0.66	< 0.66	< 0.67
2,4-Dimethylphenol	105-67-9	µg/L	< 0.97	< 0.97 [< 0.97]	< 0.97	< 0.97	< 0.95	< 0.95	< 0.95	< 0.95	< 0.97
2,4-Dinitrophenol	51-28-5	µg/L	< 2.5	< 2.5 J [< 2.5 J]	< 2.5	< 2.5 J	< 2.5	< 2.5	< 2.5 J	< 2.5	< 2.5 J
2,4-Dinitrotoluene	121-14-2	µg/L	< 1.1	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.94	< 0.94 [< 0.94]	< 0.94	< 0.94	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94
2-Chloronaphthalene	91-58-7	µg/L	< 0.65	< 0.65 [< 0.65]	< 0.65	< 0.65	< 0.64	< 0.64	< 0.64	< 0.64	< 0.65
2-Chlorophenol	95-57-8	µg/L	< 0.79	< 0.79 [< 0.79]	< 0.79	< 0.79	< 0.77	< 0.77	< 0.77	< 0.77	< 0.79
2-Methylnaphthalene	91-57-6	µg/L	< 0.94 J	< 0.94 [< 0.94]	< 0.94 J	< 0.94	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94
2-Methylphenol	95-48-7	µg/L	< 1.4 J	< 1.4 [< 1.4]	< 1.4 J	< 1.4	< 1.3 J	< 1.3 J	< 1.3	< 1.3 J	< 1.4
2-Nitroaniline	88-74-4	µg/L	< 0.69	< 0.69 [< 0.69]	< 0.69	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69
2-Nitrophenol	88-75-5	µg/L	< 0.63	< 0.63 [< 0.63]	< 0.63	< 0.63	< 0.61	< 0.61	< 0.61	< 0.61	< 0.63
3&4-Methylphenol	12-03-3	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
3-Nitroaniline	99-09-2	µg/L	< 0.87	< 0.87 [< 0.87]	< 0.87	< 0.87	< 0.85	< 0.85	< 0.85	< 0.85	< 0.88
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.1	< 2.1 [< 2.1]	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1.1	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.81	< 0.81 [< 0.81]	< 0.81	< 0.81	< 0.79	< 0.79	< 0.79	< 0.79	< 0.81
Semi-Volatile Organic Compounds											

Location ID Sample ID Sample Date	CAS	Units	RW-10 (120-130) RW-10S (120-130)-082916 8/29/2016	RW-10 (185-195) RW-10(185-195)-082616 8/26/2016	RW-10A (51-61) RW-10A(51-61)-082916 8/29/2016	RW-10A (75-85) RW-10A(75-85)-082616 8/26/2016	RW-11D (262-267) RW-11D(262-267)-082316 8/23/2016	RW-11S (236-241) RW-11S(236-241)-082316 8/23/2016	RW-12 (130-140) RW-12(130-140)-082516 8/25/2016	RW-12 (55-65) RW-12(55-65)-082216 8/22/2016	RW-13 (100-120) RW-13(100-120)-082616 8/26/2016
4-Chloroaniline	106-47-8	µg/L	< 0.78	< 0.78 [< 0.78]	< 0.78	< 0.78	< 0.76	< 0.76	< 0.76	< 0.76	< 0.78
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Nitroaniline	100-01-6	µg/L	< 0.51	< 0.51 [< 0.51]	< 0.51	< 0.51	< 0.5	< 0.5	< 0.5	< 0.5	< 0.51
4-Nitrophenol	100-02-7	µg/L	< 4.9	< 4.9 [< 4.9]	< 4.9	< 4.9	< 4.8	< 4.8	< 4.8	< 4.8	< 5
Acenaphthene	83-32-9	µg/L	< 0.94	< 0.94 [< 0.94]	< 0.94	< 0.94	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94
Acenaphthylene	208-96-8	µg/L	< 0.69	< 0.69 [< 0.69]	< 0.69	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69
Acetophenone	98-86-2	µg/L	< 1.1	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Anthracene	120-12-7	µg/L	< 0.61	< 0.61 [< 0.61]	< 0.61	< 0.61	< 0.59	< 0.59	< 0.59	< 0.59	< 0.61
Atrazine	1912-24-9	µg/L	< 0.82 J	< 0.82 [< 0.82]	< 0.82	< 0.82	< 0.8	< 0.8	< 0.8	< 0.8	< 0.82
Benzaldehyde	100-52-7	µg/L	< 0.91	< 0.91 [< 0.91]	< 0.91	< 0.91	< 0.9	< 0.9	< 0.9	< 0.9	< 0.92
Benzo(a)anthracene	56-55-3	µg/L	< 0.039	< 0.039 [< 0.039]	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.04
Benzo(a)pyrene	50-32-8	µg/L	< 0.028	< 0.028 J [< 0.028 J]	< 0.028	< 0.028 J	< 0.027	< 0.027	< 0.027 J	< 0.027	< 0.028 J
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.013	< 0.013 J [< 0.013 J]	< 0.013	< 0.013 J	< 0.013	< 0.013	< 0.013 J	< 0.013	< 0.013 J
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.8	< 0.8 [< 0.8]	< 0.8	< 0.8	< 0.78	< 0.78	< 0.78	< 0.78	< 0.8
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.19	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzyl butyl phthalate	85-68-7	µg/L	< 0.64	< 0.64 [< 0.64]	< 0.64	< 0.64	< 0.63	< 0.63	< 0.63	< 0.63	< 0.64
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.73	< 0.73 [< 0.73]	< 0.73	< 0.73	< 0.72	< 0.72	< 0.72	< 0.72	< 0.74
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.0096	< 0.0096 J [< 0.0096 J]	< 0.0096	< 0.0096 J	< 0.0094	< 0.0094	< 0.0094 J	< 0.0094	< 0.0096 J
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.77	1.3 J [< 0.77]	< 0.77	1 J	1.5 UB	2.8 B	< 0.75	2.2	< 0.77
Caprolactam	105-60-2	µg/L	< 1.1 J	< 1.1 [< 1.1]	< 1.1 J	< 1.1	< 1.1 J	< 1.1 J	< 1.1	< 1.1 J	< 1.1
Carbazole	86-74-8	µg/L	< 0.9	< 0.9 [< 0.9]	< 0.9	< 0.9	< 0.89	< 0.89	< 0.89	< 0.89	< 0.91
Chrysene	218-01-9	µg/L	< 0.71	< 0.71 [< 0.71]	< 0.71	< 0.71	< 0.7	< 0.7	< 0.7	< 0.7	< 0.72
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023	< 0.023 J [< 0.023 J]	< 0.023	< 0.023 J	< 0.023	< 0.023	< 0.023 J	< 0.023	< 0.024 J
Dibenzofuran	132-64-9	µg/L	< 0.9	< 0.9 [< 0.9]	< 0.9	< 0.9	< 0.89	< 0.89	< 0.89	< 0.89	< 0.91
Diethyl phthalate	84-66-2	µg/L	< 1.1	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1	< 1	< 1	< 1	< 1.1
Dimethyl phthalate	131-11-3	µg/L	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1
di-n-butyl phthalate	84-74-2	µg/L	< 0.87	< 0.87 [< 0.87]	< 0.87	< 0.87	1.3 UB	2.4 UB	< 0.85	1.9 UB	< 0.88
di-n-octylphthalate	117-84-0	µg/L	< 0.73	< 0.73 [< 0.73]	< 0.73	< 0.73	< 0.72	< 0.72	< 0.72	< 0.72	< 0.74
Fluoranthene	206-44-0	µg/L	< 0.77	< 0.77 [< 0.77]	< 0.77	< 0.77	< 0.75	< 0.75	< 0.75	< 0.75	< 0.77
Fluorene	86-73-7	µg/L	< 0.85	< 0.85 [< 0.85]	< 0.85	< 0.85	< 0.83	< 0.83	< 0.83	< 0.83	< 0.85
Hexachlorobenzene	118-74-1	µg/L	< 0.0096	< 0.0096 [< 0.0096]	< 0.0096	< 0.0096	< 0.0094 J	< 0.0094 J	< 0.0094	< 0.0094	< 0.0096
Hexachlorobutadiene	87-68-3	µg/L	< 0.81 J	< 0.81 [< 0.81]	< 0.81 J	< 0.81	< 0.79 J	< 0.79 J	< 0.79	< 0.79	< 0.81
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.65	< 0.65 [< 0.65]	< 0.65	< 0.65	< 0.64 J	< 0.64 J	< 0.64	< 0.64	< 0.65
Hexachloroethane	67-72-1	µg/L	< 0.096	< 0.096 [< 0.096]	< 0.096	< 0.096	< 0.094	< 0.094	< 0.094	< 0.094	< 0.096
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.029	< 0.029 [< 0.029]	< 0.029	< 0.029	< 0.028	< 0.028	< 0.028	< 0.028	< 0.029
Isophorone	78-59-1	µg/L	1.3 J	< 0.71 [< 0.71]	< 0.71	< 0.71	< 0.7	< 0.7	< 0.7	2.1 J	< 0.72
Naphthalene	91-20-3	µg/L	< 0.85 J	< 0.85 [< 0.85]	< 0.85 J	< 0.85	< 0.83	< 0.83	< 0.83	< 0.83	< 0.85
Nitrobenzene	98-95-3	µg/L	< 0.52	< 0.52 [< 0.52]	< 0.52	< 0.52	< 0.51	< 0.51	< 0.51	< 0.51	< 0.52
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.88	< 0.88 [< 0.88]	< 0.88	< 0.88	< 0.86	< 0.86	< 0.86	< 0.86	< 0.89
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.79	< 0.79 [< 0.79]	< 0.79	< 0.79	< 0.77	< 0.77	< 0.77	< 0.77	< 0.79
Pentachlorophenol	87-86-5	µg/L	< 0.082	< 0.082 [< 0.082]	< 0.082	< 0.082	< 0.08 J	< 0.08 J	< 0.08	< 0.08	< 0.082
Phenanthrene	85-01-8	µg/L	< 0.69	< 0.69 [< 0.69]	< 0.69	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69
Phenol	108-95-2	µg/L	7.4 J	< 0.44 [< 0.44]	< 0.44	< 0.44	< 0.43	< 0.43	< 0.43	6.3 J	4.8 J
Pyrene	129-00-0	µg/L	< 0.88	< 0.88 [< 0.88]	< 0.88	< 0.88	< 0.86	< 0.86	< 0.86	< 0.86	< 0.89
Metals - Total											
Aluminum, total	7429-90-5	µg/L	114	119 [114]	< 18.2	27.3 J	9100	< 18.2	877	156	5080
Antimony, total	7440-36-0	µg/L	0.88 J	< 0.62 [< 0.62]	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.76	< 0.62
Arsenic, total	7440-38-2	µg/L	6.6	4.6 [4.3]	0.86 J	< 0.64	0.88 J	< 0.64	13.5	12	3.1
Barium, total	7440-39-3	µg/L	13.1	9.9 [9.3]	11.4	6.7	233	15.9	15.1	20.6	17.7
Beryllium, total	7440-41-7	µg/L	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.29	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.71	< 0.71 [< 0.71]	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.72	< 0.71
Calcium, total	7440-70-2	µg/L	44400	47200 [46600]	53300	49900	200000	16000	38500	61800	13800
Chromium, total	7440-47-3	µg/L	< 1.3	< 1.3 [< 1.3]	< 1.3	< 1.3	4.3	< 1.3	< 1.3	< 1.5	22.3
Cobalt, total	7440-48-4	µg/L	< 1.3	< 1.3 [< 1.3]	4.2	< 1.3	< 1.3	< 1.3	< 1.3	< 1.5	< 1.3
Copper, total	7440-50-8	µg/L	< 1.4	< 1.4 [< 1.4]	2.9 J	< 1.4	< 1.4	5.8	< 1.4	< 1.6	14.8
Iron, total	7439-89-6	µg/L	< 42.4	< 42.4 [< 42.4]	648	< 42.4	127	142	400	< 49.1	344
Lead, total	7439-92-1	µg/L	< 0.38	< 0.38 [< 0.38]	< 0.38	< 0.38	< 0.38	< 0.38	0.41 J	< 0.44	0.78 J
Magnesium, total	7439-95-4	µg/L	< 63.6	747 [738]	15100	14200	< 63.6	1860	710	484	< 63.6
Manganese, total	7439-96-5	µg/L	< 2.5	< 2.5 [< 2.5]	2460	9.1	6.8 J	327	11.9	< 3	< 2.5
Mercury, total	7439-97-6	µg/L	< 0.17	< 0.17 [< 0.17]	< 0.17	< 0.17	< 0.17	0.49	< 0.17	< 0.14	< 0.17
Nickel, total	7440-02-0	µg/L	11.4	2.2 J [2.2 J]	18.2	< 1.4	11.9	< 1.4	4	2.1 J	2.8 J
Potassium, total	7440-09-7	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	2.5 J	< 0.73 [< 0.73]	< 0.73	< 0.73	1.3 J	< 0.73	0.92 J	6.3 J	9.2 J
Silicon, total	7440-21-3	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.3	< 1.3 [< 1.3]	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.5	< 1.3
Sodium, total	7440-23-5	µg/L	68800	31200 [30700]	20300	5170	184000	2670	84200	128000	190000
Thallium, total	7440-28-0	µg/L	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.31	< 0.26
Vanadium, total	7440-62-2	µg/L	5.9	< 1.9 [< 1.9]	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	2.3 J	44.1
Zinc, total	7440-66-6	µg/L	< 7	< 7 [< 7]	< 7	< 7	< 7	12.2 J	42.2	< 6.5	< 7
Other											
Cyanide, total	57-12-5	µg/L	< 2	< 2 [< 2]	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Cyanide, free	E-14718	µg/L	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-13 (150-170) RW-13(150-170)-082616 8/26/2016	RW-13 (71-91) RW-13(71-91)-082516 8/25/2016	RW-14D (175-185) RW-14D(175-185)-082916 8/29/2016	RW-14S (135-155) RW-14S(135-155)-082916 8/29/2016	RW-15D (127-137) RW-15D(127-137)-082416 8/24/2016	RW-15S (110-120) RW-15S(110-120)-082416 8/24/2016	RW-16 RW-16-081616 8/16/2016	RW-2 (279-289) RW-2(279-289)-082216 8/22/2016	RW-2 (452-462) RW-2(452-462)-082216 8/22/2016	RW-3 RW-3-082416 8/24/2016
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28 [< 0.28]
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08 [< 0.08]
1,1-Dichloroethane	75-34-3	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24 [< 0.24]
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34 [< 0.34]
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27 [< 0.27]
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007 [< 0.007]
1,2-Dibromoethane	106-93-4	µg/L	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006 [< 0.006]
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.39 J	< 0.22	< 0.22 [< 0.22]
1,2-Dichloroethane	107-06-2	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25 [< 0.25]
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 [< 0.18]
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	0.77 J	< 0.33	< 0.33 [< 0.33]
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	1.5	< 0.33	< 0.33 [< 0.33]
2-Butanone (MEK)	78-93-3	µg/L	< 2.2	< 2.2	3.5 J	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2 [< 2.2]
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72 [< 0.72]
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63 [< 0.63]
Acetone	67-64-1	µg/L	4.5 UB	8.4 B	15 B	13 B	27 B	29 B	< 1.1	13 B	16 B	7.6 B [9.4 B]
Benzene	71-43-2	µg/L	< 0.09	< 0.09	0.31 J	< 0.09	< 0.09	< 0.09	< 0.09	0.34 J	0.2 J	< 0.09 [< 0.09]
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15 [< 0.15]
Bromoform	75-25-2	µg/L	< 0.18 J	< 0.18 J	< 0.18 J	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 J	< 0.18 J	< 0.18 [< 0.18]
Bromomethane	74-83-9	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 [< 0.18]
Carbon disulfide	75-15-0	µg/L	0.37 J	< 0.22	1	0.56 J	8.7	5.1	< 0.22	< 0.22	0.7 J	< 0.22 [< 0.22]
Carbon tetrachloride	56-23-5	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33 [< 0.33]
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	12	< 0.24	< 0.24 [< 0.24]
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37 [< 0.37]
Chloroform	67-66-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.32 J	< 0.22 [< 0.22]
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26 [< 0.26]
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16 [< 0.16]
Cyclohexane	110-82-7	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26 [< 0.26]
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14 J	< 0.14 J	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14 [< 0.14]
Ethylbenzene	100-41-4	µg/L	0.48 J	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3 [< 0.3]
Freon 113	76-13-1	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34 [< 0.34]
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32 [< 0.32]
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58 [< 0.58]
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	0.25 J	0.32 J	< 0.13 [< 0.13]
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]
Methylene chloride	75-09-2	µg/L	< 0.21	0.35 UB	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21 [< 0.21]
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]
Styrene	100-42-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17 [< 0.17]
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12 [< 0.12]
Toluene	108-88-3	µg/L	0.33 J	< 0.25	0.85 J	0.96 J	1.7	1.2	< 0.25	0.42 J	0.69 J	< 0.25 [< 0.25]
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 [< 0.18]
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]
Trichloroethene	79-01-6	µg/L	0.69 J	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]
Trichlorofluoromethane	75-69-4	µg/L	< 0.15 J	< 0.15 J	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15 [< 0.15]
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06 J	< 0.06 J	< 0.06	< 0.06	0.2 J	< 0.06 J [< 0.06 J]
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]
Xylenes	1330-20-7	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28 [< 0.28]
Semi-Volatile Organic Compounds												
1,1'-Biphenyl	92-52-4	µg/L	< 0.67	< 0.66	< 0.63	< 0.63	< 0.66	< 0.67	< 0.66	< 0.66	< 0.66	< 0.67 [< 0.67]
1,4-Dioxane	123-91-1	µg/L	< 76.5	201	0.973	0.251	0.86	0.277 B	< 0.075	11.9	0.901	29.1 [29]
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.52	< 0.51	< 0.49	< 0.49	< 0.51	< 0.52	< 0.51	< 0.51	< 0.51	< 0.52 [< 0.52]
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.56	< 0.55	< 0.53	< 0.53	< 0.55	< 0.56	< 0.55	< 0.55	< 0.55	< 0.56 [< 0.56]
2,4-Dichlorophenol	120-83-2	µg/L	< 0.67	< 0.66	< 0.63 J	< 0.63	< 0.66	< 0.67	< 0.66	< 0.66	< 0.66	< 0.67 [< 0.67]
2,4-Dimethylphenol	105-67-9	µg/L	< 0.97	< 0.95	< 0.91 J	< 0.91	< 0.95	< 0.96	< 0.95	< 0.95	< 0.95	< 0.97 [< 0.97]
2,4-Dinitrophenol	51-28-5	µg/L	< 2.5 J	< 2.5 J	< 2.4	< 2.4	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5 J [< 2.5 J]
2,4-Dinitrotoluene	121-14-2	µg/L	< 1.1	< 1.1	< 1	< 1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 [< 1.1]
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.94	< 0.92	< 0.88	< 0.88	< 0.92	< 0.93	< 0.92	< 0.92	< 0.92	< 0.94 [< 0.94]
2-Chloronaphthalene	91-58-7	µg/L	< 0.65	< 0.64	< 0.61	< 0.61	< 0.64	< 0.65	< 0.64	< 0.64	< 0.64	< 0.65 [< 0.65]
2-Chlorophenol	95-57-8	µg/L	< 0.79	< 0.77	< 0.74	< 0.74	< 0.77	< 0.78	< 0.77	< 0.77	< 0.77	< 0.79 [< 0.79]
2-Methylnaphthalene	91-57-6	µg/L	< 0.94	< 0.92	< 0.88 J	< 0.88 J	< 0.92	< 0.93	< 0.92	< 0.92	< 0.92	< 0.94 [< 0.94]
2-Methylphenol	95-48-7	µg/L	< 1.4	< 1.3	< 1.3 J	< 1.3 J	< 1.3	< 1.4	< 1.3 J	< 1.3 J	< 1.3 J	< 1.4 [< 1.4]
2-Nitroaniline	88-74-4	µg/L	< 0.69	< 0.68	< 0.65	< 0.65	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68	< 0.69 [< 0.69]
2-Nitrophenol	88-75-5	µg/L	< 0.63	< 0.61	< 0.59 J	< 0.59	< 0.61	< 0.63 J	< 0.61	< 0.61	< 0.61	< 0.63 [< 0.63]
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1	< 1.1	< 1	< 1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 [< 1.1]
3-Nitroaniline	99-09-2	µg/L	< 0.87	< 0.85	< 0.82	< 0.82	< 0.85	< 0.87	< 0.85	< 0.85	< 0.85	< 0.87 [< 0.87]
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.1	< 2.1	< 2	< 2	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1 [< 2.1]
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1.1	< 1.1	< 1 J	< 1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 [< 1.1]
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.81	< 0.79	< 0.76	< 0.76	< 0.79	< 0.81	< 0.79	< 0.79	< 0.79	< 0.81 [< 0.81]
Semi-Volatile Organic Compounds												

Location ID Sample ID Sample Date	CAS	Units	RW-13 (150-170) RW-13(150-170)-082616 8/26/2016	RW-13 (71-91) RW-13(71-91)-082516 8/25/2016	RW-14D (175-185) RW-14D(175-185)-082916 8/29/2016	RW-14S (135-155) RW-14S(135-155)-082916 8/29/2016	RW-15D (127-137) RW-15D(127-137)-082416 8/24/2016	RW-15S (110-120) RW-15S(110-120)-082416 8/24/2016	RW-16 RW-16-081616 8/16/2016	RW-2 (279-289) RW-2(279-289)-082216 8/22/2016	RW-2 (452-462) RW-2(452-462)-082216 8/22/2016	RW-3 RW-3-082416 8/24/2016
4-Chloroaniline	106-47-8	µg/L	< 0.78	< 0.76	< 0.73	< 0.73	< 0.76	< 0.77	< 0.76	< 0.76	< 0.76	< 0.78 [< 0.78]
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 1	< 1	< 0.96	< 0.96	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]
4-Nitroaniline	100-01-6	µg/L	< 0.51	< 0.5	< 0.48	< 0.48	< 0.5	< 0.51	< 0.5	< 0.5	< 0.5	< 0.51 [< 0.51]
4-Nitrophenol	100-02-7	µg/L	< 4.9	< 4.8	< 4.7	< 4.7	< 4.8	< 4.9	< 4.8	< 4.8	< 4.8	< 4.9 [< 4.9]
Acenaphthene	83-32-9	µg/L	< 0.94	< 0.92	< 0.88	< 0.88	< 0.92	< 0.93	< 0.92	< 0.92	< 0.92	< 0.94 [< 0.94]
Acenaphthylene	208-96-8	µg/L	< 0.69	< 0.68	< 0.65	< 0.65	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68	< 0.69 [< 0.69]
Acetophenone	98-86-2	µg/L	< 1.1	< 1.1	< 1	< 1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 [< 1.1]
Anthracene	120-12-7	µg/L	< 0.61	< 0.59	< 0.57 J	< 0.57	< 0.59	< 0.6	< 0.59	< 0.59	< 0.59	< 0.61 [< 0.61]
Atrazine	1912-24-9	µg/L	< 0.82	< 0.8	< 0.77 J	< 0.77	< 0.8	< 0.82	0.91 J	< 0.8	< 0.8	< 0.82 [< 0.82]
Benzaldehyde	100-52-7	µg/L	< 0.91	< 0.9	< 0.86	< 0.86	< 0.9	< 0.91	< 0.9	< 0.9	< 0.9	< 0.91 [< 0.91]
Benzo(a)anthracene	56-55-3	µg/L	< 0.039	< 0.039	< 0.037	< 0.037	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039 [< 0.039]
Benzo(a)pyrene	50-32-8	µg/L	< 0.028 J	< 0.027 J	< 0.026	< 0.026	< 0.027 J	< 0.028 J	< 0.027	< 0.027	< 0.027	< 0.028 J [< 0.028 J]
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.013 J	< 0.013 J	< 0.012	< 0.012	< 0.013 J	< 0.013 J	< 0.013	< 0.013	< 0.013	< 0.013 J [< 0.013 J]
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.8	< 0.78	< 0.75	< 0.75	< 0.78	< 0.79	< 0.78	< 0.78	< 0.78	< 0.8 [< 0.8]
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.19	< 0.19	< 0.18	< 0.18	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]
Benzyl butyl phthalate	85-68-7	µg/L	< 0.64	< 0.63	< 0.6	< 0.6	< 0.63	< 0.64	< 0.63	< 0.63	< 0.63	< 0.64 [< 0.64]
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.73	< 0.72	< 0.69	< 0.69	< 0.72	< 0.73	< 0.72	< 0.72	< 0.72	< 0.73 [< 0.73]
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.0096 J	< 0.0094 J	< 0.009	< 0.009	< 0.0094 J	< 0.0095 J	< 0.0094	0.033	< 0.0094	< 0.0096 J [< 0.0096 J]
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.77	< 0.75	< 0.72	< 0.72	< 0.75	0.95 J	< 0.75	1.9 J	1.5 J	< 0.77 [< 0.77]
Caprolactam	105-60-2	µg/L	< 1.1	< 1.1	< 1.1 J	< 1.1 J	< 1.1	< 1.1	< 1.1	< 1.1 J	< 1.1 J	< 1.1 [< 1.1]
Carbazole	86-74-8	µg/L	< 0.9	< 0.89	< 0.85 J	< 0.85	< 0.89	< 0.9	< 0.89	< 0.89	< 0.89	< 0.9 [< 0.9]
Chrysene	218-01-9	µg/L	< 0.71	< 0.7	< 0.67	< 0.67	< 0.7	< 0.71	< 0.7	< 0.7	< 0.7	< 0.71 [< 0.71]
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023 J	< 0.023 J	< 0.022	< 0.022	< 0.023 J	< 0.023 J	< 0.023	< 0.023	< 0.023	< 0.023 J [< 0.023 J]
Dibenzofuran	132-64-9	µg/L	< 0.9	< 0.89	< 0.85	< 0.85	< 0.89	< 0.9	< 0.89	< 0.89	< 0.89	< 0.9 [< 0.9]
Diethyl phthalate	84-66-2	µg/L	< 1.1	< 1	< 1	< 1	< 1	< 1.1	< 1	< 1	< 1	< 1.1 [< 1.1]
Dimethyl phthalate	131-11-3	µg/L	< 1	< 1	< 0.98	< 0.98	< 1	< 1	< 1	< 1	< 1	< 1 [< 1]
di-n-butyl phthalate	84-74-2	µg/L	< 0.87	< 0.85	< 0.82 J	< 0.82	< 0.85	< 0.87	< 0.85	< 0.85	1.5 UB	< 0.87 [< 0.87]
di-n-octylphthalate	117-84-0	µg/L	< 0.73	< 0.72	< 0.69	< 0.69	< 0.72	< 0.73	< 0.72	< 0.72	< 0.72	< 0.73 [< 0.73]
Fluoranthene	206-44-0	µg/L	< 0.77	< 0.75	< 0.72 J	< 0.72	< 0.75	< 0.76	< 0.75	< 0.75	< 0.75	< 0.77 [< 0.77]
Fluorene	86-73-7	µg/L	< 0.85	< 0.83	< 0.8	< 0.8	< 0.83	< 0.85	< 0.83	< 0.83	< 0.83	< 0.85 [< 0.85]
Hexachlorobenzene	118-74-1	µg/L	< 0.0096	< 0.0094	< 0.009	< 0.009	< 0.0094	< 0.0095	< 0.0094	< 0.0094	< 0.0094	< 0.0096 [< 0.0096]
Hexachlorobutadiene	87-68-3	µg/L	< 0.81	< 0.79	< 0.76 J	< 0.76 J	< 0.79	< 0.81	< 0.79	< 0.79	< 0.79	< 0.81 [< 0.81]
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.65	< 0.64	< 0.61	< 0.61	< 0.64	< 0.65	< 0.64	< 0.64	< 0.64	< 0.65 [< 0.65]
Hexachloroethane	67-72-1	µg/L	< 0.096	< 0.094	< 0.09	< 0.09	< 0.094	< 0.095	< 0.094	< 0.094	< 0.094	< 0.096 [< 0.096]
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.029	< 0.028	< 0.027	< 0.027	< 0.028	< 0.029	< 0.028	< 0.028	< 0.028	< 0.029 [< 0.029]
Isophorone	78-59-1	µg/L	< 0.71	< 0.7	< 0.67 J	< 0.67	< 0.7	< 0.71	< 0.7	< 0.7	< 0.7	< 0.71 [< 0.71]
Naphthalene	91-20-3	µg/L	< 0.85	< 0.83	< 0.8 J	< 0.8 J	< 0.83	< 0.85	< 0.83	< 0.83	< 0.83	< 0.85 [< 0.85]
Nitrobenzene	98-95-3	µg/L	< 0.52	< 0.51	< 0.49	< 0.49	< 0.51	< 0.52	< 0.51	< 0.51	< 0.51	< 0.52 [< 0.52]
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.88	< 0.86	< 0.83	< 0.83	< 0.86	< 0.88	< 0.86	< 0.86	< 0.86	< 0.88 [< 0.88]
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.79	< 0.77	< 0.74 J	< 0.74	< 0.77	< 0.78	< 0.77	< 0.77	< 0.77	< 0.79 [< 0.79]
Pentachlorophenol	87-86-5	µg/L	< 0.082	< 0.08	< 0.077	< 0.077	< 0.08	< 0.082	< 0.08	< 0.08	< 0.08	< 0.082 [< 0.082]
Phenanthrene	85-01-8	µg/L	< 0.69	< 0.68	< 0.65	< 0.65	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68	< 0.69 [< 0.69]
Phenol	108-95-2	µg/L	< 0.44	< 0.43	< 0.41	< 0.41	< 0.43	< 0.43	< 0.43	< 0.43	11	< 0.44 [< 0.44]
Pyrene	129-00-0	µg/L	< 0.88	< 0.86	< 0.83	< 0.83	< 0.86	< 0.88	< 0.86	< 0.86	< 0.86	< 0.88 [< 0.88]
Metals - Total												
Aluminum, total	7429-90-5	µg/L	89.4	51	< 18.2	< 18.2	112	72	82.7	163	114	< 18.2 [< 18.2]
Antimony, total	7440-36-0	µg/L	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.76	1 J	< 0.76	< 0.62 [< 0.62]
Arsenic, total	7440-38-2	µg/L	1.6 J	< 0.64	8.8	14	2.2	12.7	< 0.71	1.7 J	4.3	< 0.64 [< 0.64]
Barium, total	7440-39-3	µg/L	48.2	11.2	30.9	18.1	34.9	9.6	38.3	27	53.5	46 [45.6]
Beryllium, total	7440-41-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.29	< 0.29	< 0.29	< 0.24 [< 0.24]
Cadmium, total	7440-43-9	µg/L	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.72	< 0.72	< 0.72	< 0.71 [< 0.71]
Calcium, total	7440-70-2	µg/L	34900	41200	64800	40000	141000	63600	62100	116000	115000	60000 [60900]
Chromium, total	7440-47-3	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	2.8 J	1.4 J	< 1.5	< 1.5	< 1.5	< 1.3 [< 1.3]
Cobalt, total	7440-48-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.5	< 1.5	< 1.5	< 1.3 [< 1.3]
Copper, total	7440-50-8	µg/L	< 1.4	2.4 J	1.4 J	3.2 J	< 1.4	1.9 J	3.7 J	2.2 J	< 1.6	< 1.4 [< 1.4]
Iron, total	7439-89-6	µg/L	365	149	26000	3400	101 J	< 42.4	956	< 49.1	56.4 J	< 42.4 [< 42.4]
Lead, total	7439-92-1	µg/L	0.54 J	< 0.38	< 0.38	0.81 J	< 0.38	0.58 J	< 0.44	< 0.44	< 0.44	< 0.38 [< 0.38]
Magnesium, total	7439-95-4	µg/L	5860	15100	14300	8490	249	2150	21000	< 68.4	< 68.4	16700 [17400]
Manganese, total	7439-96-5	µg/L	104	3.9 J	608	110	< 2.5	< 2.5	5.3 J	< 3	< 3	118 [120]
Mercury, total	7439-97-6	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.14	< 0.14	< 0.14	< 0.17 [< 0.17]
Nickel, total	7440-02-0	µg/L	5.4	< 1.4	1.6 J	2.5 J	5.7	1.8 J	< 1.6	3.3 J	6.6	5.3 [5.2]
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]
Selenium, total	7782-49-2	µg/L	< 0.73	< 0.73	< 0.73	< 0.73	4.1 J	1.4 J	< 0.79	< 0.79	3.1 J	< 0.73 [< 0.73]
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]
Silver, total	7440-22-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.5	< 1.5	< 1.5	< 1.3 [< 1.3]
Sodium, total	7440-23-5	µg/L	18200	14100	68200	58900	81800	26200	19300	106000	297000	7630 [7880]
Thallium, total	7440-28-0	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.31	< 0.31	< 0.31	< 0.26 [< 0.26]
Vanadium, total	7440-62-2	µg/L	< 1.9	< 1.9	< 1.9	2.1 J	11	20	1.6 J	15.2	30.8	< 1.9 [< 1.9]
Zinc, total	7440-66-6	µg/L	8.5 J	< 7	< 7	< 7	< 7	< 7	6.6 J	< 6.5	< 6.5	< 7 [< 7]
Other												
Cyanide, total	57-12-5	µg/L	< 2	< 2	2.2 J	< 2	< 2	< 2	< 2	< 2	< 2	< 2 [< 2]
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]

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Location ID Sample ID Sample Date	CAS	Units	RW-3DD (175-180) RW-3DD(175-180)-082316 8/23/2016	RW-3DS (155-160) RW-3DS(155-160)-082316 8/23/2016	RW-4 (333-343) RW-4(333-343)-082416 8/24/2016	RW-4 (393-403) RW-4(393-403)-082416 8/24/2016	RW-4A (113-123) RW-4A(113-123)-082416 8/24/2016	RW-4A (62-72) RW-4A(62-72)-082516 8/25/2016	RW-5 RW-5-081816 8/18/2016	RW-5A RW-5A-081816 8/18/2016	RW-6 RW-6-081816 8/18/2016	RW-6A RW-6A-081816 8/18/2016	RW-8 (163-173) RW-8(163-173)-082516 8/25/2016
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 J	< 0.19 J	< 0.19 J	< 0.19 J	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	2.2	2.2	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	0.64 J	0.3 J	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
1,2-Dibromoethane	106-93-4	µg/L	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	3.6 J	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	13 B	11 B	10 B	7 B	5.8 B	7.2 B	< 1.1	< 1.1	< 1.1	9.1	6.5 B
Benzene	71-43-2	µg/L	0.26 J	0.13 J	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	1.9	8	0.35 J
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 J	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 J
Bromomethane	74-83-9	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	2.5	6.5	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	2.6	< 0.37	10	5.7	< 0.37
Chloroform	67-66-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	0.75 J	3.6	< 0.26
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14 J	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14 J
Ethylbenzene	100-41-4	µg/L	< 0.3	0.31 J	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Freon 113	76-13-1	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	5	< 0.32
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.75 J	1	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 0.25	0.67 J	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15 J	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15 J
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06	< 0.06 J	< 0.06 J	< 0.06 J	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.28	0.58 J	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	9.7	< 0.28
Semi-Volatile Organic Compounds													
1,1'-Biphenyl	92-52-4	µg/L	< 0.66	< 0.66	< 0.67	< 0.67	< 0.66	< 0.66	< 0.66	< 0.66	< 0.67	< 0.66	< 0.66
1,4-Dioxane	123-91-1	µg/L	29.2 J	25.1	< 0.0765	< 0.0798	< 0.0735	< 78.1	10.8	< 0.0833	3.7	3.1	< 78.1
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.51	< 0.51	< 0.52	< 0.52	< 0.51	< 0.51	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.55	< 0.55	< 0.56	< 0.56	< 0.55	< 0.55	< 0.55	< 0.55	< 0.56	< 0.55	< 0.55
2,4-Dichlorophenol	120-83-2	µg/L	< 0.66	< 0.66	< 0.67	< 0.67	< 0.66	< 0.66	< 0.66	< 0.66	< 0.67	< 0.66	< 0.66
2,4-Dimethylphenol	105-67-9	µg/L	< 0.95	< 0.95	< 0.96	< 0.96	< 0.95	< 0.95	< 0.95	< 0.95	< 0.97	< 0.95	< 0.95
2,4-Dinitrophenol	51-28-5	µg/L	< 2.5	< 2.5	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 J
2,4-Dinitrotoluene	121-14-2	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.92	< 0.92	< 0.93	< 0.93	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94	< 0.92	< 0.92
2-Chloronaphthalene	91-58-7	µg/L	< 0.64	< 0.64	< 0.65	< 0.65	< 0.64	< 0.64	< 0.64	< 0.64	< 0.65	< 0.64	< 0.64
2-Chlorophenol	95-57-8	µg/L	< 0.77	< 0.77	< 0.78	< 0.78	< 0.77	< 0.77	< 0.77	< 0.77	< 0.79	< 0.77	< 0.77
2-Methylnaphthalene	91-57-6	µg/L	< 0.92	< 0.92	< 0.93	< 0.93	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94	1.3 J	< 0.92
2-Methylphenol	95-48-7	µg/L	< 1.3	< 1.3 J	< 1.4	< 1.4	< 1.3	< 1.3	< 1.3 J	< 1.3 J	< 1.4 J	< 1.3 J	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 0.68	< 0.68	< 0.69	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69	< 0.68	< 0.68
2-Nitrophenol	88-75-5	µg/L	< 0.61	< 0.61	< 0.63	< 0.63	< 0.61	< 0.61	< 0.61	< 0.61	< 0.63	< 0.61	< 0.61
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
3-Nitroaniline	99-09-2	µg/L	< 0.85	< 0.85	< 0.87	< 0.87	< 0.85	< 0.85	< 0.85	< 0.85	< 0.87	< 0.85	< 0.85
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.79	< 0.79	< 0.81	< 0.81	< 0.79	< 0.79	< 0.79	< 0.79	< 0.81	< 0.79	< 0.79
Semi-Volatile Organic Compounds													

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4-Chloroaniline	106-47-8	µg/L	< 0.76	< 0.76	< 0.77	< 0.77	< 0.76	< 0.76	< 0.76	< 0.76	< 0.78	< 0.76	< 0.76
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Nitroaniline	100-01-6	µg/L	< 0.5	< 0.5	< 0.51	< 0.51	< 0.5	< 0.5	< 0.5	< 0.5	< 0.51	< 0.5	< 0.5
4-Nitrophenol	100-02-7	µg/L	< 4.8	< 4.8	< 4.9	< 4.9	< 4.8	< 4.8	< 4.8	< 4.8	< 4.9	< 4.8	< 4.8
Acenaphthene	83-32-9	µg/L	< 0.92	< 0.92	< 0.93	< 0.93	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94	< 0.92	< 0.92
Acenaphthylene	208-96-8	µg/L	< 0.68	< 0.68	< 0.69	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69	< 0.68	< 0.68
Acetophenone	98-86-2	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Anthracene	120-12-7	µg/L	< 0.59	< 0.59	< 0.6	< 0.6	< 0.59	< 0.59	< 0.59	< 0.59	< 0.61	< 0.59	< 0.59
Atrazine	1912-24-9	µg/L	< 0.8	< 0.8	< 0.82	< 0.82	< 0.8	< 0.8	< 0.8	1.5 J	< 0.82	1.8 J	< 0.8
Benzaldehyde	100-52-7	µg/L	< 0.9	< 0.9	< 0.91	< 0.91	< 0.9	< 0.9	< 0.9	< 0.9	< 0.91	< 0.9	< 0.9
Benzo(a)anthracene	56-55-3	µg/L	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039
Benzo(a)pyrene	50-32-8	µg/L	< 0.027	< 0.027	< 0.028 J	< 0.028 J	< 0.027 J	< 0.027 J	< 0.027	< 0.027	< 0.028	< 0.027	< 0.027 J
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.013	< 0.013	< 0.013 J	< 0.013 J	< 0.013 J	< 0.013 J	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013 J
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.78	< 0.78	< 0.79	< 0.79	< 0.78	< 0.78	< 0.78	< 0.78	< 0.8	< 0.78	< 0.78
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzyl butyl phthalate	85-68-7	µg/L	< 0.63	< 0.63	< 0.64	< 0.64	< 0.63	< 0.63	< 0.63	< 0.63	< 0.64	< 0.63	< 0.63
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.72	< 0.72	< 0.73	< 0.73	< 0.72	< 0.72	< 0.72	< 0.72	< 0.73	< 0.72	< 0.72
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.0094	< 0.0094	< 0.0095 J	< 0.0095 J	< 0.0094 J	< 0.0094 J	< 0.0094	< 0.0094	< 0.0096	< 0.0094	< 0.0094 J
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	0.96 J	1.8 UB	< 0.76	< 0.76	< 0.75	< 0.75	2.3	< 0.75	0.93 J	< 0.75	< 0.75
Caprolactam	105-60-2	µg/L	< 1.1	< 1.1 J	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Carbazole	86-74-8	µg/L	< 0.89	< 0.89	< 0.9	< 0.9	< 0.89	< 0.89	< 0.89	< 0.89	< 0.9	< 0.89	< 0.89
Chrysene	218-01-9	µg/L	< 0.7	< 0.7	< 0.71	< 0.71	< 0.7	< 0.7	< 0.7	< 0.7	< 0.71	< 0.7	< 0.7
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023	< 0.023	< 0.023 J	< 0.023 J	< 0.023 J	< 0.023 J	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023 J
Dibenzofuran	132-64-9	µg/L	< 0.89	< 0.89	< 0.9	< 0.9	< 0.89	< 0.89	< 0.89	< 0.89	< 0.9	< 0.89	< 0.89
Diethyl phthalate	84-66-2	µg/L	< 1	< 1	< 1.1	< 1.1	< 1	< 1	< 1	< 1	< 1.1	< 1	< 1
Dimethyl phthalate	131-11-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
di-n-butyl phthalate	84-74-2	µg/L	< 0.85	1.7 UB	< 0.87	< 0.87	< 0.85	< 0.85	1.5 J	< 0.85	< 0.87	< 0.85	< 0.85
di-n-octylphthalate	117-84-0	µg/L	< 0.72	< 0.72	< 0.73	< 0.73	< 0.72	< 0.72	< 0.72	< 0.72	< 0.73	< 0.72	< 0.72
Fluoranthene	206-44-0	µg/L	< 0.75	< 0.75	< 0.76	< 0.76	< 0.75	< 0.75	< 0.75	< 0.75	< 0.77	< 0.75	< 0.75
Fluorene	86-73-7	µg/L	< 0.83	< 0.83	< 0.85	< 0.85	< 0.83	< 0.83	< 0.83	< 0.83	< 0.85	< 0.83	< 0.83
Hexachlorobenzene	118-74-1	µg/L	< 0.0094	< 0.0094 J	< 0.0095	< 0.0095	< 0.0094	< 0.0094	< 0.0094	< 0.0094	< 0.0096	< 0.0094	< 0.0094
Hexachlorobutadiene	87-68-3	µg/L	< 0.79	< 0.79 J	< 0.81	< 0.81	< 0.79	< 0.79	< 0.79	< 0.79	< 0.81	< 0.79	< 0.79
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.64	< 0.64 J	< 0.65	< 0.65	< 0.64	< 0.64	< 0.64	< 0.64	< 0.65	< 0.64	< 0.64
Hexachloroethane	67-72-1	µg/L	< 0.094	< 0.094	< 0.095	< 0.095	< 0.094	< 0.094	< 0.094	< 0.094	< 0.096	< 0.094	< 0.094
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.028	< 0.028	< 0.029	< 0.029	< 0.028	< 0.028	< 0.028	< 0.028	< 0.029	< 0.028	< 0.028
Isophorone	78-59-1	µg/L	< 0.7	< 0.7	< 0.71	< 0.71	< 0.7	< 0.7	< 0.7	< 0.7	< 0.71	< 0.7	< 0.7
Naphthalene	91-20-3	µg/L	< 0.83	< 0.83	< 0.85	< 0.85	< 0.83	< 0.83	< 0.83	< 0.83	< 0.85	9.1 NJ	< 0.83
Nitrobenzene	98-95-3	µg/L	< 0.51	< 0.51	< 0.52	< 0.52	< 0.51	< 0.51	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.86	< 0.86	< 0.88	< 0.88	< 0.86	< 0.86	< 0.86	< 0.86	< 0.88	< 0.86	< 0.86
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.77	< 0.77	< 0.78	< 0.78	< 0.77	< 0.77	< 0.77	< 0.77	< 0.79	1.4 J	< 0.77
Pentachlorophenol	87-86-5	µg/L	< 0.08 J	< 0.08 J	< 0.082	< 0.082	< 0.08	< 0.08	< 0.08	< 0.08	0.11 J	0.12 J	< 0.08
Phenanthrene	85-01-8	µg/L	< 0.68	< 0.68	< 0.69	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69	< 0.68	< 0.68
Phenol	108-95-2	µg/L	< 0.43	< 0.43	< 0.43	< 0.43	< 0.43	< 0.43	< 0.43	< 0.43	< 0.44	< 0.43	< 0.43
Pyrene	129-00-0	µg/L	< 0.86	< 0.86	< 0.88	< 0.88	< 0.86	< 0.86	< 0.86	< 0.86	< 0.88	< 0.86	< 0.86
Metals - Total													
Aluminum, total	7429-90-5	µg/L	102	40.5	942	448	83.8	121	168	65.9	18.4 J	23.5 J	< 18.2
Antimony, total	7440-36-0	µg/L	< 0.62	0.72 J	< 0.62	< 0.62	< 0.62	< 0.62	< 0.76	< 0.76	< 0.76	< 0.76	< 0.62
Arsenic, total	7440-38-2	µg/L	16.8	14.7	1.1 J	< 0.64	< 0.64	< 0.64	8	0.97 J	1.2 J	< 0.71	1.5 J
Barium, total	7440-39-3	µg/L	8.5	11.4	21.8	15.4	16.2	4.4	5.9	17.8	429	47.2	9.7
Beryllium, total	7440-41-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.29	< 0.29	< 0.29	< 0.29	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.72	< 0.72	< 0.72	< 0.72	< 0.71
Calcium, total	7440-70-2	µg/L	26300	42500	58900	18400	13500	9340	10100	58500	80300	86200	34300
Chromium, total	7440-47-3	µg/L	< 1.3	1.4 J	40.8	1.7 J	< 1.3	< 1.3	< 1.5	< 1.5	1.8 J	< 1.5	< 1.3
Cobalt, total	7440-48-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.5	< 1.5	4.8	20.3	< 1.3
Copper, total	7440-50-8	µg/L	< 1.4	< 1.4	1.7 J	< 1.4	< 1.4	2 J	3.8 J	< 1.6	< 1.6	< 1.6	< 1.4
Iron, total	7439-89-6	µg/L	< 42.4	< 42.4	< 42.4	279	< 42.4	147	506	306	43800	23600	< 42.4
Lead, total	7439-92-1	µg/L	< 0.38	< 0.38	< 0.38	0.38 J	< 0.38	0.83 J	1.5	< 0.44	< 0.44	< 0.44	< 0.38
Magnesium, total	7439-95-4	µg/L	1460	< 63.6	< 63.6	6320	4750	3130	793	7340	14900	22000	5460
Manganese, total	7439-96-5	µg/L	< 2.5	< 2.5	< 2.5	6 J	< 2.5	2.9 J	60.5	678	7470	14800	14.7
Mercury, total	7439-97-6	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.14	< 0.14	< 0.14	< 0.14	< 0.17
Nickel, total	7440-02-0	µg/L	< 1.4	2.6 J	< 1.4	1.8 J	72.2	21.3	2.1 J	< 1.6	< 1.6	3.2 J	2.3 J
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 0.73	2.1 J	< 0.73	< 0.73	< 0.73	< 0.73	< 0.79	< 0.79	< 0.79	< 0.79	< 0.73
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.5	< 1.5	< 1.5	< 1.5	< 1.3
Sodium, total	7440-23-5	µg/L	35800	189000	19800	8280	6410	5640	57700	6330	7580	8240	43800
Thallium, total	7440-28-0	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.31	< 0.31	< 0.31	< 0.31	< 0.26
Vanadium, total	7440-62-2	µg/L	4	5.5	12.1	< 1.9	< 1.9	< 1.9	1.6 J	< 1.4	< 1.4	2.2 J	< 1.9
Zinc, total	7440-66-6	µg/L	< 7	< 7	< 7	9.7 J	14.7 J	10 J	24.9	6.8 J	< 6.5	< 6.5	< 7
Other													
Cyanide, total	57-12-5	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-8 (204-214) RW-8(204-214)-082516 8/25/2016	RW-9 (206-216) RW-9(206-216)-083016 8/30/2016	RW-9A (85-95) RW-9A(85-95)-083016 8/30/2016	OB-2 OB-2-082217 8/22/2017	OB-3 OB-3-082117 8/21/2017	OB-4 OB-4-081617 8/16/2017	OB-5 OB-5-082117 8/21/2017	OB-12 OB-12-082217 8/22/2017	OB-13 OB-13-081717 8/17/2017	RW-2 RW-2-(279-289)-082317 8/23/2017	RW-2 RW-2-(452-462)-082317 8/23/2017	RW-3 RW-3(77-87)-081717 8/17/2017
Volatile Organic Compounds														
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 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
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 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
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08 [< 0.08]	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	< 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
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34 [< 0.34]	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 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
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.007	< 0.007	< 0.007	< 0.004	< 0.004 [< 0.004]	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
1,2-Dibromoethane	106-93-4	µg/L	< 0.006	< 0.006	< 0.006	< 0.001	< 0.001 [< 0.001]	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichlorobenzene	95-50-1	µg/L	< 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
1,2-Dichloroethane	107-06-2	µg/L	< 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
1,2-Dichloropropane	78-87-5	µg/L	< 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
1,3-Dichlorobenzene	541-73-1	µg/L	< 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
1,4-Dichlorobenzene	106-46-7	µg/L	< 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
2-Butanone (MEK)	78-93-3	µg/L	13	< 2.2	< 2.2	< 2.2	< 2.2 [< 2.2]	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	2.4 J	< 2.2
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72 [< 0.72]	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	1.1 J	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63 [< 0.63]	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	8.8 B	5.1 B	6.7 B	1.6 B	< 1.1 [< 1.1]	5 B	< 1.1	1.7 B	< 1.1	15	32	< 1.1
Benzene	71-43-2	µg/L	3.8	0.15 J	< 0.09	< 0.09	< 0.09 [< 0.09]	< 0.09	< 0.09	< 0.09	< 0.09	0.3 J	< 0.09	< 0.09
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15 [< 0.15]	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 0.18 J	< 0.18	< 0.18	< 0.18	< 0.18 [< 0.18]	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Bromomethane	74-83-9	µg/L	< 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
Carbon disulfide	75-15-0	µg/L	1.6	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	3.2	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 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
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.24	< 0.24	4.2	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 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
Chloroform	67-66-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	0.24 J	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	0.49 J	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 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
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16 [< 0.16]	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 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
Dibromochloromethane	124-48-1	µg/L	< 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
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14 J	< 0.14	< 0.14	< 0.14	< 0.14 [< 0.14]	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 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
Freon 113	76-13-1	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34 [< 0.34]	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32 [< 0.32]	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
Methyl acetate	79-20-9	µg/L	< 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
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13 [< 0.13]	< 0.13	0.2 J	< 0.13	< 0.13	0.34 J	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 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
Methylene chloride	75-09-2	µg/L	< 0.21	< 0.21	< 0.21	0.47 J	0.32 B [< 0.21]	0.3 B	1.3 B	0.93 J	1.6	0.73 J	0.61 J	1.3
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 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
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12 [< 0.12]	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.25	< 0.25	0.88 J	0.69 J	< 0.25
Trans-1,2-dichloroethene	156-60-5	µg/L	< 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
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 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
Trichloroethene	79-01-6	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	0.25 J [< 0.22]	< 0.22	0.26 J	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.15 J	< 0.15	< 0.15	< 0.15	< 0.15 [< 0.15]	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Vinyl Chloride	75-01-4	µg/L	0.24 J	< 0.06	< 0.06	< 0.06	< 0.06 [< 0.06]	< 0.06	< 0.06	< 0.06	< 0.06	0.23 J	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.28	< 0.28	0.32 J	< 0.28	< 0.28
Semi-Volatile Organic Compounds														
1,1'-Biphenyl	92-52-4	µg/L	< 0.67	< 0.67	< 0.66	< 0.66	< 0.64 [< 0.66]	< 0.63	< 0.63	< 0.66	< 0.64	< 0.72	< 0.66	< 0.66
1,4-Dioxane	123-91-1	µg/L	121 J	< 0.0915	< 0.0815	< 0.0815	< 0.0833 [< 0.0781]	0.126 J	0.194	< 0.0815	< 0.0758	13.6	1.23	29.4
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.52	< 0.52	< 0.51	< 0.51	< 0.5 [< 0.51]	< 0.49	< 0.49	< 0.51	< 0.5	< 0.56	< 0.51	< 0.51
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.56	< 0.56	< 0.55	< 0.55	< 0.54 [< 0.55]	< 0.53	< 0.53	< 0.55	< 0.54	< 0.6	< 0.55	< 0.55
2,4-Dichlorophenol	120-83-2	µg/L	< 0.67	< 0.67	< 0.66	< 0.66	< 0.64 [< 0.66]	< 0.63	< 0.63	< 0.66	< 0.64	< 0.72	< 0.66	< 0.66
2,4-Dimethylphenol	105-67-9	µg/L	< 0.97	< 0.97	< 0.95	< 0.95	< 0.93 [< 0.95]	< 0.91	< 0.91	< 0.95	< 0.93	< 1	< 0.95	< 0.95
2,4-Dinitrophenol	51-28-5	µg/L	< 2.5 J	< 2.5	< 2.5	< 2.5	< 2.4 [< 2.5]	< 2.4	< 2.4	< 2.5	< 2.4	< 2.7	< 2.5	< 2.5
2,4-Dinitrotoluene	121-14-2	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 [< 1.1]	< 1	< 1	< 1.1	< 1.1 F	< 1.2	< 1.1	< 1.1
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.94	< 0.94	< 0.92	< 0.92	< 0.9 [< 0.92]	< 0.88	< 0.88	< 0.92	< 0.9 F	< 1	< 0.92	< 0.92
2-Chloronaphthalene	91-58-7	µg/L	< 0.65	< 0.65	< 0.64	< 0.64	< 0.62 [< 0.64]	< 0.61	< 0.61	< 0.64	< 0.62	< 0.69	< 0.64	< 0.64
2-Chlorophenol	95-57-8	µg/L	< 0.79	< 0.79	< 0.77	< 0.77	< 0.76 [< 0.77]	< 0.74	< 0.74	< 0.77	< 0.76	< 0.84	< 0.77	< 0.77
2-Methylnaphthalene	91-57-6	µg/L	< 0.94	< 0.94 J	< 0.92 J	< 0.92	< 0.9 [< 0.92]	< 0.88	< 0.88	< 0.92	< 0.9	< 1	< 0.92	< 0.92
2-Methylphenol	95-48-7	µg/L	< 1.4	< 1.4 J	< 1.3 J	< 1.3 J	< 1.3 [< 1.3]	< 1.3 J	< 1.3	< 1.3 J	< 1.3 J	< 1.5	< 1.3	< 1.3 J
2-Nitroaniline	88-74-4	µg/L	< 0.69	< 0.69	< 0.68	< 0.68	< 0.66 [< 0.68]	< 0.65	< 0.65	< 0.68	< 0.66	< 0.74	< 0.68	< 0.68
2-Nitrophenol	88-75-5	µg/L	< 0.63	< 0.63	< 0.61	< 0.61	< 0.6 [< 0.61]	< 0.59	< 0.59	< 0.61	< 0.6	< 0.67	< 0.61	< 0.61
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 [< 1.1]	< 1	< 1	< 1.1	< 1.1 F	< 1.2	< 1.1	< 1.1
3-Nitroaniline	99-09-2	µg/L	< 0.87	< 0.87	< 0.85	< 0.85	< 0.84 [< 0.85]	< 0.82	< 0.82	< 0.85	< 0.84	< 0.93	< 0.85	< 0.85
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1 [< 2.1]	< 2	< 2	< 2.1	< 2.1	< 2.3	< 2.1	< 2.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1 [< 1.1]	< 1	< 1	< 1.1	< 1	< 1.2	< 1.1	< 1.1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.81	< 0.81	< 0.79	< 0.79	< 0.78 [< 0.79]	< 0.76	< 0.76	< 0.79	< 0.78	< 0.86	< 0.79	< 0.79
Semi-Volatile Organic Compounds														

Location ID Sample ID Sample Date	CAS	Units	RW-8 (204-214) RW-8(204-214)-082516 8/25/2016	RW-9 (206-216) RW-9(206-216)-083016 8/30/2016	RW-9A (85-95) RW-9A(85-95)-083016 8/30/2016	OB-2 OB-2-082217 8/22/2017	OB-3 OB-3-082117 8/21/2017	OB-4 OB-4-081617 8/16/2017	OB-5 OB-5-082117 8/21/2017	OB-12 OB-12-082217 8/22/2017	OB-13 OB-13-081717 8/17/2017	RW-2 RW-2-(279-289)-082317 8/23/2017	RW-2 RW-2-(452-462)-082317 8/23/2017	RW-3 RW-3(77-87)-081717 8/17/2017
4-Chloroaniline	106-47-8	µg/L	< 0.78	< 0.78	< 0.76	< 0.76	< 0.74 [< 0.76]	< 0.73	< 0.73	< 0.76	< 0.74 F	< 0.83	< 0.76	< 0.76
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 1	< 1	< 1	< 1	< 0.98 [< 1]	< 0.96	< 0.96	< 1	< 0.98 F	< 1.1	< 1	< 1
4-Nitroaniline	100-01-6	µg/L	< 0.51	< 0.51	< 0.5	< 0.5	< 0.49 [< 0.5]	< 0.48	< 0.48	< 0.5	< 0.49	< 0.55	< 0.5	< 0.5
4-Nitrophenol	100-02-7	µg/L	< 4.9	< 4.9	< 4.8	< 4.8	< 4.7 [< 4.8]	< 4.7	< 4.7	< 4.8	< 4.7	< 5.3	< 4.8	< 4.8
Acenaphthene	83-32-9	µg/L	< 0.94	< 0.94	< 0.92	< 0.92	< 0.9 [< 0.92]	< 0.88	< 0.88	< 0.92	< 0.9	< 1	< 0.92	< 0.92
Acenaphthylene	208-96-8	µg/L	< 0.69	< 0.69	< 0.68	< 0.68	< 0.66 [< 0.68]	< 0.65	< 0.65	< 0.68	< 0.66	< 0.74	< 0.68	< 0.68
Acetophenone	98-86-2	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 [< 1.1]	< 1	< 1	< 1.1	< 1.1	< 1.2	1.3 J	< 1.1
Anthracene	120-12-7	µg/L	< 0.61	< 0.61	< 0.59	< 0.59	< 0.58 [< 0.59]	< 0.57	< 0.57	< 0.59	< 0.58 F	< 0.65	< 0.59	< 0.59
Atrazine	1912-24-9	µg/L	< 0.82	< 0.82	< 0.8 J	< 0.8	< 0.79 [< 0.8]	< 0.77	< 0.77	< 0.8	< 0.79 F	< 0.88	< 0.8	< 0.8
Benzaldehyde	100-52-7	µg/L	< 0.91	< 0.91	< 0.9	< 0.9	< 0.88 [< 0.9]	< 0.86	< 0.86	< 0.9	< 0.88	< 0.98	< 0.9	< 0.9
Benzo(a)anthracene	56-55-3	µg/L	< 0.039	< 0.039	< 0.039	< 0.039	< 0.038 [< 0.039]	< 0.037	< 0.037	< 0.039	< 0.038	< 0.042	< 0.039	< 0.039
Benzo(a)pyrene	50-32-8	µg/L	< 0.028 J	< 0.028	< 0.027	< 0.027	< 0.027 [< 0.027]	< 0.026	< 0.026	< 0.027	< 0.027	< 0.03	< 0.027	< 0.027
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.013 J	< 0.013	< 0.013	< 0.013	< 0.012 [< 0.013]	< 0.012	< 0.012	< 0.013	< 0.012	< 0.014	< 0.013	< 0.013
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.8	< 0.8	< 0.78	< 0.78	< 0.77 [< 0.78]	< 0.75	< 0.75	< 0.78	< 0.77 F	< 0.85	< 0.78	< 0.78
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.18 [< 0.19]	< 0.18	< 0.18	< 0.19	< 0.18	< 0.2	< 0.19	< 0.19
Benzyl butyl phthalate	85-68-7	µg/L	< 0.64	< 0.64	< 0.63	< 0.63	< 0.61 [< 0.63]	< 0.6	< 0.6	< 0.63	< 0.61	< 0.68	< 0.63	< 0.63
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.73	< 0.73	< 0.72	< 0.72	< 0.7 [< 0.72]	< 0.69	< 0.69	< 0.72	< 0.7	< 0.78	< 0.72	< 0.72
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.0096 J	< 0.0096	< 0.0094	< 0.0094	< 0.0092 [< 0.0094]	< 0.009	< 0.009	< 0.0094	< 0.0092	0.033	< 0.0094	< 0.0094
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.77	< 0.77	< 0.75	1.3 J	< 0.73 [< 0.75]	< 0.72	< 0.72	< 0.75	< 0.73 F	1.5 J	< 0.75	< 0.75
Caprolactam	105-60-2	µg/L	< 1.1	< 1.1 J	< 1.1 J	< 1.1 J	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1.1 J	< 1.1 J	< 1.2	< 1.1	< 1.1 J
Carbazole	86-74-8	µg/L	< 0.9	< 0.9	< 0.89	< 0.89	< 0.87 [< 0.89]	< 0.85	< 0.85	< 0.89	< 0.87 F	< 0.97	< 0.89	< 0.89
Chrysene	218-01-9	µg/L	< 0.71	< 0.71	< 0.7	< 0.7	< 0.68 [< 0.7]	< 0.67	< 0.67	< 0.7	< 0.68	< 0.76	< 0.7	< 0.7
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023 J	< 0.023	< 0.023	< 0.023	< 0.022 [< 0.023]	< 0.022	< 0.022	< 0.023	< 0.022	< 0.025	< 0.023	< 0.023
Dibenzofuran	132-64-9	µg/L	< 0.9	< 0.9	< 0.89	< 0.89	< 0.87 [< 0.89]	< 0.85	< 0.85	< 0.89	< 0.87	< 0.97	< 0.89	< 0.89
Diethyl phthalate	84-66-2	µg/L	< 1.1	< 1.1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1 F	< 1.1	< 1	< 1
Dimethyl phthalate	131-11-3	µg/L	< 1	< 1	< 1	< 1	< 1 [< 1]	< 0.98	< 0.98	< 1	< 1 F	< 1.1	< 1	< 1
di-n-butyl phthalate	84-74-2	µg/L	< 0.87	< 0.87	< 0.85	< 0.85	< 0.84 [< 0.85]	< 0.82	< 0.82	< 0.85	< 0.84 F	< 0.93	< 0.85	< 0.85
di-n-octylphthalate	117-84-0	µg/L	< 0.73	< 0.73	< 0.72	< 0.72	< 0.7 [< 0.72]	< 0.69	< 0.69	< 0.72	< 0.7 F	< 0.78	< 0.72	< 0.72
Fluoranthene	206-44-0	µg/L	< 0.77	< 0.77	< 0.75	< 0.75	< 0.73 [< 0.75]	< 0.72	< 0.72	< 0.75	< 0.73 F	< 0.82	< 0.75	< 0.75
Fluorene	86-73-7	µg/L	< 0.85	< 0.85	< 0.83	< 0.83	< 0.82 [< 0.83]	< 0.8	< 0.8	< 0.83	< 0.82	< 0.91	< 0.83	< 0.83
Hexachlorobenzene	118-74-1	µg/L	< 0.0096	< 0.0096	< 0.0094	< 0.0094	0.046 [< 0.0094]	< 0.009	< 0.009	< 0.0094	< 0.0092	< 0.01	< 0.0094	< 0.0094
Hexachlorobutadiene	87-68-3	µg/L	< 0.81	< 0.81 J	< 0.79 J	< 0.79 J	< 0.78 [< 0.79]	< 0.76	< 0.76	< 0.79 J	< 0.78	< 0.86	< 0.79	< 0.79
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.65	< 0.65	< 0.64	< 0.64	< 0.62 [< 0.64]	< 0.61	< 0.61	< 0.64	< 0.62	< 0.69	< 0.64	< 0.64
Hexachloroethane	67-72-1	µg/L	< 0.096	< 0.096	< 0.094	< 0.094	< 0.092 [< 0.094]	< 0.09	< 0.09	< 0.094	< 0.092	< 0.1	< 0.094	< 0.094
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.029	< 0.029	< 0.028	< 0.028	< 0.028 [< 0.028]	< 0.027	< 0.027	< 0.028	< 0.028	< 0.031	< 0.028	< 0.028
Isophorone	78-59-1	µg/L	< 0.71	< 0.71	< 0.7	< 0.7	< 0.68 [< 0.7]	< 0.67	< 0.67	< 0.7	< 0.68	< 0.76	< 0.7	< 0.7
Naphthalene	91-20-3	µg/L	< 0.85	< 0.85 J	< 0.83 J	< 0.83	< 0.82 [< 0.83]	< 0.8	< 0.8	< 0.83	< 0.82	0.98 J	1.1 J	< 0.83
Nitrobenzene	98-95-3	µg/L	< 0.52	< 0.52	< 0.51	< 0.51	< 0.5 [< 0.51]	< 0.49	< 0.49	< 0.51	< 0.5	< 0.56	< 0.51	< 0.51
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.88	< 0.88	< 0.86	< 0.86	< 0.85 [< 0.86]	< 0.83	< 0.83	< 0.86	< 0.85	< 0.94	< 0.86	< 0.86
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.79	< 0.79	< 0.77	< 0.77	< 0.76 [< 0.77]	< 0.74	< 0.74	< 0.77	< 0.76	< 0.84	< 0.77	< 0.77
Pentachlorophenol	87-86-5	µg/L	< 0.082	< 0.082	< 0.08	< 0.08 J	< 0.079 [< 0.08]	< 0.077 J	< 0.077	< 0.08 J	< 0.079	< 0.088	< 0.08	< 0.08
Phenanthrene	85-01-8	µg/L	< 0.69	< 0.69	< 0.68	< 0.68	< 0.66 [< 0.68]	< 0.65	< 0.65	< 0.68	< 0.66 F	< 0.74	< 0.68	< 0.68
Phenol	108-95-2	µg/L	4.2 J	< 0.44	< 0.43	< 0.43	< 0.42 [< 0.43]	< 0.41	< 0.41	< 0.43	< 0.42	1.3 J	9.6 J	< 0.43
Pyrene	129-00-0	µg/L	< 0.88	< 0.88	< 0.86	< 0.86	< 0.85 [< 0.86]	< 0.83	< 0.83	< 0.86	< 0.85	< 0.94	< 0.86	< 0.86
Metals - Total														
Aluminum, total	7429-90-5	µg/L	< 18.2	62.3	107	44.9	< 18.2 [25.8 J]	< 18.2	< 18.2	< 18.2	78.2	140	57.6	21.4 J
Antimony, total	7440-36-0	µg/L	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62 [< 0.62]	< 0.62	< 0.62	< 0.62	< 0.62	1.3 J	< 0.62	< 0.62
Arsenic, total	7440-38-2	µg/L	1.8 J	2.8	3	< 0.64	< 0.64 [< 0.64]	0.87 J	< 0.64	< 0.64	< 0.64	1.4 J	4.9	< 0.64
Barium, total	7440-39-3	µg/L	8.1	59.6	11.3	5.4	3.4 J [3.5 J]	67.7	30.2	2.7 J	5.1	29.6	55.2	54.8
Beryllium, total	7440-41-7	µg/L	< 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
Cadmium, total	7440-43-9	µg/L	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71 [< 0.71]	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71
Calcium, total	7440-70-2	µg/L	10400	82700	23400	11300	14400 [14100]	63900	83500	7990	7440	117000	112000	70200
Chromium, total	7440-47-3	µg/L	< 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
Cobalt, total	7440-48-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3 [< 1.3]	< 1.3	7.9	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Copper, total	7440-50-8	µg/L	< 1.4	< 1.4	< 1.4	9	5.6 [1.8 J]	< 1.4	1.9 J	6.3	1.8 J	1.7 J	< 1.4	2.9 J
Iron, total	7439-89-6	µg/L	73.2 J	663	405	87.7 J	1380 [1370]	10100	29400	< 42.4	121	< 42.4	44.3 J	75 J
Lead, total	7439-92-1	µg/L	< 0.38	< 0.38	< 0.38	0.46 J	< 0.38 [< 0.38]	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	0.38 J
Magnesium, total	7439-95-4	µg/L	10700	16300	5710	4190	4570 [4410]	18700	43900	2810	3070	340	< 63.6	20800
Manganese, total	7439-96-5	µg/L	5.9 J	316	35.4	3.7 J	20.9 [19.8]	1670	2430	< 2.5	8.1	< 2.5	< 2.5	249
Mercury, total	7439-97-6	µg/L	< 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
Nickel, total	7440-02-0	µg/L	4.5	2.3 J	8.2	< 1.4	< 1.4 [< 1.4]	1.5 J	3.1 J	< 1.4	< 1.4	3.3 J	6.6	2.8 J
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73 [< 0.73]	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	2.6 J	< 0.73
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 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
Sodium, total	7440-23-5	µg/L	86300	166000	4830	13200	3600 [3470]	107000	36700	2630	3220	120000	327000	8850
Thallium, total	7440-28-0	µg/L	< 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
Vanadium, total	7440-62-2	µg/L	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9 [< 1.9]	2.5 J	< 1.9	< 1.9	< 1.9	14.7	30.4	< 1.9
Zinc, total	7440-66-6	µg/L	< 7	< 7	< 7	7.4 J	< 7 [< 7]	< 7	< 7	9.9 J	< 7	< 7	< 7	< 7
Other														
Cyanide, total	57-12-5	µg/L	< 2	6.8 J	6.5 J	< 2.4	< 2 [< 2]	2.9 J	< 2	< 2.4	< 2	3.1 B	3.9 B	< 2
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA [NA]	< 1.5	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-3DD RW-3DD(175-180)-081717 8/17/2017	RW-3DS RW-3DS(155-160)-081717 8/17/2017	RW-4 RW-4(333-343)-082517 8/25/2017	RW-4 RW-4(393-403)-082517 8/25/2017	RW-4A RW-4A-(62-72)-082217 8/22/2017	RW-4A RW-4A(113-123)-081617 8/16/2017	RW-5 RW-5-083017 8/30/2017	RW-5A RW-5A-082317 8/23/2017	RW-6 RW-6-081617 8/16/2017	RW-6A RW-6A-082917 8/29/2017	RW-8 RW-8(163-173)-082117 8/21/2017
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	1.9	2.9	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	0.68 J	0.24 J	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
1,2-Dibromoethane	106-93-4	µg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	6.6	3.1 J	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	9.6 B	15 B	3.8 B	2.1 B	< 1.1	< 1.1	3.5 B	< 1.1	11	2.7 J	2.2 J
Benzene	71-43-2	µg/L	0.39 J	0.1 J	0.14 J	0.1 J	< 0.09	< 0.09	< 0.09	< 0.09	1.4	6.1	0.22 J
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Bromomethane	74-83-9	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	8.1	4.6	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.26 J	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	1	< 0.37	6.1	1.4	< 0.37
Chloroform	67-66-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	0.3 J	0.32 J	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.26	0.27 J	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	2	< 0.26
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 0.3	0.47 J	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Freon 113	76-13-1	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	3	< 0.32
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.81 J	< 0.22
Methylene chloride	75-09-2	µg/L	1.1	0.81 J	0.43 J	0.3 J	< 0.21	0.76 B	< 0.21	1.3 B	< 0.21	< 0.21	0.61 J
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 0.25	0.44 J	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.24 J	< 0.22	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06	0.11 J	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.28	0.79 J	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Semi-Volatile Organic Compounds													
1,1'-Biphenyl	92-52-4	µg/L	< 0.66	< 0.79	< 0.66	< 0.64	< 0.66	< 0.66	< 0.85	< 0.66	< 0.64 J	< 0.68	< 0.63
1,4-Dioxane	123-91-1	µg/L	26.1	23.8	< 0.0781	< 0.0781	< 0.0735	< 0.0765	10.2	< 0.0765 J	4.01	2.72	< 0.0798
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.52	< 0.61	< 0.51	< 0.5	< 0.51	< 0.51	< 0.66	< 0.51	< 0.5 J	< 0.53	< 0.49
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.56	< 0.66	< 0.55	< 0.54	< 0.55	< 0.55	< 0.72	< 0.55	< 0.54 J	< 0.58	< 0.53
2,4-Dichlorophenol	120-83-2	µg/L	< 0.66	< 0.79	< 0.66	< 0.64	< 0.66	< 0.66	< 0.85	< 0.66	< 0.64 J	< 0.68	< 0.63
2,4-Dimethylphenol	105-67-9	µg/L	< 0.96	< 1.1	< 0.95	< 0.93	< 0.95	< 0.95	< 1.2	< 0.95	< 0.93 J	< 0.99	< 0.91
2,4-Dinitrophenol	51-28-5	µg/L	< 2.5	< 3	< 2.5	< 2.4	< 2.5	< 2.5	< 3.2	< 2.5	< 2.4 J	< 2.6	< 2.4
2,4-Dinitrotoluene	121-14-2	µg/L	< 1.1	< 1.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.4	< 1.1	< 1.1 J	< 1.1	< 1
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.93	< 1.1	< 0.92	< 0.9	< 0.92	< 0.92	< 1.2	< 0.92	< 0.9 J	< 0.96	< 0.88
2-Chloronaphthalene	91-58-7	µg/L	< 0.64	< 0.76	< 0.64	< 0.62	< 0.64	< 0.64	< 0.82	< 0.64	< 0.62 J	< 0.66	< 0.61
2-Chlorophenol	95-57-8	µg/L	< 0.78	< 0.93	< 0.77	< 0.76	< 0.77	< 0.77	< 1	< 0.77	< 0.76 J	< 0.8	< 0.74
2-Methylnaphthalene	91-57-6	µg/L	< 0.93	< 1.1	< 0.92	< 0.9	< 0.92	< 0.92	< 1.2	< 0.92	< 0.9 J	< 0.96	< 0.88
2-Methylphenol	95-48-7	µg/L	< 1.4 J	< 1.6 J	< 1.3	< 1.3	< 1.3 J	< 1.3 J	< 1.7 J	< 1.3	< 1.3 J	< 1.4	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 0.69	< 0.81	< 0.68	< 0.66	< 0.68	< 0.68	< 0.88	< 0.68	< 0.66 J	< 0.71	< 0.65
2-Nitrophenol	88-75-5	µg/L	< 0.62	< 0.74	< 0.61	< 0.6	< 0.61	< 0.62	< 0.8	< 0.61	< 0.6 J	< 0.64	< 0.59
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1	< 1.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.4	< 1.1	< 1.1 J	< 1.1	< 1
3-Nitroaniline	99-09-2	µg/L	< 0.86	< 1	< 0.85	< 0.84	< 0.85	< 0.86	< 1.1	< 0.85	< 0.84 J	< 0.89	< 0.82
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.1	< 2.5	< 2.1	< 2.1	< 2.1	< 2.1	< 2.7	< 2.1	< 2.1 J	< 2.2	< 2
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1.1	< 1.3	< 1.1	< 1	< 1.1	< 1.1	< 1.4	< 1.1	< 1 J	< 1.1	< 1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.8	< 0.95	< 0.79	< 0.78	< 0.79	< 0.79	< 1	< 0.79	< 0.78 J	< 0.83	< 0.76
Semi-Volatile Organic Compounds													

Location ID Sample ID Sample Date	CAS	Units	RW-3DD RW-3DD(175-180)-081717 8/17/2017	RW-3DS RW-3DS(155-160)-081717 8/17/2017	RW-4 RW-4(333-343)-082517 8/25/2017	RW-4 RW-4(393-403)-082517 8/25/2017	RW-4A RW-4A-(62-72)-082217 8/22/2017	RW-4A RW-4A(113-123)-081617 8/16/2017	RW-5 RW-5-083017 8/30/2017	RW-5A RW-5A-082317 8/23/2017	RW-6 RW-6-081617 8/16/2017	RW-6A RW-6A-082917 8/29/2017	RW-8 RW-8(163-173)-082117 8/21/2017
4-Chloroaniline	106-47-8	µg/L	< 0.77	< 0.91	< 0.76	< 0.74	< 0.76	< 0.76	< 0.99	< 0.76	< 0.74 J	< 0.79	< 0.73
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 1	< 1.2	< 1	< 0.98	< 1	< 1	< 1.3	< 1	< 0.98 J	< 1	< 0.96
4-Nitroaniline	100-01-6	µg/L	< 0.51	< 0.6	< 0.5	< 0.49	< 0.5	< 0.5	< 0.65	< 0.5	< 0.49 J	< 0.52	< 0.48
4-Nitrophenol	100-02-7	µg/L	< 4.9	< 5.8	< 4.8	< 4.7	< 4.8	< 4.9	< 6.3	< 4.8	< 4.7 J	< 5.1	< 4.7
Acenaphthene	83-32-9	µg/L	< 0.93	< 1.1	< 0.92	< 0.9	< 0.92	< 0.92	< 1.2	< 0.92	< 0.9 J	< 0.96	< 0.88
Acenaphthylene	208-96-8	µg/L	< 0.69	< 0.81	< 0.68	< 0.66	< 0.68	< 0.68	< 0.88	< 0.68	< 0.66 J	< 0.71	< 0.65
Acetophenone	98-86-2	µg/L	< 1.1	< 1.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.4	< 1.1	< 1.1 J	2.1 J	< 1
Anthracene	120-12-7	µg/L	< 0.6	< 0.71	< 0.59	< 0.58	< 0.59	< 0.6	< 0.77	< 0.59	< 0.58 J	< 0.62	< 0.57
Atrazine	1912-24-9	µg/L	< 0.81	< 0.96	< 0.8	< 0.79	< 0.8	< 0.81	< 1	< 0.8	< 0.79 J	< 0.84	< 0.77
Benzaldehyde	100-52-7	µg/L	< 0.91	< 1.1	< 0.9	< 0.88	< 0.9	< 0.9	< 1.2	< 0.9	< 0.88 J	< 0.93	< 0.86
Benzo(a)anthracene	56-55-3	µg/L	< 0.039	< 0.046	< 0.039	< 0.038	< 0.039	< 0.039	< 0.05	< 0.039	< 0.039	< 0.04	< 0.037
Benzo(a)pyrene	50-32-8	µg/L	< 0.027	< 0.033	< 0.027	< 0.027	< 0.027	< 0.027	< 0.035	< 0.027	< 0.027	< 0.028	< 0.026
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.013	0.034 J	< 0.013	< 0.012	< 0.013	< 0.013	< 0.016	< 0.013	< 0.013	< 0.013	< 0.012
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.79	< 0.94	< 0.78	< 0.77	< 0.78	< 0.78	< 1	< 0.78	< 0.77 J	< 0.82	< 0.75
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.19	< 0.23	< 0.19	< 0.18	< 0.19	< 0.19	< 0.24	< 0.19	< 0.18 J	< 0.2	< 0.18
Benzyl butyl phthalate	85-68-7	µg/L	< 0.63	< 0.75	< 0.63	< 0.61	< 0.63	< 0.63	< 0.81	< 0.63	< 0.61 J	< 0.65	< 0.6
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.73	< 0.86	< 0.72	< 0.7	< 0.72	< 0.72	< 0.93	< 0.72	< 0.7 J	< 0.75	< 0.69
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.0095	< 0.011	< 0.0094	< 0.0092	< 0.0094	< 0.0094	< 0.012	< 0.0094	< 0.0094	< 0.0098	< 0.009
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.76	< 0.9	< 0.75	< 0.73	< 0.75	< 0.75	< 0.97	< 0.75	< 0.73 J	< 0.78	< 0.72
Caprolactam	105-60-2	µg/L	< 1.1	< 1.3 J	< 1.1	< 1.1	< 1.1 J	< 1.1	< 1.4 J	< 1.1	< 1.1 J	< 1.1	< 1.1
Carbazole	86-74-8	µg/L	< 0.9	< 1.1	< 0.89	< 0.87	< 0.89	< 0.89	< 1.1	< 0.89	< 0.87 J	< 0.92	< 0.85
Chrysene	218-01-9	µg/L	< 0.71	< 0.84	< 0.7	< 0.68	< 0.7	< 0.7	< 0.91	< 0.7	< 0.68 J	< 0.73	< 0.67
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023	< 0.028	< 0.023	< 0.022	< 0.023	< 0.023	< 0.03	< 0.023	< 0.023	< 0.024	< 0.022
Dibenzofuran	132-64-9	µg/L	< 0.9	< 1.1	< 0.89	< 0.87	< 0.89	< 0.89	< 1.1	< 0.89	< 0.87 J	< 0.92	< 0.85
Diethyl phthalate	84-66-2	µg/L	< 1.1	< 1.3	< 1	< 1	< 1	< 1	< 1.4	< 1	< 1 J	< 1.1	< 1
Dimethyl phthalate	131-11-3	µg/L	< 1	< 1.2	< 1	< 1	< 1	< 1	< 1.3	< 1	< 1 J	< 1.1	< 0.98
di-n-butyl phthalate	84-74-2	µg/L	< 0.86	< 1	< 0.85	< 0.84	< 0.85	< 0.86	< 1.1	< 0.85	< 0.84 J	< 0.89	< 0.82
di-n-octylphthalate	117-84-0	µg/L	< 0.73	< 0.86	< 0.72	< 0.7	< 0.72	< 0.72	< 0.93	< 0.72	< 0.7 J	< 0.75	< 0.69
Fluoranthene	206-44-0	µg/L	< 0.76	< 0.9	< 0.75	< 0.73	< 0.75	< 0.75	< 0.97	< 0.75	< 0.73 J	< 0.78	< 0.72
Fluorene	86-73-7	µg/L	< 0.84	< 1	< 0.83	< 0.82	< 0.83	< 0.84	< 1.1	< 0.83	< 0.82 J	< 0.87	< 0.8
Hexachlorobenzene	118-74-1	µg/L	< 0.0095	< 0.011	< 0.0094	< 0.0092	< 0.0094	< 0.0094	< 0.012	< 0.0094	< 0.0094	0.015 J	< 0.009
Hexachlorobutadiene	87-68-3	µg/L	< 0.8	< 0.95	< 0.79	< 0.78	< 0.79 J	< 0.79	< 1	< 0.79	< 0.78 J	< 0.83	< 0.76
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.64	< 0.76	< 0.64	< 0.62	< 0.64	< 0.64	< 0.82	< 0.64	< 0.62 J	< 0.66	< 0.61
Hexachloroethane	67-72-1	µg/L	< 0.095	< 0.11	< 0.094	< 0.092	< 0.094	< 0.094	< 0.12	< 0.094	< 0.092 J	< 0.098	< 0.09
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.028	0.041 J	< 0.028	< 0.028	< 0.028	< 0.028	< 0.036	< 0.028	< 0.028	< 0.029	< 0.027
Isophorone	78-59-1	µg/L	< 0.71	< 0.84	< 0.7	< 0.68	< 0.7	< 0.7	< 0.91	< 0.7	< 0.68 J	< 0.73	< 0.67
Naphthalene	91-20-3	µg/L	< 0.84	< 1	< 0.83	< 0.82	< 0.83	< 0.84	< 1.1	1.1 J	< 0.82 J	3.5 J	< 0.8
Nitrobenzene	98-95-3	µg/L	< 0.52	< 0.61	< 0.51	< 0.5	< 0.51	< 0.51	< 0.66	< 0.51	< 0.5 J	< 0.53	< 0.49
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.88	< 1	< 0.86	< 0.85	< 0.86	< 0.87	< 1.1	< 0.86	< 0.85 J	< 0.9	< 0.83
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.78	< 0.93	< 0.77	< 0.76	< 0.77	< 0.77	< 1	< 0.77	< 0.76 J	< 0.8	< 0.74
Pentachlorophenol	87-86-5	µg/L	< 0.081	< 0.096	< 0.08	< 0.079	< 0.08 J	< 0.081 J	< 0.1	< 0.08	< 0.08 J	< 0.084	< 0.077
Phenanthrene	85-01-8	µg/L	< 0.69	< 0.81	< 0.68	< 0.66	< 0.68	< 0.68	< 0.88	< 0.68	< 0.66 J	< 0.71	< 0.65
Phenol	108-95-2	µg/L	1.1 J	4.7 J	< 0.43	< 0.42	< 0.43	< 0.43	< 0.55	< 0.43	< 0.42 J	< 0.45	< 0.41
Pyrene	129-00-0	µg/L	< 0.88	< 1	< 0.86	< 0.85	< 0.86	< 0.87	< 1.1	< 0.86	< 0.85 J	< 0.9	< 0.83
Metals - Total													
Aluminum, total	7429-90-5	µg/L	82.2	51.8	746	199	566	29.2 J	910 B	87.5	18.9 J	25.6 J	< 18.2
Antimony, total	7440-36-0	µg/L	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62
Arsenic, total	7440-38-2	µg/L	20.9	16.1	1 J	< 0.64	< 0.64	< 0.64	14.1	2.6	0.7 J	0.65 J	< 0.64
Barium, total	7440-39-3	µg/L	6.8	12.1	20.7	13.6	4.4	15.5	11.8	10.8	445	45.6	11.6
Beryllium, total	7440-41-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71
Calcium, total	7440-70-2	µg/L	22700	44400	52600	16900	9430	12700	11500	41900	80400	85600	36000
Chromium, total	7440-47-3	µg/L	< 1.3	1.8 J	29.8	< 1.3	< 1.3	< 1.3	3.7 J	< 1.3	2.5 J	< 1.3	< 1.3
Cobalt, total	7440-48-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	6.7	13.5	< 1.3
Copper, total	7440-50-8	µg/L	< 1.4	2 J	5.6	< 1.4	9.8	< 1.4	16 B	4.7	< 1.4	2.2 J	< 1.4
Iron, total	7439-89-6	µg/L	< 42.4	< 42.4	< 42.4	144	738	< 42.4	1710	1390	49800	19100	< 42.4
Lead, total	7439-92-1	µg/L	< 0.38	< 0.38	< 0.38	< 0.38	3.6	0.52 J	4.1	0.47 J	0.55 J	< 0.38	< 0.38
Magnesium, total	7439-95-4	µg/L	1390	< 63.6	< 63.6	5550	3720	4730	1210	5710	14200	19300	6000
Manganese, total	7439-96-5	µg/L	< 2.5	< 2.5	< 2.5	2.9 J	7.7 J	< 2.5	133	540	7240	13100	12.4
Mercury, total	7439-97-6	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Nickel, total	7440-02-0	µg/L	1.6 J	3 J	< 1.4	< 1.4	48.4	91.1	4.7	< 1.4	1.9 J	2.8 J	6.3
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 0.73	2.1 J	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Sodium, total	7440-23-5	µg/L	35100	192000	17100	5870	5080	6080	84000	4980	5550	7480	59500
Thallium, total	7440-28-0	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Vanadium, total	7440-62-2	µg/L	3.7 J	4.2	11.9	< 1.9	< 1.9	< 1.9	2.9 J	< 1.9	1.9 J	2.4 J	< 1.9
Zinc, total	7440-66-6	µg/L	< 7	< 7	< 7	7.5 J	25.5	16.4	117 B	< 7	9.5 J	< 7	10.6 J
Other													
Cyanide, total	57-12-5	µg/L	< 2	< 2	6.1 B	5.4 B	< 2.4	2.8 J	4.8 B	3 B	3.1 J	5.1 B	< 2
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	< 1.5	NA	NA	< 1.5	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-8 RW-8(204-214)-082217 8/22/2017	RW-9 RW-9(206-216)-081617 8/16/2017	RW-9A RW-9A(85-95)-081617 8/16/2017	RW-10 RW-10(120-130)-082317 8/23/2017	RW-10 RW-10-(185-195)-082217 8/22/2017	RW-10A RW-10A-(75-85)-082217 8/22/2017	RW-11D RW-11D(262-267)-082917 8/29/2017	RW-11S RW-11S(236-241)-082517 8/25/2017	RW-12 RW-12 (55-65)-081817 8/18/2017
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
1,2-Dibromoethane	106-93-4	µg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	< 2.2	< 2.2	< 2.2	5.2	2.8 J	< 2.2	5.8	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	< 1.1	10	5.1 B	47	25	< 1.1	31	7.2	19 B
Benzene	71-43-2	µg/L	1	< 0.09	< 0.09	0.092 J	< 0.09	< 0.09	6.3	< 0.09	< 0.09
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 J	< 0.18
Bromomethane	74-83-9	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	0.8 J	0.43 J	< 0.22	1.1	0.54 J	< 0.22	7.7	< 0.22	2.7
Carbon tetrachloride	56-23-5	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	1.6	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	4.6	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Freon 113	76-13-1	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.21	< 0.21	0.32 B	0.56 B	0.46 J	< 0.21	0.4 J	0.53 J	1
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 0.25	0.28 J	< 0.25	0.33 J	< 0.25	< 0.25	< 0.25	< 0.25	1.8
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Semi-Volatile Organic Compounds											
1,1'-Biphenyl	92-52-4	µg/L	< 0.63	< 1.2	< 0.7	< 0.72	< 0.66	< 0.66	< 0.64	< 0.66	< 0.75
1,4-Dioxane	123-91-1	µg/L	< 0.0781	< 0.11	< 0.0987	< 0.0833	< 0.0765	< 0.0781	88.3	1.63	< 0.0815
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.49	< 0.94	< 0.54	< 0.56	< 0.51	< 0.51	< 0.5	< 0.51	< 0.58
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.53	< 1	< 0.59	< 0.6	< 0.55	< 0.55	< 0.54	< 0.55	< 0.63
2,4-Dichlorophenol	120-83-2	µg/L	< 0.63	< 1.2	< 0.7	< 0.72	< 0.66	< 0.66	< 0.64	< 0.66	< 0.75
2,4-Dimethylphenol	105-67-9	µg/L	< 0.91	< 1.8	< 1	< 1	< 0.95	< 0.95	< 0.93	< 0.95	< 1.1
2,4-Dinitrophenol	51-28-5	µg/L	< 2.4	< 4.6	< 2.6	< 2.7	< 2.5	< 2.5	< 2.4	< 2.5	< 2.8
2,4-Dinitrotoluene	121-14-2	µg/L	< 1	< 2	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.88	< 1.7	< 0.98	< 1	< 0.92	< 0.92	< 0.9	< 0.92	< 1
2-Chloronaphthalene	91-58-7	µg/L	< 0.61	< 1.2	< 0.68	< 0.69	< 0.64	< 0.64	< 0.62	< 0.64	< 0.73
2-Chlorophenol	95-57-8	µg/L	< 0.74	< 1.4	< 0.82	< 0.84	< 0.77	< 0.77	< 0.76	< 0.77	< 0.88
2-Methylnaphthalene	91-57-6	µg/L	< 0.88	< 1.7	< 0.98	< 1	< 0.92	< 0.92	< 0.9	< 0.92	< 1
2-Methylphenol	95-48-7	µg/L	< 1.3	< 2.5 J	< 1.4 J	< 1.5	< 1.3 J	< 1.3 J	< 1.3	< 1.3 J	< 1.5 J
2-Nitroaniline	88-74-4	µg/L	< 0.65	< 1.3	< 0.72	< 0.74	< 0.68	< 0.68	< 0.66	< 0.68	< 0.77
2-Nitrophenol	88-75-5	µg/L	< 0.59	< 1.1	< 0.66	< 0.67	< 0.61	< 0.61	< 0.6	< 0.61	< 0.7
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1	< 2	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2
3-Nitroaniline	99-09-2	µg/L	< 0.82	< 1.6	< 0.91	< 0.93	< 0.85	< 0.85	< 0.84	< 0.85	< 0.98
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2	< 3.9	< 2.2	< 2.3	< 2.1	< 2.1	< 2.1	< 2.1	< 2.4
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1	< 2	< 1.1	< 1.2	< 1.1	< 1.1	< 1	< 1.1	< 1.2
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.76	< 1.5	< 0.84	< 0.86	< 0.79	< 0.79	< 0.78	< 0.79	< 0.9
Semi-Volatile Organic Compounds											

Location ID Sample ID Sample Date	CAS	Units	RW-8 RW-8(204-214)-082217 8/22/2017	RW-9 RW-9(206-216)-081617 8/16/2017	RW-9A RW-9A(85-95)-081617 8/16/2017	RW-10 RW-10(120-130)-082317 8/23/2017	RW-10 RW-10-(185-195)-082217 8/22/2017	RW-10A RW-10A-(75-85)-082217 8/22/2017	RW-11D RW-11D(262-267)-082917 8/29/2017	RW-11S RW-11S(236-241)-082517 8/25/2017	RW-12 RW-12 (55-65)-081817 8/18/2017
4-Chloroaniline	106-47-8	µg/L	< 0.73	< 1.4	< 0.81	< 0.83	< 0.76	< 0.76	< 0.74	< 0.76	< 0.87
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.96	< 1.8	< 1.1	< 1.1	< 1	< 1	< 0.98	< 1	< 1.1
4-Nitroaniline	100-01-6	µg/L	< 0.48	< 0.92	< 0.53	< 0.55	< 0.5	< 0.5	< 0.49	< 0.5	< 0.57
4-Nitrophenol	100-02-7	µg/L	< 4.7	< 8.9	< 5.2	< 5.3	< 4.8	< 4.8	< 4.7	< 4.8	< 5.5
Acenaphthene	83-32-9	µg/L	< 0.88	< 1.7	< 0.98	< 1	< 0.92	< 0.92	< 0.9	< 0.92	< 1
Acenaphthylene	208-96-8	µg/L	< 0.65	< 1.3	< 0.72	< 0.74	< 0.68	< 0.68	< 0.66	< 0.68	< 0.77
Acetophenone	98-86-2	µg/L	< 1	< 2	< 1.2	1.3 J	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2
Anthracene	120-12-7	µg/L	< 0.57	< 1.1	< 0.63	< 0.65	< 0.59	< 0.59	< 0.58	< 0.59	< 0.68
Atrazine	1912-24-9	µg/L	< 0.77	< 1.5	< 0.86	< 0.88	< 0.8	< 0.8	< 0.79	< 0.8	< 0.92
Benzaldehyde	100-52-7	µg/L	< 0.86	< 1.7	< 0.96	< 0.98	< 0.9	< 0.9	< 0.88	< 0.9	< 1
Benzo(a)anthracene	56-55-3	µg/L	< 0.037	< 0.071	< 0.041	< 0.042	< 0.039	< 0.039	< 0.038	< 0.039	< 0.044
Benzo(a)pyrene	50-32-8	µg/L	< 0.026	< 0.05	< 0.029	< 0.03	< 0.027	< 0.027	< 0.027	< 0.027	0.035 J
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.012	< 0.023	< 0.013	< 0.014	< 0.013	< 0.013	< 0.012	< 0.013	0.03 J
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.75	< 1.4	< 0.83	< 0.85	< 0.78	< 0.78	< 0.77	< 0.78	< 0.89
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.18	< 0.35	< 0.2	< 0.2	< 0.19	< 0.19	< 0.18	< 0.19	< 0.21
Benzyl butyl phthalate	85-68-7	µg/L	< 0.6	< 1.2	< 0.67	< 0.68	< 0.63	< 0.63	< 0.61	< 0.63	< 0.71
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.69	< 1.3	< 0.77	< 0.78	< 0.72	< 0.72	< 0.7	< 0.72	< 0.82
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.009	< 0.017	< 0.01	< 0.01	< 0.0094	< 0.0094	< 0.0092	< 0.0094	< 0.011
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.72	< 1.4	1.3 J	< 0.82	< 0.75	< 0.75	3	< 0.75	< 0.86
Caprolactam	105-60-2	µg/L	< 1.1	< 2	< 1.2	< 1.2	< 1.1 J	< 1.1 J	< 1.1	< 1.1	< 1.3 J
Carbazole	86-74-8	µg/L	< 0.85	< 1.6	< 0.94	< 0.97	< 0.89	< 0.89	< 0.87	< 0.89	< 1
Chrysene	218-01-9	µg/L	< 0.67	< 1.3	< 0.74	< 0.76	< 0.7	< 0.7	< 0.68	< 0.7	< 0.8
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.022	< 0.042	< 0.024	< 0.025	< 0.023	< 0.023	< 0.022	< 0.023	< 0.026
Dibenzofuran	132-64-9	µg/L	< 0.85	< 1.6	< 0.94	< 0.97	< 0.89	< 0.89	< 0.87	< 0.89	< 1
Diethyl phthalate	84-66-2	µg/L	< 1	< 1.9	< 1.1	< 1.1	< 1	< 1	< 1	< 1	< 1.2
Dimethyl phthalate	131-11-3	µg/L	< 0.98	< 1.9	< 1.1	< 1.1	< 1	< 1	< 1	< 1	< 1.2
di-n-butyl phthalate	84-74-2	µg/L	< 0.82	< 1.6	< 0.91	< 0.93	< 0.85	< 0.85	< 0.84	< 0.85	< 0.98
di-n-octylphthalate	117-84-0	µg/L	< 0.69	< 1.3	< 0.77	< 0.78	< 0.72	< 0.72	< 0.7	< 0.72	< 0.82
Fluoranthene	206-44-0	µg/L	< 0.72	< 1.4	< 0.8	< 0.82	< 0.75	< 0.75	< 0.73	< 0.75	< 0.86
Fluorene	86-73-7	µg/L	< 0.8	< 1.5	< 0.89	< 0.91	< 0.83	< 0.83	< 0.82	< 0.83	< 0.95
Hexachlorobenzene	118-74-1	µg/L	< 0.009	< 0.017	< 0.01	< 0.01	< 0.0094	< 0.0094	< 0.0092	< 0.0094	< 0.011
Hexachlorobutadiene	87-68-3	µg/L	< 0.76	< 1.5	< 0.84	< 0.86	< 0.79 J	< 0.79 J	< 0.78	< 0.79	< 0.9
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.61	< 1.2	< 0.68	< 0.69	< 0.64	< 0.64	< 0.62	< 0.64	< 0.73
Hexachloroethane	67-72-1	µg/L	< 0.09	< 0.17	< 0.1	< 0.1	< 0.094	< 0.094	< 0.092	< 0.094	< 0.11
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.027	< 0.052	< 0.03	< 0.031	< 0.028	< 0.028	< 0.028	< 0.028	0.036 J
Isophorone	78-59-1	µg/L	< 0.67	< 1.3	< 0.74	1.2 J	< 0.7	< 0.7	< 0.68	< 0.7	2 J
Naphthalene	91-20-3	µg/L	< 0.8	< 1.5	< 0.89	1.2 J	< 0.83	< 0.83	< 0.82	< 0.83	< 0.95
Nitrobenzene	98-95-3	µg/L	< 0.49	< 0.94	< 0.54	< 0.56	< 0.51	< 0.51	< 0.5	< 0.51	< 0.58
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.83	< 1.6	< 0.92	< 0.94	< 0.86	< 0.86	< 0.85	< 0.86	< 0.99
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.74	< 1.4	< 0.82	< 0.84	< 0.77	< 0.77	< 0.76	< 0.77	< 0.88
Pentachlorophenol	87-86-5	µg/L	< 0.077	< 0.15 J	< 0.086 J	< 0.088	< 0.08 J	< 0.08 J	< 0.079	< 0.08	< 0.092
Phenanthrene	85-01-8	µg/L	< 0.65	< 1.3	< 0.72	< 0.74	< 0.68	< 0.68	< 0.66	< 0.68	< 0.77
Phenol	108-95-2	µg/L	< 0.41	< 0.79	< 0.46	11	3.2 J	< 0.43	4.1 J	< 0.43	7.9 J
Pyrene	129-00-0	µg/L	< 0.83	< 1.6	< 0.92	< 0.94	< 0.86	< 0.86	< 0.85	< 0.86	< 0.99
Metals - Total											
Aluminum, total	7429-90-5	µg/L	< 18.2	686	98.2	88.8	117	30.5 J	6260	20.4 J	128
Antimony, total	7440-36-0	µg/L	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62
Arsenic, total	7440-38-2	µg/L	2	3	2.4	7	5.7	< 0.64	0.76 J	< 0.64	16.4
Barium, total	7440-39-3	µg/L	27.4	46.9	10.2	14.5	10.7	6.3	109	16.8	24.9
Beryllium, total	7440-41-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71
Calcium, total	7440-70-2	µg/L	52200	62600	23900	41800	44700	45600	133000	16200	61900
Chromium, total	7440-47-3	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	2.2 J	< 1.3	< 1.3
Cobalt, total	7440-48-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Copper, total	7440-50-8	µg/L	< 1.4	< 1.4	1.5 J	2.1 J	< 1.4	1.7 J	< 1.4	1.9 J	< 1.4
Iron, total	7439-89-6	µg/L	510	219	258	43.6 J	< 42.4	< 42.4	127	413	< 42.4
Lead, total	7439-92-1	µg/L	< 0.38	< 0.38	< 0.38	0.94 J	< 0.38	0.5 J	< 0.38	< 0.38	< 0.38
Magnesium, total	7439-95-4	µg/L	17600	15400	5520	< 63.6	167 J	13100	< 63.6	2080	250
Manganese, total	7439-96-5	µg/L	164	99.1	34.6	< 2.5	< 2.5	5.5 J	3.8 J	446	< 2.5
Mercury, total	7439-97-6	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Nickel, total	7440-02-0	µg/L	11.5	1.8 J	3.6 J	8.8	2.4 J	2.2 J	8.7	27.5	1.8 J
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 0.73	< 0.73	< 0.73	2.2 J	< 0.73	< 0.73	1.9 J	< 0.73	4.5 J
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Sodium, total	7440-23-5	µg/L	85600	144000	4440	60700	39800	4850	145000	3670	149000
Thallium, total	7440-28-0	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Vanadium, total	7440-62-2	µg/L	< 1.9	< 1.9	< 1.9	6	2 J	< 1.9	< 1.9	< 1.9	2.1 J
Zinc, total	7440-66-6	µg/L	< 7	< 7	< 7	< 7	< 7	< 7	< 7	< 7	8.1 J
Other											
Cyanide, total	57-12-5	µg/L	< 2.4	2.3 J	< 2	4 B	< 2.4	< 2.4	5.4 B	6.9 B	< 2
Cyanide, free	E-14718	µg/L	NA	< 1.5	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	RW-12 RW-12 (130-140)-081817 8/18/2017	RW-13 RW-13(71-91)-081617 8/16/2017	RW-13 RW-13(100-120)-082917 8/29/2017	RW-13 RW-13(150-170)-082517 8/25/2017	RW-14S RW-14S(135-155)-081817 8/18/2017	RW-14D RW-14D(175-185)-081617 8/16/2017	RW-15S RW-15S(110-120)-081717 8/17/2017	RW-15D RW-15D(127-137)-081717 8/17/2017	RW-16 RW-16-081717 8/17/2017	RW-12 RW-12(50-70) 5/10/2012
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.24
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.2
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.19
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.28
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.15
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.21
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.18
1,2-Dichloroethane	107-06-2	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.18
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.22
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.29
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.26
2-Butanone (MEK)	78-93-3	µg/L	< 2.2	< 2.2	3.4 J	< 2.2	< 2.2	< 2.2	< 2.2	7.3	< 2.2	< 2.9
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	3 J	< 0.72	< 3
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	0.78 J	< 0.63	< 1.2
Acetone	67-64-1	µg/L	2.7 B	10 B	21 B	7.1 B	6.7 B	5.7 B	23	59	< 1.1	< 5
Benzene	71-43-2	µg/L	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.31 J	< 0.09	< 0.09	< 0.09	< 0.22
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.23
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.24
Bromomethane	74-83-9	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.31
Carbon disulfide	75-15-0	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.79 J	5.4	13	0.26 J	< 0.18
Carbon tetrachloride	56-23-5	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.19
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.22
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37	1.3	< 0.37	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.21
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.28 J	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.22
Cyclohexane	110-82-7	µg/L	< 0.26	< 0.26	0.33 J	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.29
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.2
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.31
Ethylbenzene	100-41-4	µg/L	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.21
Freon 113	76-13-1	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.49
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.19
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 2.9
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.18
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.18
Methylene chloride	75-09-2	µg/L	< 0.21	0.45 B	0.94 J	0.3 J	0.91 J	0.99 B	1.2	0.78 J	1.5	< 0.2
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.23
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.32
Toluene	108-88-3	µg/L	< 0.25	< 0.25	0.67 J	< 0.25	0.58 J	0.46 J	0.89 J	1.4	< 0.25	< 0.15
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.31
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	0.37 J	0.56 J	0.25 J	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.21
Trichlorofluoromethane	75-69-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.35
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.27
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.17
Semi-Volatile Organic Compounds												
1,1'-Biphenyl	92-52-4	µg/L	< 0.75	< 0.66	< 0.67	< 0.66	< 0.66	< 0.66	< 0.66	< 0.72	< 0.72	< 0.33
1,4-Dioxane	123-91-1	µg/L	< 0.0781	0.277	0.148 J	< 0.0781	0.163	0.719	< 0.0773	0.982	< 0.0765	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.58	< 0.51	< 0.52	< 0.51	< 0.51	< 0.51	< 0.51	< 0.56	< 0.56	< 1.7
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.63	< 0.55	< 0.56	< 0.55	< 0.55	< 0.56	< 0.55	< 0.6	< 0.6	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 0.75	< 0.66	< 0.67	< 0.66	< 0.66	< 0.66	< 0.66	< 0.72	< 0.72	< 1.2
2,4-Dimethylphenol	105-67-9	µg/L	< 1.1	< 0.95	< 0.97	< 0.95	< 0.95	< 0.96	< 0.95	< 1	< 1	< 1.6
2,4-Dinitrophenol	51-28-5	µg/L	< 2.8	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.7	< 2.7	< 18
2,4-Dinitrotoluene	121-14-2	µg/L	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2	< 1.2	< 0.46
2,6-Dinitrotoluene	606-20-2	µg/L	< 1	< 0.92	< 0.94	< 0.92	< 0.92	< 0.92	< 0.92	< 1	< 1	< 0.5
2-Chloronaphthalene	91-58-7	µg/L	< 0.73	< 0.64	< 0.65	< 0.64	< 0.64	< 0.64	< 0.64	< 0.69	< 0.69	< 0.32
2-Chlorophenol	95-57-8	µg/L	< 0.88	< 0.77	< 0.79	< 0.77	< 0.77	< 0.78	< 0.77	< 0.84	< 0.84	< 1
2-Methylnaphthalene	91-57-6	µg/L	< 1	< 0.92	< 0.94	< 0.92	< 0.92	< 0.92	< 0.92	< 1	< 1	< 0.41
2-Methylphenol	95-48-7	µg/L	< 1.5 J	< 1.3 J	< 1.4	< 1.3	< 1.3 J	< 1.4 J	< 1.3 J	< 1.5 J	< 1.5 J	< 1.1
2-Nitroaniline	88-74-4	µg/L	< 0.77	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.74	< 0.74	< 1.2
2-Nitrophenol	88-75-5	µg/L	< 0.7	< 0.61	< 0.63	< 0.61	< 0.61	< 0.62	< 0.61	< 0.67	< 0.67	< 1.6
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2	< 1.2	< 0.39
3-Nitroaniline	99-09-2	µg/L	< 0.98	< 0.85	< 0.87	< 0.85	< 0.85	< 0.86	< 0.85	< 0.93	< 0.93	< 1.4
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.4	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.3	< 2.3	< 1.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2	< 1.2	< 0.38
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.9	< 0.79	< 0.81	< 0.79	< 0.79	< 0.8	< 0.79	< 0.86	< 0.86	< 2
Semi-Volatile Organic Compounds												

Location ID Sample ID Sample Date	CAS	Units	RW-12 RW-12 (130-140)-081817 8/18/2017	RW-13 RW-13(71-91)-081617 8/16/2017	RW-13 RW-13(100-120)-082917 8/29/2017	RW-13 RW-13(150-170)-082517 8/25/2017	RW-14S RW-14S(135-155)-081817 8/18/2017	RW-14D RW-14D(175-185)-081617 8/16/2017	RW-15S RW-15S(110-120)-081717 8/17/2017	RW-15D RW-15D(127-137)-081717 8/17/2017	RW-16 RW-16-081717 8/17/2017	RW-12 RW-12(50-70) 5/10/2012
4-Chloroaniline	106-47-8	µg/L	< 0.87	< 0.76	< 0.78	< 0.76	< 0.76	< 0.77	< 0.76	< 0.83	< 0.83	< 0.57
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 1.1	< 1	< 1	< 1	< 1	< 1	< 1	< 1.1	< 1.1	< 0.34
4-Nitroaniline	100-01-6	µg/L	< 0.57	< 0.5	< 0.51	< 0.5	< 0.5	< 0.5	< 0.5	< 0.55	< 0.55	< 1.8
4-Nitrophenol	100-02-7	µg/L	< 5.5	< 4.8	< 4.9	< 4.8	< 4.8	< 4.9	< 4.8	< 5.3	< 5.3	< 5.6
Acenaphthene	83-32-9	µg/L	< 1	< 0.92	< 0.94	< 0.92	< 0.92	< 0.92	< 0.92	< 1	< 1	< 0.015
Acenaphthylene	208-96-8	µg/L	< 0.77	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.74	< 0.74	< 0.017 J
Acetophenone	98-86-2	µg/L	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2	< 1.2	< 0.31
Anthracene	120-12-7	µg/L	< 0.68	< 0.59	< 0.61	< 0.59	< 0.59	< 0.6	< 0.59	< 0.65	< 0.65	< 0.011
Atrazine	1912-24-9	µg/L	< 0.92	< 0.8	< 0.82	< 0.8	< 0.8	< 0.81	< 0.8	< 0.88	< 0.88	< 0.52
Benzaldehyde	100-52-7	µg/L	< 1	< 0.9	< 0.91	< 0.9	< 0.9	< 0.9	< 0.9	< 0.98	< 0.98	< 3.5
Benzo(a)anthracene	56-55-3	µg/L	< 0.044	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.042	< 0.042	< 0.016
Benzo(a)pyrene	50-32-8	µg/L	< 0.031	< 0.027	< 0.028	< 0.027	< 0.027	< 0.027	< 0.027	< 0.03	< 0.03	< 0.0053
Benzo(b)fluoranthene	205-99-2	µg/L	0.025 J	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.014	< 0.014	< 0.018
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.89	< 0.78	< 0.8	< 0.78	< 0.78	< 0.79	< 0.78	< 0.85	< 0.85	< 0.011
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.21	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.2	< 0.2	< 0.013
Benzyl butyl phthalate	85-68-7	µg/L	< 0.71	< 0.63	< 0.64	< 0.63	< 0.63	< 0.63	< 0.63	< 0.68	< 0.68	< 0.31
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.82	< 0.72	< 0.73	< 0.72	< 0.72	< 0.72	< 0.72	< 0.78	< 0.78	< 0.33
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.011	< 0.0094	< 0.0096	< 0.0094	< 0.0094	< 0.0095	< 0.0094	< 0.01	< 0.01	< 0.33
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.86	< 0.75	1.4 J	< 0.75	< 0.75	1.5 J	< 0.75	< 0.82	< 0.82	< 0.63
Caprolactam	105-60-2	µg/L	< 1.3 J	< 1.1	< 1.1	< 1.1	< 1.1 J	< 1.1	< 1.1 J	< 1.2 J	< 1.2 J	< 0.74
Carbazole	86-74-8	µg/L	< 1	< 0.89	< 0.9	< 0.89	< 0.89	< 0.89	< 0.89	< 0.97	< 0.97	< 0.39
Chrysene	218-01-9	µg/L	< 0.8	< 0.7	< 0.71	< 0.7	< 0.7	< 0.7	< 0.7	< 0.76	< 0.76	< 0.025
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.026	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023	< 0.025	< 0.025	< 0.024
Dibenzofuran	132-64-9	µg/L	< 1	< 0.89	< 0.9	< 0.89	< 0.89	< 0.89	< 0.89	< 0.97	< 0.97	< 0.28
Diethyl phthalate	84-66-2	µg/L	< 1.2	< 1	< 1.1	< 1	< 1	< 1.1	< 1	< 1.1	< 1.1	< 0.35
Dimethyl phthalate	131-11-3	µg/L	< 1.2	< 1	< 1	< 1	< 1	< 1	< 1	< 1.1	< 1.1	< 0.3
di-n-butyl phthalate	84-74-2	µg/L	< 0.98	< 0.85	< 0.87	< 0.85	< 0.85	1.1 J	< 0.85	< 0.93	< 0.93	< 0.6
di-n-octylphthalate	117-84-0	µg/L	< 0.82	< 0.72	< 0.73	< 0.72	< 0.72	< 0.72	< 0.72	< 0.78	< 0.78	< 0.33
Fluoranthene	206-44-0	µg/L	< 0.86	< 0.75	< 0.77	< 0.75	< 0.75	< 0.76	< 0.75	< 0.82	< 0.82	< 0.01
Fluorene	86-73-7	µg/L	< 0.95	< 0.83	< 0.85	< 0.83	< 0.83	< 0.84	< 0.83	< 0.91	< 0.91	< 0.016
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.0094	< 0.0096 J	< 0.0094	< 0.0094	< 0.0095	< 0.0094	< 0.01	< 0.01	< 0.0086
Hexachlorobutadiene	87-68-3	µg/L	< 0.9	< 0.79	< 0.81 J	< 0.79	< 0.79	< 0.8	< 0.79	< 0.86	< 0.86	< 0.55
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.73	< 0.64	< 0.65	< 0.64	< 0.64	< 0.64	< 0.64	< 0.69	< 0.69	< 7.6
Hexachloroethane	67-72-1	µg/L	< 0.11	< 0.094	< 0.096	< 0.094	< 0.094	< 0.095	< 0.094	< 0.1	< 0.1	< 0.59
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.032	< 0.028	< 0.029	< 0.028	< 0.028	< 0.028	< 0.028	< 0.031	< 0.031	< 0.011
Isophorone	78-59-1	µg/L	< 0.8	< 0.7	0.89 J	< 0.7	< 0.7	< 0.7	< 0.7	< 0.76	< 0.76	< 0.29
Naphthalene	91-20-3	µg/L	< 0.95	< 0.83	< 0.85	< 0.83	< 0.83	< 0.84	< 0.83	< 0.91	< 0.91	< 0.017
Nitrobenzene	98-95-3	µg/L	< 0.58	< 0.51	< 0.52	< 0.51	< 0.51	< 0.51	< 0.51	< 0.56	< 0.56	< 0.45
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.99	< 0.86	< 0.88	< 0.86	< 0.86	< 0.87	< 0.86	< 0.94	< 0.94	< 0.32
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.88	< 0.77	< 0.79	< 0.77	< 0.77	< 0.78	< 0.77	< 0.84	< 0.84	< 0.33
Pentachlorophenol	87-86-5	µg/L	< 0.092	< 0.08 J	< 0.082	< 0.08	< 0.08	< 0.081 J	< 0.08	< 0.088	< 0.088	< 0.11
Phenanthrene	85-01-8	µg/L	< 0.77	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68	< 0.68	< 0.74	< 0.74	< 0.017
Phenol	108-95-2	µg/L	< 0.49	< 0.43	4.5 J	< 0.43	< 0.43	< 0.43	< 0.43	3.9 J	< 0.47	< 1.4
Pyrene	129-00-0	µg/L	< 0.99	< 0.86	< 0.88	< 0.86	< 0.86	< 0.87	< 0.86	< 0.94	< 0.94	< 0.0087
Metals - Total												
Aluminum, total	7429-90-5	µg/L	424	133	5450 B	< 18.2	< 18.2	< 18.2	50.8	146	20.5 J	66.7 J
Antimony, total	7440-36-0	µg/L	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	0.66 J	< 0.62	< 0.62	< 1.4
Arsenic, total	7440-38-2	µg/L	8.2	< 0.64	4.2	< 0.64	4.8	8.9	36.8	5.3	< 0.64	< 0.97
Barium, total	7440-39-3	µg/L	13.9	14.5	11.9	7.2	11.7	47.3	6.3	17.7	39.4	34.8 B
Beryllium, total	7440-41-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.44
Cadmium, total	7440-43-9	µg/L	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.24
Calcium, total	7440-70-2	µg/L	28800	45300	9200	27500	46000	72200	46600	89400	67500	53100
Chromium, total	7440-47-3	µg/L	< 1.3	1.5 J	8.2	< 1.3	< 1.3	1.6 J	< 1.3	< 1.3	< 1.3	1.2 B
Cobalt, total	7440-48-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 0.59
Copper, total	7440-50-8	µg/L	6.8	2.3 J	8.9 B	< 1.4	< 1.4	< 1.4	< 1.4	1.8 J	1.4 J	< 1.3
Iron, total	7439-89-6	µg/L	282	334	550	60.4 J	74.8 J	19900	< 42.4	67.9 J	277	12100
Lead, total	7439-92-1	µg/L	4.5	0.4 J	0.7 J	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 1.7
Magnesium, total	7439-95-4	µg/L	656	16400	< 63.6	6640	11900	14400	291	288	22100	9440
Manganese, total	7439-96-5	µg/L	5.9 J	17.5	< 2.5	6.9 J	70	739	< 2.5	< 2.5	< 2.5	178
Mercury, total	7439-97-6	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.075
Nickel, total	7440-02-0	µg/L	65.3	< 1.4	4.5	7.1	< 1.4	< 1.4	2.6 J	6.7	< 1.4	2.6 J
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 0.73	< 0.73	8 J	< 0.73	< 0.73	< 0.73	0.77 J	4.1 J	< 0.73	< 2.4
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 0.85
Sodium, total	7440-23-5	µg/L	29900	15400	172000	4730	41000	206000	70700	112000	20000	48500
Thallium, total	7440-28-0	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 1.7
Vanadium, total	7440-62-2	µg/L	< 1.9	< 1.9	43.9	< 1.9	1.9 J	2.4 J	23.3	21.7	< 1.9	1.1 B
Zinc, total	7440-66-6	µg/L	30.3	< 7	< 7	7.5 J	< 7	< 7	< 7	< 7	< 7	639
Other												
Cyanide, total	57-12-5	µg/L	< 2	2.2 J	4.9 B	5.5 B	< 2	2.7 J	< 2	< 2	< 2	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	< 1.5	NA	< 1.5	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	RW-12 RW-12(96-116) 5/10/2012	RW-12 RW-12(125-148) 5/11/2012	RW-12 RW-12(130-140)(091914) 9/19/2014	RW-12 RW-12(55-65)(091914) 9/19/2014	RW-13 RW-13(71-91) (090914) & DUP 9/9/2014	RW-13 RW-13(100-120)(091614) 9/16/2014	RW-13 RW-13(150-170)(091614) 9/16/2014	OB-11R OB-11R(061110) 6/11/2010	OB-11R OB-11R(051811) 5/18/2011	OB-11R OB-11R (042612) 4/26/2012	OB-11R OB-11R (110813) 11/8/2013
Volatile Organic Compounds													
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.24	< 0.32	< 0.32	< 0.32 [< 0.32]	< 0.32	< 0.32	< 0.26	< 0.24	< 0.24	< 0.25
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.2	< 0.2	< 0.39	< 0.39	< 0.39 [< 0.39]	< 0.39	< 0.39	< 0.24	< 0.2	< 0.2	< 0.20
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23	< 0.28	< 0.28 J	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.23	< 0.23	< 0.23	< 0.21
1,1-Dichloroethane	75-34-3	µg/L	< 0.19	< 0.19	< 0.35	< 0.35	< 0.35 [< 0.35]	< 0.35	< 0.35	0.52 J	0.48 J	0.4 J	0.42 J
1,1-Dichloroethene	75-35-4	µg/L	< 0.28	< 0.28	< 0.5	< 0.5	< 0.5 [< 0.5]	< 0.5	< 0.5	< 0.4	< 0.28	< 0.28	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.15	< 0.15	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.56	< 0.15	< 0.15	< 0.22
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3	< 1.3	< 1.2	< 1.2	< 1.2 [< 1.2]	< 1.2	< 1.2	< 1.1	< 1.3	< 1.3*	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 0.21	< 0.21	< 0.23	< 0.23	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.39	< 0.21	< 0.21*	< 0.16
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.18	< 0.16	< 0.16	< 0.16 [< 0.16]	< 0.16	< 0.16	< 0.26	< 0.18	< 0.18	< 0.20
1,2-Dichloroethane	107-06-2	µg/L	< 0.18	< 0.18	< 0.3	< 0.3	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.33	< 0.18	< 0.18	< 0.22
1,2-Dichloropropane	78-87-5	µg/L	< 0.22	< 0.22	< 0.43	< 0.43	< 0.43 [< 0.43]	< 0.43	< 0.43	< 0.27	< 0.22	< 0.22	< 0.28
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.29	< 0.29	< 0.26	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.25	< 0.29	< 0.29	< 0.31
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.26	< 0.26	< 0.24	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.28	< 0.26	< 0.26	< 0.30
2-Butanone (MEK)	78-93-3	µg/L	< 2.9	< 2.9	< 2.5	< 2.5	< 2.5 [< 2.5]	< 2.5	< 2.5	< 1.6	< 2.9	< 2.9	< 3.2
2-Hexanone	591-78-6	µg/L	< 3	< 3	< 1.7	< 1.7 J	< 1.7 [< 1.7]	< 1.7	< 1.7	< 1.4	< 3	< 3	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1 [< 1.1]	< 1.1	< 1.1	< 0.86	< 1.2	< 1.2	< 1.5
Acetone	67-64-1	µg/L	< 5	< 5	6.1 J	7.9 J	4.9 J [< 2.6]	17.1	< 2.6	< 2.9	< 7.6	< 5	< 3.3
Benzene	71-43-2	µg/L	< 0.22	< 0.22	< 0.21	< 0.21	< 0.21 [< 0.21]	< 0.21	< 0.21	5.2	3.7	3.7	4.7
Bromodichloromethane	75-27-4	µg/L	< 0.23	< 0.23	< 0.28	< 0.28	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.22	< 0.23	< 0.23	< 0.21
Bromoform	75-25-2	µg/L	< 0.24	< 0.24	< 0.31	< 0.31	< 0.31 [< 0.31]	< 0.31	< 0.31	< 0.23	< 0.24	< 0.24	< 0.30
Bromomethane	74-83-9	µg/L	< 0.31	< 0.31	< 0.39	< 0.39	< 0.39 [< 0.39]	< 0.39	< 0.39	< 0.3	< 0.31	< 0.31	< 0.56
Carbon disulfide	75-15-0	µg/L	< 0.18	< 0.18	< 0.5	< 0.5	< 0.5 [< 0.5]	< 0.5	< 0.5	< 0.74	< 0.18	< 0.18	< 0.18
Carbon tetrachloride	56-23-5	µg/L	< 0.19	< 0.19	< 0.24	< 0.24	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.26	< 0.19	< 0.19	< 0.23
Chlorobenzene	108-90-7	µg/L	< 0.22	< 0.22	< 0.27	< 0.27	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.39	< 0.22	< 0.22	< 0.35
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.56	< 0.56	< 0.56 [< 0.56]	< 0.56	< 0.56	39.1	20.2	37.9 J	30.2
Chloroform	67-66-3	µg/L	< 0.21	< 0.21	0.21 J	0.59 J	< 1 B [< 0.2]	< 0.2	< 0.2	< 0.23	< 0.21	< 0.21	< 0.25
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22	< 0.33	< 0.33	< 0.33 [< 0.33]	< 0.33	< 0.33	< 0.29	< 0.22 J	< 0.22	< 0.36
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22	< 0.33	< 0.33	< 0.33 [< 0.33]	< 0.33	< 0.33	0.42 J	0.33 J	0.29 J	0.39 J
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.22	< 0.22	< 0.28	< 0.28	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.25	< 0.22	< 0.22	< 0.15
Cyclohexane	110-82-7	µg/L	< 0.29	< 0.29	0.42 J	< 0.37	< 0.37 [< 0.37]	< 0.37	0.57 J	2 J	1.1 J	1.1 J	2.2 J
Dibromochloromethane	124-48-1	µg/L	< 0.2	< 0.2	< 0.25	< 0.25	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.22	< 0.2	< 0.2	< 0.19
Dichlorodifluoromethane	75-71-8	µg/L	< 0.31	< 0.31	< 0.73	< 0.73	< 0.73 [< 0.73]	< 0.73	< 0.73	< 0.92	< 0.31 J	< 0.31	< 0.63
Ethylbenzene	100-41-4	µg/L	< 0.21	< 0.21	< 0.4	< 0.4	< 0.4 [< 0.4]	< 0.4	< 0.4	< 0.27	< 0.21	< 0.21	< 0.21
Freon 113	76-13-1	µg/L	< 0.49	< 0.49	< 0.45	< 0.45	< 0.45 [< 0.45]	< 0.45	< 0.45	< 0.38	< 0.49	< 0.49	< 0.77 J
Isopropylbenzene	98-82-8	µg/L	< 0.19	< 0.19	< 0.26	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.26	0.75 J	0.62 J	< 0.19	0.69 J
Methyl acetate	79-20-9	µg/L	< 2.9	< 2.9	< 3.1	< 3.1	< 3.1 [< 3.1]	< 3.1	< 3.1	< 1.5	< 2.9	< 2.9	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.18	< 0.18	< 0.26	< 0.26 J	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.23	< 0.18	< 0.18	< 0.29
Methylcyclohexane	108-87-2	µg/L	< 0.18	< 0.18	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	0.39 J	0.23 J	< 0.18	0.50 J
Methylene chloride	75-09-2	µg/L	< 0.2	< 0.2	< 0.81	< 0.81 J	< 0.81 [< 0.81]	< 0.81	< 0.81	< 0.3	< 0.2	< 0.2	< 0.86
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.30
Styrene	100-42-5	µg/L	< 0.23	< 0.23	< 0.26	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.58	< 0.23	< 0.23	NA
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25
Tetrachloroethene	127-18-4	µg/L	< 0.32	< 0.32	< 0.35	< 0.35	< 0.35 [< 0.35]	< 0.35	< 0.35	< 0.27	< 0.32	< 0.32	< 0.44
Toluene	108-88-3	µg/L	< 0.15	0.43 J	0.45 J	6.4	0.53 J [< 0.22]	1.7	0.73 J	< 0.3	< 0.15	< 0.15	< 0.38
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.31	< 0.31	< 0.51	< 0.51	< 0.51 [< 0.51]	< 0.51	< 0.51	< 0.25	< 0.31	< 0.31	< 0.21
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.32	< 0.32	< 0.32 [< 0.32]	< 0.32	< 0.32	< 0.21	< 0.19	< 0.19	< 0.50
Trichloroethene	79-01-6	µg/L	< 0.21	< 0.21	< 0.25	< 0.25	< 0.25 [< 0.25]	< 0.25	< 0.25	< 0.24	< 0.21	< 0.21	< 0.33
Trichlorofluoromethane	75-69-4	µg/L	< 0.35	< 0.35	< 0.28	< 0.28	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.54	< 0.35	< 0.35	< 0.41
Vinyl Chloride	75-01-4	µg/L	< 0.27	< 0.27	< 0.17	< 0.17	< 0.17 [< 0.17]	< 0.17	< 0.17	< 0.44	< 0.27	< 0.27	NA
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.17	< 0.17	< 0.2	< 0.2	< 0.2 [< 0.2]	< 0.2	< 0.2	< 0.25	< 0.17	< 0.17	< 0.19
Semi-Volatile Organic Compounds													
1,1'-Biphenyl	92-52-4	µg/L	< 0.34	< 0.34	< 0.29 J	< 0.3 J	< 0.29 [< 0.29 J]	< 0.3 J	< 0.3 J	< 0.46	< 0.42	< 0.32	< 0.34
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.8	< 1.8	< 1.8 J	< 1.9 J	< 1.8 [< 1.8 J]	< 1.9 J	< 1.9 J	< 1.4	< 1.3	< 1.6	< 1.7
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4	< 1.4	< 1.6 J	< 1.7 J	< 1.6 [< 1.7 J]	< 1.7 J	< 1.7 J	< 1.3	< 1.2	< 1.4	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 1.3	< 1.3	< 1.7 J	< 1.8 J	< 1.7 [< 1.7 J]	< 1.8 J	< 1.8 J	< 1.3	< 1.2	< 1.2	< 1.3
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7	< 1.7	< 1.9 J	< 2 J	< 1.9 [< 2 J]	< 2 J	< 2 J	< 1.8	< 1.7	< 1.6	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	< 19	< 19	< 6.8 J	< 7.2 J	< 6.8 [< 7 J]	< 7.1 J	< 7.1 J	< 0.8	< 0.74	< 17	< 18
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.48	< 0.48	< 0.33 J	< 0.36 J	< 0.33 [< 0.35 J]	< 0.35 J	< 0.35 J	< 0.24	< 0.22	< 0.45	< 0.47
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.52	< 0.52	< 0.27 J	< 0.28 J	< 0.27 [< 0.27 J]	< 0.28 J	< 0.28 J	< 0.35	< 0.33	< 0.48	< 0.51
2-Chloronaphthalene	91-58-7	µg/L	< 0.33	< 0.33	< 0.36 J	< 0.38 J	< 0.36 [< 0.37 J]	< 0.37 J	< 0.37 J	< 0.45	< 0.42	< 0.31	< 0.33
2-Chlorophenol	95-57-8	µg/L	< 1.1	< 1.1	< 1.3 J	< 1.4 J	< 1.3 [< 1.3 J]	< 1.4 J	< 1.4 J	< 1.2	< 1.1	< 1	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	< 0.43	< 0.43	< 0.3 J	< 0.32 J	< 0.3 [< 0.31 J]	< 0.32 J	< 0.32 J	< 0.72	< 0.66	< 0.4	< 0.43
2-Methylphenol	95-48-7	µg/L	< 1.2	< 1.2	< 1.3 J	< 1.4 J	< 1.3 [< 1.4 J]	< 1.4 J	< 1.4 J	< 1.2	< 1.1	< 1.1	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 1.2	< 1.2	< 0.33 J	< 0.35 J	< 0.33 [< 0.34 J]	< 0.34 J	< 0.34 J	< 0.26	< 0.24	< 1.2	< 1.2
2-Nitrophenol	88-75-5	µg/L	< 1.7	< 1.7	< 1.9 J	< 2.1 J	< 1.9 [< 2 J]	< 2 J	< 2 J	< 1.3	< 1.2	< 1.6	< 1.7
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	< 1.1	< 1	< 0.97	< 1.0
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.4	< 0.4	< 0.58 J	< 0.62 J	< 0.58 [< 0.6 J]	< 0.61 J	< 0.61 J	< 0.32	< 0.3	< 0.38	< 0.40
3-Nitroaniline	99-09-2	µg/L	< 1.4	< 1.4	< 0.27 J	< 0.29 J	< 0.27 [< 0.28 J]	< 0.28 J	< 0.28 J	< 0.31	< 0.29	< 1.3	< 1.4
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.1	< 1.1	< 1.4 J	< 1.5 J	< 1.4 [< 1.4 J]	< 1.4 J	< 1.4 J	< 0.56	< 0.51	< 1	< 1.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.4	< 0.4	< 0.26 J	< 0.28 J	< 0.26 [< 0.27 J]	< 0.27 J	< 0.27 J	< 0.38	< 0.35	< 0.37	< 0.40
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 2	< 2	< 1.4 J	< 1.4 J	< 1.4 [< 1.4 J]	< 1.4 J	< 1.4 J	< 1.1	< 1.1	< 1.9	< 2.0
Semi-Volatile Organic Compounds													

Location ID Sample ID Sample Date	CAS	Units	RW-12 RW-12(96-116) 5/10/2012	RW-12 RW-12(125-148) 5/11/2012	RW-12 RW-12(130-140)(091914) 9/19/2014	RW-12 RW-12(55-65)(091914) 9/19/2014	RW-13 RW-13(71-91) (090914) & DUP 9/9/2014	RW-13 RW-13(100-120)(091614) 9/16/2014	RW-13 RW-13(150-170)(091614) 9/16/2014	OB-11R OB-11R(061110) 6/11/2010	OB-11R OB-11R(051811) 5/18/2011	OB-11R OB-11R (042612) 4/26/2012	OB-11R OB-11R (110813) 11/8/2013
4-Chloroaniline	106-47-8	µg/L	< 0.59	< 0.59	< 0.31 J	< 0.33 J	< 0.31 J [< 0.32 J]	< 0.33 J	< 0.33 J	< 0.28	< 0.25	< 0.55	< 0.59
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.35	< 0.35	< 0.4 J	< 0.42 J	< 0.4 [< 0.41 J]	< 0.41 J	< 0.41 J	< 0.38	< 0.35	< 0.33	< 0.35
4-Nitroaniline	100-01-6	µg/L	< 1.9	< 1.9	< 0.31 J	< 0.33 J	< 0.31 [< 0.32 J]	< 0.33 J	< 0.33 J	< 0.19	< 0.18	< 1.7	< 1.8
4-Nitrophenol	100-02-7	µg/L	< 5.8	< 5.8	< 0.94 J	< 1 J	< 0.94 [< 0.98 J]	< 0.99 J	< 0.99 J	< 0.9	< 0.83	< 5.4	< 5.8
Acenaphthene	83-32-9	µg/L	< 0.015	< 0.015	< 0.31 J	< 0.33 J	< 0.021 [< 0.32 J]	< 0.022 J	< 0.022 J	< 0.032	< 0.014	< 0.014	< 0.023
Acenaphthylene	208-96-8	µg/L	< 0.018	< 0.018	< 0.21 J	< 0.22 J	< 0.025 [< 0.22 J]	< 0.026 J	< 0.026 J	< 0.043	< 0.016	< 0.017	< 0.026
Acetophenone	98-86-2	µg/L	< 0.32	< 0.32	< 0.38 J	0.98 J	< 0.38 [< 0.39 J]	0.96 J	< 0.4 J	< 0.43	< 0.4	< 0.3	< 0.32
Anthracene	120-12-7	µg/L	< 0.011	< 0.011	< 0.2 J	< 0.21 J	< 0.021 [< 0.022 J]	< 0.022 J	< 0.022 J	< 0.028	< 0.01	< 0.01	< 0.023
Atrazine	1912-24-9	µg/L	< 0.55	< 0.55	< 0.44 J	< 0.47 J	< 0.44 [< 0.45 J]	< 0.46 J	< 0.46 J	< 0.43	< 0.39	< 0.51	< 0.54
Benzaldehyde	100-52-7	µg/L	< 3.7	< 3.7	< 0.7 J	< 0.75 J	< 0.7 [< 0.72 J]	< 0.73 J	< 0.73 J	< 0.44	< 0.4	< 3.4	< 3.6
Benzo(a)anthracene	56-55-3	µg/L	< 0.017	< 0.017	< 0.23 J	< 0.24 J	< 0.012 [< 0.012 J]	< 0.013 J	< 0.013 J	< 0.026	< 0.015	< 0.016	< 0.013
Benzo(a)pyrene	50-32-8	µg/L	< 0.0055	< 0.0055	< 0.25 J	< 0.27 J	< 0.013 [< 0.26 J]	< 0.013 J	< 0.013 J	< 0.033	< 0.0049	< 0.0051	< 0.014
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.018	< 0.018	< 0.23 J	< 0.25 J	< 0.011 [< 0.011 J]	< 0.011 J	< 0.011 J	< 0.039	< 0.016	< 0.017	< 0.011
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.012	< 0.012	< 0.32 J	< 0.34 J	< 0.016 [< 0.33 J]	< 0.017 J	< 0.017 J	< 0.031	< 0.01	< 0.011	< 0.017
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.014	< 0.014	< 0.23 J	< 0.24 J	< 0.015 [< 0.24 J]	< 0.016 J	< 0.016 J	< 0.031	< 0.013	< 0.013	< 0.016
Benzyl butyl phthalate	85-68-7	µg/L	< 0.32	< 0.32	< 0.23 J	< 0.25 J	< 0.23 [< 0.24 J]	< 0.24 J	< 0.24 J	< 0.27	< 0.25	< 0.3	< 0.32
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.34	< 0.34	< 0.44 J	< 0.47 J	< 0.44 [< 0.45 J]	< 0.46 J	< 0.46 J	< 0.27	< 0.25	< 0.32	< 0.34
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.35	< 0.35	< 0.45 J	< 0.48 J	< 0.45 [< 0.47 J]	< 0.47 J	< 0.47 J	< 0.34	< 0.31	< 0.32	< 0.34
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	< 0.42	< 0.39	< 0.48	< 0.50
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.66	< 0.66	< 0.58 J	< 2.8 BJ	59.3 [< 6.7 BJ]	< 2.3 BJ	< 7.3 BJ	< 0.36	< 0.33	< 0.61	< 0.65
Caprolactam	105-60-2	µg/L	< 0.77	< 0.77	< 0.42 J	< 0.45 J	< 0.42 J [< 0.44 J]	< 0.44 J	< 0.44 J	< 0.21	< 0.2	< 0.72	< 0.77
Carbazole	86-74-8	µg/L	< 0.4	< 0.4	< 0.18 J	< 0.19 J	< 0.18 [< 0.18 J]	< 0.18 J	< 0.18 J	< 0.18	< 0.17	< 0.38	< 0.40
Chrysene	218-01-9	µg/L	< 0.026	< 0.026	< 0.17 J	< 0.18 J	< 0.012 [< 0.18 J]	< 0.013 J	< 0.013 J	< 0.024	< 0.023	< 0.024	< 0.013
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.025	< 0.025	< 0.29 J	< 0.31 J	< 0.017 [< 0.3 J]	< 0.018 J	< 0.018 J	< 0.024	< 0.023	< 0.024	< 0.018
Dibenzofuran	132-64-9	µg/L	< 0.3	< 0.3	< 0.24 J	< 0.25 J	< 0.24 [< 0.25 J]	< 0.25 J	< 0.25 J	< 0.33	< 0.3	< 0.28	< 0.29
Diethyl phthalate	84-66-2	µg/L	< 0.37	< 0.37	< 0.24 J	< 0.26 J	< 0.24 [< 0.25 J]	< 0.25 J	< 0.25 J	< 0.18	< 0.17	< 0.34	< 0.36
Dimethyl phthalate	131-11-3	µg/L	< 0.32	< 0.32	< 0.27 J	< 0.29 J	6.9 [< 0.28 J]	< 0.28 J	< 0.28 J	< 0.24	< 0.23	< 0.3	< 0.31
di-n-butyl phthalate	84-74-2	µg/L	< 0.62	< 0.62	< 0.61 J	< 0.65 JB	< 0.61 [< 4.4 BJ]	< 2.2 BJ	< 2.2 BJ	< 0.21	< 0.19	< 0.58	< 0.62
di-n-octylphthalate	117-84-0	µg/L	< 0.35	< 0.35	< 0.26 J	< 0.28 J	< 0.26 [0.98 J]	< 0.27 J	< 0.27 J	< 0.43	< 0.4	< 0.32	< 0.34
Fluoranthene	206-44-0	µg/L	< 0.011	< 0.011	< 0.17 J	< 0.18 J	< 0.014 [< 0.17 J]	< 0.014 J	< 0.014 J	< 0.026	< 0.0096	< 0.01	< 0.015
Fluorene	86-73-7	µg/L	< 0.017	< 0.017	< 0.28 J	< 0.3 J	< 0.018 [< 0.29 J]	< 0.018 J	< 0.018 J	< 0.029	< 0.015	< 0.016	< 0.019
Hexachlorobenzene	118-74-1	µg/L	< 0.009	< 0.009	< 0.48 J	< 0.51 J	< 0.017 [< 0.018 J]	< 0.018 J	< 0.018 J	< 0.011	< 0.008	< 0.0084	< 0.018
Hexachlorobutadiene	87-68-3	µg/L	< 0.58	< 0.58	< 0.4 J	< 0.43 J	< 0.4 [< 0.42 J]	< 0.42 J	< 0.42 J	< 0.14	< 0.13	< 0.54	< 0.57
Hexachlorocyclopentadiene	77-47-4	µg/L	< 8	< 8	< 0.5 J	< 0.54 J	< 0.5 [< 0.52 J]	< 0.52 J	< 0.52 J	< 0.27	< 0.24	< 7.4	< 7.9
Hexachloroethane	67-72-1	µg/L	< 0.62	< 0.62	< 0.3 J	< 0.32 J	< 0.3 [< 0.31 J]	< 0.31 J	< 0.31 J	< 0.23	< 0.21	< 0.58	< 0.61
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.012	< 0.012	< 0.42 J	< 0.45 J	< 0.015 [< 0.015 J]	< 0.016 J	< 0.016 J	< 0.032	< 0.011	< 0.011	< 0.016
Isophorone	78-59-1	µg/L	< 0.31	< 0.31	< 0.35 J	3.1 J	< 0.35 [< 0.36 J]	3.8 J	< 0.37 J	< 0.27	< 0.25	< 0.29	< 0.30
Naphthalene	91-20-3	µg/L	< 0.018	< 0.018	< 0.28 J	< 0.29 J	< 0.037 [< 0.28 J]	< 0.039	< 0.039 J	< 0.02	< 0.016	< 0.017	< 0.039
Nitrobenzene	98-95-3	µg/L	< 0.47	< 0.47	< 0.54 J	< 0.58 J	< 0.54 [< 0.56 J]	< 0.56 J	< 0.56 J	< 0.28	< 0.25	< 0.44	< 0.47
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.34	< 0.34	< 0.39 J	< 0.42 J	< 0.39 J [< 0.41 J]	< 0.41 J	< 0.41 J	< 0.48	< 0.44	< 0.32	< 0.34
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.34	< 0.34	< 0.21 J	< 0.23 J	< 0.21 [< 0.22 J]	< 0.22 J	< 0.22 J	< 0.23	< 0.22	< 0.32	< 0.34
Pentachlorophenol	87-86-5	µg/L	< 0.11	< 0.11	< 1.4 J	< 1.5 J	< 0.1 [< 1.5 J]	< 0.11 J	< 0.11 J	< 0.074	< 0.29	< 0.1 J	< 0.11
Phenanthrene	85-01-8	µg/L	< 0.018	< 0.018	< 0.19 J	< 0.21 J	< 0.022 [< 0.022 J]	< 0.023 J	< 0.023 J	< 0.039	< 0.016	< 0.016	< 0.023
Phenol	108-95-2	µg/L	< 1.4	< 1.4	< 0.57 J	3.1 J	< 0.57 [< 0.59 J]	5.7 J	< 0.59 J	< 0.63	< 0.58	< 1.3	< 1.4
Pyrene	129-00-0	µg/L	< 0.0091	< 0.0091	< 0.2 J	< 0.21 J	< 0.016 [< 0.016 J]	< 0.016 J	< 0.016 J	< 0.024	< 0.0081	< 0.0085	< 0.017
Metals - Total													
Aluminum, total	7429-90-5	µg/L	134 J	145 B	1200	691	360 [< 11]	114 B	46.2 B	637 J	4860 J	18.5 J	92.1 B
Antimony, total	7440-36-0	µg/L	< 1.4	< 1.4	< 2.6	< 2.6	3.1 B [< 2.6]	< 2.6	< 2.6	< 2.2	< 1.3	< 1.4	< 1.8
Arsenic, total	7440-38-2	µg/L	< 0.97	< 0.97	< 2.6	< 2.6	6.3 [< 2.6]	< 2.6	< 2.6	24.9	23.9	21	25.3
Barium, total	7440-39-3	µg/L	25 B	26.5 B	43 B	39.3 B	51 B [6.9 B]	99.7 B	37.5 B	77.6 B	117 B	71.3 B	89.0 B
Beryllium, total	7440-41-7	µg/L	< 0.44	< 0.44	< 0.4	< 0.4	< 0.4 [< 0.4]	< 0.4	< 0.4	< 0.21	< 0.24	< 0.44	< 0.17
Cadmium, total	7440-43-9	µg/L	< 0.24	< 0.24	< 0.7	< 0.7	< 0.7 [< 0.7]	< 0.7	< 0.7	< 0.35	< 0.17	0.5 J	< 0.24
Calcium, total	7440-70-2	µg/L	56300	54800	96600	86200	25400 [13800]	144000	29400	49700 J	64800	47300	56100
Chromium, total	7440-47-3	µg/L	1.7 B	1.8 B	1.1 B	32.4	41.1 [< 0.89]	191	< 0.89	< 0.56	5.9 J	< 0.91	6.5 B
Cobalt, total	7440-48-4	µg/L	< 0.59	< 0.59	< 0.83	< 0.83	< 0.83 [< 0.83]	< 0.83	< 0.83	2.7 B	4.5 B	< 0.59	1.8 B
Copper, total	7440-50-8	µg/L	< 1.3	1.6 B	30.5	3.7 B	2 B [< 1.2]	14.2 J	< 10 B	< 2.5	10.1	< 10	< 1.0
Iron, total	7439-89-6	µg/L	13500	11400	225	80.6 B	316 [58.3 J]	< 140 B	184 J	56700	66000	53800	67100 J
Lead, total	7439-92-1	µg/L	< 1.7	< 1.7	< 3 B	< 3 B	3.7 [< 1.3]	< 1.3	1.7 B	< 1.9	7.4	4.5	< 2.4
Magnesium, total	7439-95-4	µg/L	8860	8440	246 B	< 41	9420 [4030 B]	< 41	5660	6630	7800	6060	7340
Manganese, total	7439-96-5	µg/L	156	150	8.4 B	< 0.48	8.4 B [7.8 J]	< 0.48	75.7	9580	9790	10000	10300
Mercury, total	7439-97-6	µg/L	< 0.075	< 0.075	< 0.2 B	< 0.2 B	< 0.064 [< 0.2 B]	< 0.064	< 0.064	< 0.082	< 0.088	< 0.075	< 0.089
Nickel, total	7440-02-0	µg/L	2.7 J	< 10	14.2	< 0.75	1.6 B [1.3 B]	< 0.75	2.1 J	2.4 B	10	< 0.94	< 1.6
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	2840 B	3310 B	2660 B	2990 B
Selenium, total	7782-49-2	µg/L	< 2.4	< 2.4	7.5 B	14.1	9.4 B [< 3.6]	24	< 3.6	< 1.9	< 1.5	3 J	5.1 B
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	11300 J	NA
Silver, total	7440-22-4	µg/L	< 0.85	< 0.85	1.8 B	2.5 B	< 1.2 [< 1.2]	< 1.2	< 1.2	3.4 B	1.1 B	2.7 B	5.8 B
Sodium, total	7440-23-5	µg/L	51500	50600	139000	138000	32200 [3150 B]	222000	30300	3480 B	3430 B	3270 B	3500 B
Thallium, total	7440-28-0	µg/L	< 1.7	< 1.7	< 1.8	< 1.8	< 1.8 [< 1.8]	< 1.8	< 1.8	< 1.8	1.8 J	< 1.7	< 1.3
Vanadium, total	7440-62-2	µg/L	1.7 B	1.4 B	18.7 B	35.7 B	9 B [< 0.87]	3.6 B	< 0.87	< 0.56	1.2 B	< 0.77	< 0.72
Zinc, total	7440-66-6	µg/L	251	1380	8.3 B	< 7.6	< 7.6 [< 7.6]	< 7.6	< 20 B	15.4 B	27.5 J	< 30	< 4.4
Other													
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

**Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey**

Location ID Sample ID Sample Date	CAS	Units	OB-11R OB-11R (091114) & DUP 9/11/2014	OB-14A OB-14A(080430) 4/30/2008	OB-14A OB-14A(080911) 9/11/2008	OB-14A OB-14A(070609) 7/6/2009	OB-14A OB-14A(102309) 10/23/2009	OB-14A OB-14A(052810) 5/28/2010	OB-14A OB-14A(051911) 5/19/2011	OB-14A OB-14A(041812) 4/18/2012	OB-14A OB-14A (110613) 11/6/2013	OB-14A OB-14A(090314) 9/3/2014	OB-14A OB-14A(091114) 9/11/2014	OB-14B OB-14B(080430) 4/30/2008	OB-14B OB-14B(080911) 9/11/2008
Volatile Organic Compounds															
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.32	< 0.24	< 0.24
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39	< 0.39	< 0.13	< 0.13
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.28	< 0.17	< 0.17
1,1-Dichloroethane	75-34-3	µg/L	< 0.35	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29	< 0.16	< 0.19	< 0.26	< 0.35	< 0.35	< 0.16	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.50	< 0.29	< 0.29
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 0.22	< 1.3	< 1.3
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2	< 1.2	< 2.4	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23	< 0.23	< 0.17	< 0.18
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.16	< 0.18	< 0.18
1,2-Dichloroethane	107-06-2	µg/L	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.30	< 0.35	< 0.35
1,2-Dichloropropane	78-87-5	µg/L	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.43	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26	< 0.26
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.24	< 0.32	< 0.22
2-Butanone (MEK)	78-93-3	µg/L	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9 J	< 3.2	< 2.5	< 2.5	< 2.3	< 2.3
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9	< 3 J	< 1.7	< 1.7	< 1.7	< 1.7	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2 J	< 1.5	< 1.1	< 1.1	< 1.9	< 1.3
Acetone	67-64-1	µg/L	< 2.6	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4	< 7.6 J	< 3.3	< 2.6	< 2.6	< 2.1	< 2.1
Benzene	71-43-2	µg/L	3.5	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21	< 0.21	< 0.26	< 0.26
Bromodichloromethane	75-27-4	µg/L	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.28	< 0.14	< 0.14
Bromoform	75-25-2	µg/L	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.31	< 0.18	< 0.18
Bromomethane	74-83-9	µg/L	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39	< 0.39	< 0.32	< 0.32
Carbon disulfide	75-15-0	µg/L	< 0.50	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.50	< 0.15	< 0.16
Carbon tetrachloride	56-23-5	µg/L	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24	< 0.24	< 0.18	< 0.18
Chlorobenzene	108-90-7	µg/L	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27	< 0.27	< 0.14	< 0.19
Chloroethane	75-00-3	µg/L	21.2	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.25	< 0.37	< 0.39	< 0.56	< 0.56	< 0.22	< 0.22
Chloroform	67-66-3	µg/L	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	< 0.20	< 0.16	< 0.16
Chloromethane	74-87-3	µg/L	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.33	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.33	< 0.19	< 0.25
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.28	< 0.15	< 0.18
Cyclohexane	110-82-7	µg/L	1.9 J	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37	< 0.37	< 0.85	< 0.85
Dibromochloromethane	124-48-1	µg/L	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.25	< 0.12	< 0.16
Dichlorodifluoromethane	75-71-8	µg/L	< 0.73	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73	< 0.73	< 0.88	< 0.88
Ethylbenzene	100-41-4	µg/L	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.40	< 0.27	< 0.27
Freon 113	76-13-1	µg/L	< 0.45	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.66	< 0.49	< 0.77	< 0.45	< 0.45	< 0.8	< 0.8
Isopropylbenzene	98-82-8	µg/L	0.58 J	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26	< 0.26	< 0.15	< 0.19
Methyl acetate	79-20-9	µg/L	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9 J	< 1.5	< 3.1	< 3.1	< 2.5	< 1.7
Methyl tert butyl ether	1634-04-4	µg/L	< 0.26	0.41 J	< 0.16	< 0.23	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26	< 0.26	0.49 J	< 0.16
Methylcyclohexane	108-87-2	µg/L	0.44 J	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22	< 0.22	< 0.11	< 0.11
Methylene chloride	75-09-2	µg/L	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.81	< 0.16	< 0.16
o-Xylene	95-47-6	µg/L	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	< 0.30	NA	NA	< 0.45	< 0.45
Styrene	100-42-5	µg/L	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.26	< 0.11	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.35	< 0.29	< 0.29
Toluene	108-88-3	µg/L	< 0.22	< 0.15	< 1 J	< 0.3	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22	< 0.22	< 0.15	< 0.15
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.51	< 0.16	< 0.16
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.32	< 0.11	< 0.15
Trichloroethene	79-01-6	µg/L	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.25	< 0.18	< 0.18
Trichlorofluoromethane	75-69-4	µg/L	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.28	< 0.25	< 0.25
Vinyl Chloride	75-01-4	µg/L	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.17	< 0.21	< 0.21
Xylene, -m,p	179601-23-1	µg/L	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	< 0.39	< 0.39
Xylenes	1330-20-7	µg/L	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20	< 0.20	< 0.39	< 0.39
Semi-Volatile Organic Compounds															
1,1'-Biphenyl	92-52-4	µg/L	< 0.30	< 0.23	< 0.57	< 0.44	< 0.47	< 0.42	< 0.44	< 0.34	< 0.31	< 0.28	< 0.27 J	< 0.23	< 0.58
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.9	< 1.1	< 2.1	< 1.4	< 1.5	< 1.3	< 1.4	< 1.7	< 1.6	< 1.8	< 1.7 J	< 1.2	< 2.1
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.7	< 1	< 1.6	< 1.3	< 1.4	< 1.2	< 1.3	< 1.4	< 1.3	< 1.6	< 1.5 J	< 1.1	< 1.7
2,4-Dichlorophenol	120-83-2	µg/L	< 1.8	< 1.4	< 2	< 1.3	< 1.4	< 1.2	< 1.3	< 1.3	< 1.2	< 1.7	< 1.6 J	< 1.5	< 2
2,4-Dimethylphenol	105-67-9	µg/L	< 2.0	< 1.7	< 2.1	< 1.7	< 1.8	< 1.7	< 1.7	< 1.7	< 1.5	< 1.9	< 1.8 J	< 1.7	< 2.1
2,4-Dinitrophenol	51-28-5	µg/L	< 7.2	< 1.1	< 4.3	< 0.77	< 0.82 J	< 0.74	< 0.78	< 18	< 17	< 6.7	< 6.5 J	< 1.2	< 4.4
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.35	< 0.56	< 0.47	< 0.23	< 0.24	< 0.22	< 0.23	< 0.47	< 0.43	< 0.33	< 0.32 J	< 0.57	< 0.48
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.28	< 0.51	< 0.63	< 0.34	< 0.36	< 0.33	< 0.34	< 0.51	< 0.47	< 0.26	< 0.26 J	< 0.53	< 0.63
2-Chloronaphthalene	91-58-7	µg/L	< 0.38	< 0.2	< 0.5	< 0.43	< 0.46	< 0.42	< 0.44	< 0.33	< 0.30	< 0.35	< 0.34 J	< 0.21	< 0.51
2-Chlorophenol	95-57-8	µg/L	< 1.4	< 0.89	< 1.5	< 1.1	< 1.2	< 1.1	< 1.1	< 1.1	< 0.98	< 1.3	< 1.3 J	< 0.92	< 1.5
2-Methylnaphthalene	91-57-6	µg/L	< 0.32	< 0.78	< 0.45	< 0.69	< 0.73	< 0.66	< 0.69	< 0.43	< 0.39	< 0.30	< 0.29 J	< 0.8	< 0.46
2-Methylphenol	95-48-7	µg/L	< 1.4	< 1.1	< 1.4	< 1.2	< 1.2	< 1.1	< 1.2	< 1.2	< 1.1	< 1.3	< 1.3 J	< 1.1	< 1.4
2-Nitroaniline	88-74-4	µg/L	< 0.35	< 0.51	< 0.46	< 0.24	< 0.26	< 0.24	< 0.25	< 1.2	< 1.1	< 0.33	< 0.32 J	< 0.52	< 0.47
2-Nitrophenol	88-75-5	µg/L	< 2.0	< 1.5	< 2	< 1.3	< 1.4	< 1.2	< 1.3	< 1.7	< 1.5	< 1.9	< 1.9 J	< 1.6	< 2
3&4-Methylphenol	12-03-3	µg/L	< 1.2	< 1.1	< 1.5	< 1.1	< 1.2	< 1	< 1.1	< 1	< 0.93	< 1.1	< 1.1 J	< 1.2	< 1.5
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.62	< 0.99	< 4.7	< 0.31	< 0.33	< 0.3	< 0.31	< 0.4	< 0.36	< 0.58	< 0.56 J	< 1	< 4.8
3-Nitroaniline	99-09-2	µg/L	< 0.29	< 0.33	< 0.47	< 0.3	< 0.32	< 0.29	< 0.3	< 1.4	< 1.3	< 0.27	< 0.26 J	< 0.34	< 0.47
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.5	< 2.3	< 1.2	< 0.53	< 0.57	< 0.51	< 0.54	< 1.1	< 1.0	< 1.4	< 1.3 J	< 2.3	< 1.2
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.27	< 0.38	< 0.43	< 0.36	< 0.39	< 0.35	< 0.37	< 0.4	< 0.36	< 0.26	< 0.25 J	< 0.39	< 0.43
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.4	< 1.2	< 2.4	< 1.1	< 1.2	< 1.1	< 1.1	< 2	< 1.8	< 1.3	< 1.3 J	< 1.3	< 2.4
Semi-Volatile Organic Compounds															

Location ID Sample ID Sample Date	CAS	Units	OB-11R OB-11R (091114) & DUP 9/11/2014	OB-14A OB-14A(080430) 4/30/2008	OB-14A OB-14A(080911) 9/11/2008	OB-14A OB-14A(070609) 7/6/2009	OB-14A OB-14A(102309) 10/23/2009	OB-14A OB-14A(052810) 5/28/2010	OB-14A OB-14A(051911) 5/19/2011	OB-14A OB-14A(041812) 4/18/2012	OB-14A OB-14A (110613) 11/6/2013	OB-14A OB-14A(090314) 9/3/2014	OB-14A OB-14A(091114) 9/11/2014	OB-14B OB-14B(080430) 4/30/2008	OB-14B OB-14B(080911) 9/11/2008
4-Chloroaniline	106-47-8	µg/L	< 0.33	< 0.36	< 0.35	< 0.26	< 0.28	< 0.25	< 0.27	< 0.59	< 0.53 J	< 0.31	< 0.30 J	< 0.37	< 0.35
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.42	< 0.3	< 0.47	< 0.37	< 0.39	< 0.35	< 0.37	< 0.35	< 0.32	< 0.39	< 0.38 J	< 0.31	< 0.48
4-Nitroaniline	100-01-6	µg/L	< 0.33	< 0.6	< 0.47	< 0.19	< 0.2	< 0.18	< 0.19	< 1.8	< 1.7	< 0.31	< 0.30 J	< 0.62	< 0.48
4-Nitrophenol	100-02-7	µg/L	< 1.0	< 1.6	< 2.3	< 0.86	< 0.92	< 0.83	< 0.87	< 5.8	< 5.3	< 0.94	< 0.91 J	< 1.7	< 2.4
Acenaphthene	83-32-9	µg/L	0.203	< 0.016	< 0.017	< 0.017	< 0.032	< 0.029	< 0.014	< 0.015	< 0.021	0.145	0.170 J	< 0.017	< 0.017
Acenaphthylene	208-96-8	µg/L	< 0.026	< 0.0071	< 0.0073	< 0.0073	< 0.044	< 0.039	< 0.017	< 0.018	< 0.024	< 0.024	< 0.024 J	< 0.0074	< 0.0074
Acetophenone	98-86-2	µg/L	< 0.40	< 0.37	< 0.49	< 0.42	< 0.44	< 0.4	< 0.42	< 0.32	< 0.29	< 0.38	< 0.36 J	< 0.38	< 0.49
Anthracene	120-12-7	µg/L	< 0.022	< 0.021	< 0.022	< 0.022	< 0.028	< 0.026	< 0.011	< 0.011	< 0.021	< 0.021	< 0.020 J	< 0.022	< 0.022
Atrazine	1912-24-9	µg/L	< 0.46	< 0.29	< 0.64	< 0.41	< 0.43	< 0.39	< 0.41	< 0.54	< 0.49	< 0.44	< 0.42 J	< 0.3	< 0.65
Benzaldehyde	100-52-7	µg/L	< 0.74	< 0.78	< 1.7	< 0.42	< 0.45	< 0.4	< 0.43	< 3.6	< 3.3	< 0.69	< 0.67 J	< 0.8	< 1.7
Benzo(a)anthracene	56-55-3	µg/L	< 0.013	< 0.034	< 0.035	< 0.035	< 0.026	< 0.024	< 0.016	< 0.017	< 0.012	< 0.012	< 0.012 J	< 0.035	< 0.035
Benzo(a)pyrene	50-32-8	µg/L	< 0.014	< 0.036	< 0.037	< 0.037	< 0.034	< 0.031	< 0.0052	< 0.0054	< 0.012	< 0.013	< 0.012 J	< 0.037	< 0.037
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.011	< 0.017	< 0.018	< 0.018	< 0.04	< 0.036	< 0.017	< 0.018	< 0.010	< 0.010	< 0.010 J	< 0.018	< 0.018
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.017 J	< 0.012	< 0.012	< 0.012	< 0.032	< 0.029	< 0.011	< 0.011	< 0.016	< 0.016	< 0.016 J	< 0.012	< 0.012
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.016	< 0.019	< 0.02	< 0.02	< 0.031	< 0.028	< 0.013	< 0.014	< 0.015	< 0.015	< 0.015 J	< 0.02	< 0.02
Benzyl butyl phthalate	85-68-7	µg/L	< 0.24	< 0.65	< 0.44	< 0.26	< 0.28	< 0.25	< 0.26	< 0.32	< 0.29	< 0.23	< 0.22 J	< 0.67	< 0.44
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.46	< 0.32	< 0.54	< 0.26	< 0.28	< 0.25	< 0.26	< 0.34	< 0.31	< 0.43	< 0.42 J	< 0.33	< 0.54
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.48	< 0.69	< 0.51	< 0.32	< 0.34	< 0.31	< 0.33	< 0.34	< 0.31	< 0.45	< 0.43 J	< 0.71	< 0.52
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.45	< 0.59	< 0.57	< 0.41	< 0.43	< 0.39	< 0.41	< 0.5	< 0.46	< 0.42	< 0.41 J	< 0.61	< 0.57
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 4.0 B	< 0.9	< 0.78	< 0.34	< 0.36	< 0.33	< 0.34	< 0.65	< 0.59	< 0.57	< 0.55 J	< 0.92	< 0.79
Caprolactam	105-60-2	µg/L	< 0.45	< 0.5	< 0.65	< 0.2	< 0.22	< 0.2	< 0.21	< 0.77	< 0.70	< 0.42	< 0.41 J	< 0.52	< 0.66
Carbazole	86-74-8	µg/L	< 0.18	0.54 J	< 0.47	< 0.17	< 0.18	< 0.17	< 0.17	< 0.4	0.47 J	< 0.17	< 0.17 J	< 0.42	< 0.47
Chrysene	218-01-9	µg/L	< 0.013	< 0.018	< 0.018	< 0.018	< 0.024	< 0.022	< 0.024	< 0.026	< 0.012	< 0.012	< 0.012 J	< 0.019	< 0.019
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.018 J	< 0.021	< 0.021	< 0.021	< 0.025	< 0.023	< 0.024	< 0.025	< 0.017	< 0.017	< 0.017 J	< 0.021	< 0.021
Dibenzofuran	132-64-9	µg/L	< 0.25	< 0.23	< 0.51	< 0.32	< 0.34	< 0.3	< 0.32	< 0.29	< 0.27	< 0.24	< 0.23 J	< 0.24	< 0.51
Diethyl phthalate	84-66-2	µg/L	< 0.26	< 0.35	< 0.38	< 0.17	< 0.18	< 0.17	< 0.17	< 0.36	< 0.33	< 0.24	< 0.23 J	< 0.36	< 0.38
Dimethyl phthalate	131-11-3	µg/L	< 0.29	< 0.34	< 0.38	< 0.23	< 0.25	< 0.23	< 0.24	< 0.31	< 0.29	< 0.27	< 0.26 J	< 0.35	< 0.38
di-n-butyl phthalate	84-74-2	µg/L	< 5.0 B	< 0.41	< 0.52	< 0.2	< 0.21	< 0.19	< 0.2	< 0.62	< 0.56	3.5	1.0 J	< 0.42	< 0.53
di-n-octylphthalate	117-84-0	µg/L	< 0.28	< 0.49	< 0.52	< 0.41	< 0.44	< 0.4	< 0.42	< 0.34	< 0.31	< 0.26	< 0.25 J	< 0.5	< 0.52
Fluoranthene	206-44-0	µg/L	< 0.015	< 0.0098	< 0.01	< 0.01	< 0.027	< 0.024	< 0.01	< 0.011	< 0.013	< 0.014	< 0.013 J	< 0.01	< 0.01
Fluorene	86-73-7	µg/L	0.146	< 0.02	< 0.02	< 0.02	< 0.03	< 0.027	< 0.016	< 0.017	< 0.017	< 0.018	0.129 J	< 0.021	< 0.021
Hexachlorobenzene	118-74-1	µg/L	< 0.018	< 0.01 J	< 0.01	< 0.01	< 0.011	< 0.0099	< 0.0084	< 0.0089	< 0.017	< 0.017	< 0.017 J	< 0.01 J	< 0.01
Hexachlorobutadiene	87-68-3	µg/L	< 0.43	< 0.13	< 0.39	< 0.39	< 0.41	< 0.13	< 0.13	< 0.57	< 0.52	R	< 0.39 J	< 0.13	< 0.39
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.53	< 0.11	< 4.7	< 0.7	< 0.75	< 0.24	< 0.26	< 7.9	< 7.2	< 0.50	< 0.48 J	< 0.11	< 4.8
Hexachloroethane	67-72-1	µg/L	< 0.32	< 0.16	< 0.31	< 0.27	< 0.29	< 0.21	< 0.22	< 0.61	< 0.56	R	< 0.29 J	< 0.17	< 0.32
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.016 J	< 0.015	< 0.015	< 0.015	< 0.032	< 0.029	< 0.011	< 0.012	< 0.015	< 0.015	< 0.014 J	< 0.015	< 0.015
Isophorone	78-59-1	µg/L	< 0.37	< 0.5	< 0.72	< 0.26	< 0.28	< 0.25	< 0.26	< 0.3	< 0.28	< 0.35	< 0.34 J	< 0.51	< 0.73
Naphthalene	91-20-3	µg/L	0.488	< 0.014	< 0.014	< 0.014	< 0.021	< 0.019	< 0.017	< 0.018	< 0.036	< 0.037	< 0.036 J	< 0.015	< 0.015
Nitrobenzene	98-95-3	µg/L	< 0.57	< 0.72	< 0.69	< 0.26	< 0.28	< 0.25	< 0.27	< 0.47	< 0.42	< 0.54	< 0.52 J	< 0.74	< 0.69
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.41	< 0.39	< 0.41	< 0.46	< 0.49	< 0.44	< 0.46	< 0.34	< 0.31	< 0.39	< 0.38 J	< 0.4	< 0.41
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.23	0.42 J	< 0.63	< 0.22	< 0.24	< 0.22	< 0.23	< 0.34	0.73 J	0.51 J	< 0.21 J	< 0.44	< 0.64
Pentachlorophenol	87-86-5	µg/L	< 0.11	< 0.23 J	< 0.23	< 0.23	< 0.25	< 0.068	< 0.3	< 0.11 J	< 0.10	< 0.10	< 0.10 J	< 0.23 J	< 0.23
Phenanthrene	85-01-8	µg/L	0.191	< 0.017	< 0.018	< 0.018	< 0.04	< 0.036	< 0.017	< 0.017	< 0.021	< 0.022	< 0.021 J	< 0.018	< 0.018
Phenol	108-95-2	µg/L	< 0.60	< 0.7	< 1.4	< 0.6	< 0.66 J	< 0.58	< 0.61	< 1.4	< 1.3	< 0.56	< 0.55 J	< 0.72	< 1.4
Pyrene	129-00-0	µg/L	< 0.016	< 0.012	< 0.013	< 0.013	< 0.025	< 0.022	< 0.0085	< 0.009	< 0.015	< 0.015	< 0.015 J	< 0.013	< 0.013
Metals - Total															
Aluminum, total	7429-90-5	µg/L	< 200 B	< 24	< 24	< 26	< 26	< 7.8	69.1 J	67.7 B	96.3 J	136 J	94.4	80.9 B	< 24
Antimony, total	7440-36-0	µg/L	< 2.6	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3	< 1.4	2.1 B	< 2.6	< 2.6	< 1.8	< 2
Arsenic, total	7440-38-2	µg/L	26.6	14.4	2.3 BJ	< 3	< 2.4	1.8 B	< 0.92	< 0.97	2.8 B	< 2.6	4.8	2.1 B	2 BJ
Barium, total	7440-39-3	µg/L	96.9 B	488	513 J	439	537	463	435	445	436	428	482	46.3 B	40.2 BJ
Beryllium, total	7440-41-7	µg/L	< 0.40	< 0.15	< 0.15	< 1	< 0.4	< 1	< 0.24	< 0.44	< 0.17	< 0.40	< 0.40	< 0.15	2.6
Cadmium, total	7440-43-9	µg/L	< 0.70	< 0.28	< 0.28	< 0.4	< 0.4	0.4 B	< 0.17	< 0.24	0.30 B	< 0.70	< 0.70	< 0.28	< 0.28
Calcium, total	7440-70-2	µg/L	56600	134000 J	121000 J	112000	132000	112000	119000	122000	118000	115000	120000	101000 J	91200 J
Chromium, total	7440-47-3	µg/L	< 0.89	1.1 B	< 1.7	< 10	1.5 B	1.8 B	< 10	< 0.91	1.0 B	< 0.89	2.0 B	1.2 B	< 1
Cobalt, total	7440-48-4	µg/L	< 0.83	1.7 B	0.7 BJ	1.4 BJ	< 1.6	< 0.65	< 50	< 0.59	< 0.48	< 0.83	< 0.83	< 0.51	< 0.51
Copper, total	7440-50-8	µg/L	< 10 B	< 2.5	< 2.5	< 10	< 1.6	< 2.5	< 0.85	< 1.3	< 1.0	< 10 B	< 10 B	< 2.5	< 0.7
Iron, total	7439-89-6	µg/L	66100	52500	34700 J	50500	38600	51300	50900	46600	41500	44400	48800	890	516 J
Lead, total	7439-92-1	µg/L	< 1.3	4	< 1.4	< 1.7	< 1.7	< 1.9	3.8 J	< 1.7	< 3.6 B	< 1.3	< 1.3	3.2	< 1.4
Magnesium, total	7439-95-4	µg/L	6970	14000 J	11800	10800	11600	10500	11600	10600	10600	9740	10700	28500 J	27500
Manganese, total	7439-96-5	µg/L	11200	1870 J	773	1360	969	1320	1480	1120	1000	931	1190	1740 J	1560
Mercury, total	7439-97-6	µg/L	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064	< 0.064	< 0.15	< 0.049
Nickel, total	7440-02-0	µg/L	< 0.75	< 1.2	< 1.2	3 BJ	< 10	3 B	3.1 J	< 0.94	1.6 B	1.7 B	1.0 B	< 1.2	< 1.2
Potassium, total	7440-09-7	µg/L	2980 B	8020 B	6670 B	5810 BJ	6820 B	5860 J	6200 B	5570 B	5520 B	4940 B	5670 B	3250 B	2840 B
Selenium, total	7782-49-2	µg/L	5.1 B	< 1.6	< 1.6	< 3.7	< 3.7	3 B	< 1.5	< 10	< 2.4	< 3.6	< 3.6	1.6 B	< 1.6
Silicon, total	7440-21-3	µg/L	3550 B	NA	NA	NA	NA	NA	NA	NA	NA	16900	20300	NA	NA
Silver, total	7440-22-4	µg/L	10.2	< 1	< 1	1.5 BJ	< 1	2.1 B	1.2 B	2.1 B	2.5 B	1.7 B	6.2	< 1	< 1
Sodium, total	7440-23-5	µg/L	3680 B	21500	15000	15500	18800	20000	19400	21900	18400	17500	19400	22400	19800
Thallium, total	7440-28-0	µg/L	< 3.7	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8	< 1.8	< 1.3	1.3 BJ
Vanadium, total	7440-62-2	µg/L	< 50 B	2.5 B	< 1.8	3.4 BJ	1.5 B	< 0.56	< 50	2.5 J	2.7 B	3.4 J	1.6 B	0.8 B	< 0.43
Zinc, total	7440-66-6	µg/L	< 7.6	< 4	< 5	5.8 BJ	< 2.9	< 1.4	5.8 J	< 20	16.7 J	< 7.6	8.7 J	< 4	< 6.5
Other															
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-14B OB-14B(070609) 7/6/2009	OB-14B OB-14B(102309) 10/23/2009	OB-14B OB-14B(052810) 5/28/2010	OB-14B OB-14B(051911) 5/19/2011	OB-14B OB-14B(041812) 4/18/2012	OB-14B OB-14B (110613) 11/6/2013	OB-14B OB-14B(091114) 9/11/2014	OB-15B OB-15B(080502) 5/2/2008	OB-15B OB-15B(080916) 9/16/2008	OB-15B OB-15B(070609) 7/6/2009	OB-15B OB-15B(102609) 10/26/2009	OB-15B OB-15B(061110) 6/11/2010	OB-15B OB-15B(052311) 5/23/2011	OB-15B OB-15B(042412) 4/24/2012
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.24	< 0.24
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.2	< 0.2
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.16	< 0.19	< 0.26	< 0.35	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29	< 0.19	< 0.19
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.28	< 0.28
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.15	< 0.15
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.3	< 1.3*
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.21	< 0.21*
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.18	< 0.18
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.18	< 0.18
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.22	< 0.22
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.29	< 0.29
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.26	< 0.26
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 2.9	< 2.9
2-Hexanone	591-78-6	µg/L	< 1.4	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 3	< 3
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 1.2	< 1.2
Acetone	67-64-1	µg/L	< 2.9	< 2.9	< 2.9	< 4.4	< 7.6	< 3.3	< 2.6	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 7.6	< 5
Benzene	71-43-2	µg/L	< 0.23	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.22	< 0.22
Bromodichloromethane	75-27-4	µg/L	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.23	< 0.23
Bromoform	75-25-2	µg/L	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.24	< 0.24
Bromomethane	74-83-9	µg/L	< 0.3	< 0.3	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.31	< 0.31
Carbon disulfide	75-15-0	µg/L	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.18	< 0.18
Carbon tetrachloride	56-23-5	µg/L	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.19	< 0.19
Chlorobenzene	108-90-7	µg/L	< 0.39	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.22	< 0.22
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.25	< 0.37	< 0.39	< 0.56	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.23	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.22	< 0.22
Cyclohexane	110-82-7	µg/L	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.29	< 0.29
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.2	< 0.2
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.31	< 0.31
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.21	< 0.21
Freon 113	76-13-1	µg/L	< 0.38	< 0.38	< 0.38	< 0.66	< 0.49	< 0.77	< 0.45	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.49	< 0.49
Isopropylbenzene	98-82-8	µg/L	< 0.57	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.19	< 0.19
Methyl acetate	79-20-9	µg/L	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 2.9	< 2.9
Methyl tert butyl ether	1634-04-4	µg/L	0.42 J	0.38 J	0.38 J	0.41 J	0.24 J	< 0.29	< 0.26	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.18	< 0.18
Methylcyclohexane	108-87-2	µg/L	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.18	< 0.18
Methylene chloride	75-09-2	µg/L	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2
o-Xylene	95-47-6	µg/L	< 0.25	< 0.25	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.23	< 0.23
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.32	< 0.32
Toluene	108-88-3	µg/L	< 0.3	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.15	< 0.15
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.31	< 0.31
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.21	< 0.21
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.35	< 0.35
Vinyl Chloride	75-01-4	µg/L	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.27	< 0.27
Xylene, -m,p	179601-23-1	µg/L	< 0.25	< 0.25	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.25	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.17	< 0.17
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.42	< 0.42	< 0.48	< 0.42	< 0.33	< 0.33	< 0.29 J	< 0.25 J	< 0.55	< 0.47	< 0.42	< 0.53	< 0.47	< 0.37
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.3	< 1.3	< 1.5	< 1.3	< 1.7	< 1.7	< 1.8 J	< 1.2 J	< 2	< 1.5	< 1.3	< 1.7	< 1.5	< 1.9
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.2	< 1.2	< 1.4	< 1.2	< 1.4	< 1.4	< 1.6 J	< 1.1 J	< 1.6	< 1.4	< 1.2	< 1.5	< 1.4	< 1.6
2,4-Dichlorophenol	120-83-2	µg/L	< 1.2	< 1.2	< 1.4	< 1.2	< 1.2	< 1.2	< 1.7 J	< 1.6 J	< 1.9	< 1.4	< 1.2	< 1.5	< 1.4	< 1.4
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7	< 1.7	< 1.9	< 1.7	< 1.6	< 1.6	< 1.9 J	< 1.8 J	< 2	< 1.8	< 1.7	< 2.1	< 1.8	< 1.9
2,4-Dinitrophenol	51-28-5	µg/L	< 0.74	< 0.74 J	< 0.84	< 0.74	< 18	< 18	< 6.9 J	< 1.2 J	< 4.2	< 0.82	< 0.74	< 0.93	< 0.82	< 20
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.22	< 0.22	< 0.25	< 0.22	< 0.46	< 0.46	< 0.34 J	< 0.6 J	< 0.45	< 0.24	< 0.22	< 0.28	< 0.24	< 0.52
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.33	< 0.33	< 0.37	< 0.33	< 0.5	< 0.50	< 0.27 J	< 0.56 J	< 0.6	< 0.36	< 0.33	< 0.41	< 0.36	< 0.56
2-Chloronaphthalene	91-58-7	µg/L	< 0.42	< 0.42	< 0.47	< 0.42	< 0.32	< 0.32	< 0.36 J	< 0.22 J	< 0.48	< 0.46	< 0.42	< 0.53	< 0.46	< 0.36
2-Chlorophenol	95-57-8	µg/L	< 1.1	< 1.1	< 1.2	< 1.1	< 1	< 1.0	< 1.3 J	< 0.97 J	< 1.5	< 1.2	< 1.1	< 1.4	< 1.2	< 1.2
2-Methylnaphthalene	91-57-6	µg/L	< 0.66	< 0.66	< 0.75	< 0.66	< 0.41	< 0.41	< 0.31 J	< 0.85 J	< 0.43	< 0.73	< 0.66	< 0.83	< 0.73	< 0.47
2-Methylphenol	95-48-7	µg/L	< 1.1	< 1.1	< 1.3	< 1.1	< 1.1	< 1.1	< 1.3 J	< 1.2 J	< 1.4	< 1.2	< 1.1	< 1.4	< 1.2	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 0.24	< 0.24	< 0.27	< 0.24	< 1.2	< 1.2	< 0.33 J	< 0.55 J	< 0.45	< 0.26	< 0.24	< 0.3	< 0.26	< 1.4
2-Nitrophenol	88-75-5	µg/L	< 1.2	< 1.2	< 1.4	< 1.2	< 1.6	< 1.6	< 1.9 J	< 1.7 J	< 1.9	< 1.4	< 1.2	< 1.6	< 1.4	< 1.8
3&4-Methylphenol	12-03-3	µg/L	< 1	< 1	< 1.2	< 1	< 0.99	< 0.99	< 1.1 J	< 1.2 J	< 1.5	< 1.2	< 1	< 1.3	< 1.2	< 1.1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.3	< 0.3	< 0.34	< 0.3	< 0.39	< 0.39	< 0.59 J	< 1.1 J	< 4.6	< 0.33	< 0.3	< 0.37	< 0.33	< 0.44
3-Nitroaniline	99-09-2	µg/L	< 0.29	< 0.29	< 0.33	< 0.29	< 1.4	< 1.4	< 0.28 J	< 0.36 J	< 0.45	< 0.32	< 0.29	< 0.36	< 0.32	< 1.5
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.51	< 0.51	< 0.58	< 0.51	< 1.1	< 1.1	< 1.4 J	< 2.5 J	< 1.2	< 0.57	< 0.51	< 0.65	< 0.57	< 1.2
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.35	< 0.35	< 0.4	< 0.35	< 0.38	< 0.38	< 0.26 J	< 0.41 J	< 0.41	< 0.39	< 0.35	< 0.44	< 0.39	< 0.44
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.1	< 1.1	< 1.2	< 1.1	< 2	< 2.0	< 1.4 J	< 1.3 J	< 2.3	< 1.2	< 1.1	< 1.3	< 1.2	< 2.2
Semi-Volatile Organic Compounds																

Location ID Sample ID Sample Date	CAS	Units	OB-14B OB-14B(070609) 7/6/2009	OB-14B OB-14B(102309) 10/23/2009	OB-14B OB-14B(052810) 5/28/2010	OB-14B OB-14B(051911) 5/19/2011	OB-14B OB-14B(041812) 4/18/2012	OB-14B OB-14B (110613) 11/6/2013	OB-14B OB-14B(091114) 9/11/2014	OB-15B OB-15B(080502) 5/2/2008	OB-15B OB-15B(080916) 9/16/2008	OB-15B OB-15B(070609) 7/6/2009	OB-15B OB-15B(102609) 10/26/2009	OB-15B OB-15B(061110) 6/11/2010	OB-15B OB-15B(052311) 5/23/2011	OB-15B OB-15B(042412) 4/24/2012
4-Chloroaniline	106-47-8	µg/L	< 0.25	< 0.25	< 0.29	< 0.25	< 0.57	< 0.57 J	< 0.32 J	< 0.39 J	< 0.33	< 0.28	< 0.25	< 0.32	< 0.28	< 0.64
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.35	< 0.35	< 0.4	< 0.35	< 0.34	< 0.34	< 0.40 J	< 0.32 J	< 0.45	< 0.39	< 0.35	< 0.45	< 0.39	< 0.38
4-Nitroaniline	100-01-6	µg/L	< 0.18	< 0.18	< 0.2	< 0.18	< 1.8	< 1.8	< 0.32 J	< 0.66 J	< 0.45	< 0.2	< 0.18	< 0.23	< 0.2	< 2
4-Nitrophenol	100-02-7	µg/L	< 0.83	< 0.83	< 0.94	< 0.83	< 5.6	< 5.6	< 0.95 J	< 1.8 J	< 2.3	< 0.92	< 0.83	< 1	< 0.92 J	< 6.3
Acenaphthene	83-32-9	µg/L	< 0.016	< 0.029	< 0.033	< 0.014	< 0.015	< 0.022	< 0.021 J	< 0.018	< 0.016	< 0.018	< 0.029	< 0.037	< 0.015	< 0.017
Acenaphthylene	208-96-8	µg/L	< 0.007	< 0.039	< 0.045	< 0.016	< 0.017	< 0.025	< 0.025 J	< 0.0078	< 0.007	< 0.0078	< 0.039	< 0.05	< 0.018	< 0.02
Acetophenone	98-86-2	µg/L	< 0.4	< 0.4	< 0.45	< 0.4	< 0.31	< 0.31	< 0.38 J	< 0.4 J	< 0.47	< 0.44	< 0.4	< 0.51	< 0.44	< 0.35
Anthracene	120-12-7	µg/L	< 0.021	< 0.026	< 0.029	< 0.01	< 0.011	< 0.022	< 0.021 J	< 0.023	< 0.021	< 0.023	< 0.026	< 0.032	< 0.011	< 0.012
Atrazine	1912-24-9	µg/L	< 0.39	< 0.39	< 0.44	< 0.39	< 0.52	< 0.52	< 0.45 J	< 0.31 J	< 0.62	< 0.43	< 0.39	< 0.49	< 0.43	< 0.6
Benzaldehyde	100-52-7	µg/L	< 0.4	< 0.4	< 0.46	< 0.4	< 3.5	< 3.5	< 0.71 J	< 0.85 J	< 1.6	< 0.45	< 0.4	< 0.51	< 0.45	< 4
Benzo(a)anthracene	56-55-3	µg/L	< 0.034	< 0.024	< 0.027	< 0.015	< 0.016	< 0.012	< 0.012 J	< 0.037	< 0.034	< 0.037	< 0.024	< 0.03	< 0.017	< 0.018
Benzo(a)pyrene	50-32-8	µg/L	< 0.036	< 0.031	< 0.035	< 0.0049	< 0.0053	< 0.013	< 0.013 J	< 0.039	< 0.036	< 0.039	< 0.031	< 0.039	< 0.0054	< 0.006
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.017	< 0.036	< 0.041	< 0.016	< 0.018	< 0.011	< 0.011 J	< 0.019	< 0.017	< 0.019	< 0.036	< 0.045	< 0.018	< 0.02
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.012	< 0.029	< 0.033	< 0.01	< 0.011	< 0.017	< 0.016 J	< 0.013	< 0.012	< 0.013	< 0.029	< 0.036	< 0.011	< 0.013
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.019	< 0.028	< 0.032	< 0.013	< 0.013	< 0.016	< 0.016 J	< 0.021	< 0.019	< 0.021	< 0.028	< 0.036	< 0.014	< 0.015
Benzyl butyl phthalate	85-68-7	µg/L	< 0.25	< 0.25	< 0.29	< 0.25	< 0.31	< 0.31	< 0.23 J	< 0.71 J	< 0.42	< 0.28	< 0.25	< 0.32	< 0.28	< 0.35
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.25	< 0.25	< 0.28	< 0.25	< 0.33	< 0.33	< 0.44 J	< 0.35 J	< 0.52	< 0.28	< 0.25	< 0.31	< 0.28	< 0.37
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.31	< 0.31	< 0.35	< 0.31	< 0.33	< 0.33	< 0.46 J	< 0.75 J	< 0.49	< 0.34	< 0.31	< 0.39	< 0.34	< 0.38
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.39	< 0.39	< 0.44	< 0.39	< 0.49	< 0.49	< 0.43 J	< 0.64 J	< 0.54	< 0.43	< 0.39	< 0.49	< 0.43	< 0.55
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.33	< 0.33	< 0.37	< 0.33	< 0.63	< 0.63	< 0.58 J	< 2.3 BJ	< 0.75	< 0.36	< 0.33	< 0.41	< 0.36	< 0.71
Caprolactam	105-60-2	µg/L	< 0.2	< 0.2	< 0.22	< 0.2	< 0.74	< 0.74	< 0.43 J	< 0.55 J	< 0.63	< 0.22	< 0.2	< 0.25	< 0.22	< 0.84
Carbazole	86-74-8	µg/L	< 0.17	< 0.17	< 0.19	< 0.17	< 0.39	< 0.39	< 0.18 J	< 0.44 J	< 0.45	< 0.18	< 0.17	< 0.21	< 0.18	< 0.44
Chrysene	218-01-9	µg/L	< 0.018	< 0.022	< 0.025	< 0.023	< 0.025	< 0.013	< 0.012 J	< 0.02	< 0.018	< 0.02	< 0.022	< 0.028	< 0.026	< 0.028
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.02	< 0.023	< 0.026	< 0.023	< 0.024	< 0.018	< 0.017 J	< 0.022	< 0.02	< 0.022	< 0.023	< 0.028	< 0.025	< 0.027
Dibenzofuran	132-64-9	µg/L	< 0.3	< 0.3	< 0.35	< 0.3	< 0.28	< 0.28	< 0.24 J	< 0.25 J	< 0.49	< 0.34	< 0.3	< 0.38	< 0.34	< 0.32
Diethyl phthalate	84-66-2	µg/L	< 0.17	< 0.17	< 0.19	< 0.17	< 0.35	< 0.35	< 0.25 J	< 0.38 J	< 0.36	< 0.18	< 0.17	< 0.21	< 0.18	< 0.4
Dimethyl phthalate	131-11-3	µg/L	< 0.23	< 0.23	< 0.26	< 0.23	< 0.3	< 0.30	< 0.28 J	< 0.37 J	< 0.36	< 0.25	< 0.23	< 0.28	< 0.25	< 0.35
di-n-butyl phthalate	84-74-2	µg/L	< 0.19	< 0.19	< 0.22	< 0.19	< 0.6	< 0.60	< 0.61 J	< 0.44 J	< 0.5	< 0.21	< 0.19	< 0.24	< 0.21	< 0.68
di-n-octylphthalate	117-84-0	µg/L	< 0.4	< 0.4	< 0.45	< 0.4	< 0.33	< 0.33	< 0.26 J	< 0.53 J	< 0.5	< 0.44	< 0.4	< 0.5	< 0.44	< 0.38
Fluoranthene	206-44-0	µg/L	< 0.0096	< 0.024	< 0.028	< 0.0096	< 0.01	< 0.014	< 0.014 J	< 0.011	< 0.0096	< 0.011	< 0.024	< 0.031	< 0.011	< 0.012
Fluorene	86-73-7	µg/L	< 0.02	< 0.027	< 0.031	< 0.015	< 0.016	< 0.018	< 0.018 J	< 0.022	< 0.02	< 0.022	< 0.027	< 0.034	< 0.017	< 0.018
Hexachlorobenzene	118-74-1	µg/L	< 0.0099	< 0.0099	< 0.011	< 0.008	< 0.0086	< 0.018	< 0.017 J	< 0.011	< 0.0099	< 0.011	< 0.0099	< 0.013	< 0.0089	< 0.0098
Hexachlorobutadiene	87-68-3	µg/L	< 0.37	< 0.37	< 0.14	< 0.13	< 0.55	< 0.55	< 0.41 J	< 0.14 J	< 0.38	< 0.41	< 0.37 J	< 0.16	< 0.14	< 0.62
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.67	< 0.67	< 0.28	< 0.24	< 7.6	< 7.6	< 0.51 J	< 0.11 J	< 4.5	< 0.75	< 0.67	< 0.31	< 0.27 J	< 8.7
Hexachloroethane	67-72-1	µg/L	< 0.26	< 0.26	< 0.24	< 0.21	< 0.59	< 0.59	< 0.30 J	< 0.18 J	< 0.3	< 0.29	< 0.26	< 0.26	< 0.23	< 0.67
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.014	< 0.029	< 0.033	< 0.011	< 0.011	< 0.015	< 0.015 J	< 0.016	< 0.014	< 0.016	< 0.029	< 0.037	< 0.012	< 0.013
Isophorone	78-59-1	µg/L	< 0.25	< 0.25	< 0.28	< 0.25	< 0.29	< 0.29	< 0.36 J	< 0.54 J	< 0.69	< 0.28	< 0.25	< 0.32	< 0.28	< 0.33
Naphthalene	91-20-3	µg/L	< 0.014	< 0.019	< 0.021	< 0.016	< 0.017	< 0.038	< 0.037 J	< 0.015	< 0.014	< 0.015	< 0.019	< 0.023	< 0.018	< 0.02
Nitrobenzene	98-95-3	µg/L	< 0.25	< 0.25	< 0.29	< 0.25	< 0.45	< 0.45	< 0.55 J	< 0.78 J	< 0.66	< 0.28	< 0.25	< 0.32	< 0.28	< 0.51
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.44	< 0.44	< 0.5	< 0.44	< 0.32	< 0.32	< 0.40 J	< 0.42 J	< 0.39	< 0.49	< 0.44	< 0.55	< 0.49	< 0.37
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.22	< 0.22	< 0.24	< 0.22	< 0.33	< 0.33	< 0.22 J	< 0.46 J	< 0.61	< 0.24	< 0.22	< 0.27	< 0.24	< 0.37
Pentachlorophenol	87-86-5	µg/L	< 0.22	< 0.22	< 0.077	< 0.29	< 0.11 J	< 0.11	< 0.11 J	< 0.25	< 0.22 J	< 0.25	< 0.22	< 0.086	< 0.32	< 0.12
Phenanthrene	85-01-8	µg/L	< 0.017	< 0.036	< 0.041	< 0.016	< 0.017	< 0.022	< 0.022 J	< 0.019	< 0.017	< 0.019	< 0.036	< 0.046	< 0.017	< 0.019
Phenol	108-95-2	µg/L	< 0.58	< 0.65 J	< 0.66	< 0.58	< 1.4	< 1.4	< 0.58 J	< 0.76 J	< 1.4	< 0.64	< 0.58	< 0.73	< 0.64	< 1.6
Pyrene	129-00-0	µg/L	< 0.012	< 0.022	< 0.025	< 0.0081	< 0.0087	< 0.016	< 0.016 J	< 0.013	< 0.012	< 0.013	< 0.022	< 0.028	< 0.009	< 0.0099
Metals - Total																
Aluminum, total	7429-90-5	µg/L	102 BJ	57.9 B	< 7.8	860	164 B	59.1 J	207	425	< 24	700	127 B	349 J	227	147 B
Antimony, total	7440-36-0	µg/L	< 4	< 2.9	< 2.2	< 1.3	< 1.4	< 1.8	< 2.6	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3	< 1.4
Arsenic, total	7440-38-2	µg/L	< 2.4	< 2.4	< 1.4	1.6 J	< 3	< 1.5	< 2.6	< 1.7	1.7 B	< 3	< 2.4	3.2	1.2 B	1.5 B
Barium, total	7440-39-3	µg/L	48.6 B	40.2 B	52.4 B	51.7 B	55.6 B	40.8 B	47.7 B	19.9 B	11.7 B	17.4 B	18 B	131 B	54.3 B	28 B
Beryllium, total	7440-41-7	µg/L	< 1.1	< 0.4	< 1	< 0.24	< 0.44	< 0.17	< 0.40	< 0.15	< 0.15	< 1	< 0.4	< 0.21	< 0.24	< 0.44
Cadmium, total	7440-43-9	µg/L	< 0.4	< 0.4	< 0.35	< 0.17	< 3	< 0.24	< 0.70	< 0.28	< 0.28	< 0.4	< 0.4	< 0.35	< 3	< 0.24
Calcium, total	7440-70-2	µg/L	107000	90000	113000	111000	112000	96800	105000	24300	23300	21800	24300	24600	24800	21300
Chromium, total	7440-47-3	µg/L	< 10	< 10	1.4 B	< 10	< 0.91	< 0.92	< 10 B	1.1 B	< 0.53	< 10	2.4 B	0.98 B	2.9 B	< 0.91
Cobalt, total	7440-48-4	µg/L	< 50	< 1.6	< 0.65	< 50	< 0.59	< 0.48	< 0.83	< 0.51	< 0.51	< 50	< 1.6	1.6 B	< 0.3	< 0.59
Copper, total	7440-50-8	µg/L	< 1.6	< 1.6	< 2.5	< 0.85	< 10	< 1.0	< 10 B	< 2.5	< 1.1	11.4	< 1.6	< 2.5	< 0.85	< 1.3
Iron, total	7439-89-6	µg/L	1040	719	729	1740	865	570	756	507	64.8 BJ	1070	169	1490	579	539
Lead, total	7439-92-1	µg/L	< 1.7	< 1.7	< 1.9	4.8 J	< 1.7	< 2.4	< 1.3	2.6 B	< 1.4	< 1.7	< 1.7	2 B	2 B	< 1.7
Magnesium, total	7439-95-4	µg/L	30000	31200	30800	31700	31700	33900	30700	6110	5790	5570	5860	5930	5950	5240
Manganese, total	7439-96-5	µg/L	2100	1630	2190	2100	2110	1650	1860	2370	1300	1830	1970	16300	6880	3750
Mercury, total	7439-97-6	µg/L	< 0.049	< 0.082 J	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	< 0.088	< 0.2
Nickel, total	7440-02-0	µg/L	1.9 BJ	< 10	2 B	3.9 J	2.4 J	< 1.6	< 0.75	5.5 B	2.5 B	11.8	7.8 B	104	30.6	16.9
Potassium, total	7440-09-7	µg/L	3180 BJ	3710 B	3630 B	3570 B	3540 B	3590 B	3150 B	863 B	702 BJ	< 10000	809 B	759 B	801 B	661 B
Selenium, total	7782-49-2	µg/L	< 3.7	< 3.7	3.5 B	< 1.5	< 10	< 2.4	< 3.6	< 1.6	< 1.6	< 3.7	< 3.7	< 2.3	< 1.5	< 2.4
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	21100	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	2.2 BJ	< 1	1 B	< 0.72	2.1 B	< 1.5	3.4	< 1	< 1	1.4 BJ	< 1	3.9 B	< 0.72	1 B
Sodium, total	7440-23-5	µg/L	24300	28800	26300	23800	25300	25500	21600	4200 B	4250 B	3860 BJ	4390 B	3820 B	4230 B	3620 B
Thallium, total	7440-28-0	µg/L	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8	< 1.3	< 1.3	< 1.5	< 1.5	< 5.4	< 0.17	< 1.7
Vanadium, total	7440-62-2	µg/L	< 0.9	< 0.9	< 0.56	< 50	< 0.77	1.7 B	< 0.87	1.8 B	1.3 B	< 50	2.1 B	6.1 B	5.2 B	2.9 B
Zinc, total	7440-66-6	µg/L	< 2.9	< 2.9	< 20	5.5 J	< 2.8	< 4.4	< 7.6	< 4	5.1 B	8 BJ	< 2.9	19.2 B	3.6 B	3.2 B
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-15B OB-15B (112013) 11/20/2013	OB-15B OB-15B (090514) 9/5/2014	OB-16 OB-16(080501) 5/1/2008	OB-16 OB-16(080911) 9/11/2008	OB-16 OB-16(070809) 7/8/2009	OB-16 OB-16(102309) 10/23/2009	OB-16 OB-16 10/29/2009	OB-16 OB-16(052710) 5/27/2010	OB-16 OB-16(051911) 5/19/2011	OB-16 OB-16(041712) 4/17/2012	OB-16 OB-16 (110613) 11/6/2013	OB-16 OB-16 (091014) 9/10/2014	OB-17 OB-17(080501) 5/1/2008	OB-17 OB-17(080911) 9/11/2008	OB-17 OB-17(070809) 7/8/2009
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.25 J	< 0.32	< 0.24	< 0.24	< 0.26	NA	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.24	< 0.24	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.20 J	< 0.39	< 0.13	< 0.13	< 0.24	NA	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39	< 0.13	< 0.13	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.21 J	< 0.28	< 0.17	< 0.17	< 0.23	NA	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.17	< 0.17	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.26 J	< 0.35	< 0.16	< 0.24	< 0.29	NA	< 0.29	< 0.29	< 0.16	< 0.19	< 0.26	< 0.35	0.57 J	< 0.24	1
1,1-Dichloroethene	75-35-4	µg/L	< 0.34 J	< 0.50	< 0.29	< 0.29	< 0.4	NA	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.29	< 0.29	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.22 J	< 0.22	< 1.3	< 1.3	< 0.56	NA	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 1.3	< 1.3	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3 J	< 1.2	< 2.4	< 1.3	< 1.1	NA	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2	< 2.4	< 1.3	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.16 J	< 0.23	< 0.17	< 0.18	< 0.39	NA	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23	< 0.17	< 0.18	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.20 J	< 0.16	< 0.18	< 0.18	< 0.26	NA	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.18	< 0.18	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.22 J	< 0.30	< 0.35	< 0.35	< 0.33	NA	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.35	< 0.35	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.28 J	< 0.43	< 0.18	< 0.18	< 0.27	NA	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.18	< 0.18	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.31 J	< 0.26	< 0.26	< 0.26	< 0.25	NA	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.30 J	< 0.24	< 0.32	< 0.22	< 0.28	NA	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.32	< 0.22	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 3.2 J	< 2.5	< 2.3	< 2.3	< 1.6	NA	< 1.6	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5	< 2.3	< 2.3	< 1.6
2-Hexanone	591-78-6	µg/L	< 1.7 J	< 1.7	< 1.7	< 1.7	< 1.4	NA	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.5 J	< 1.1	< 1.9	< 1.3	< 0.86	NA	< 0.86	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1	< 1.9	< 1.3	< 0.86
Acetone	67-64-1	µg/L	< 3.3 J	< 2.6	< 2.1	< 2.1	< 2.9	NA	< 2.9	< 2.9	< 4.4	< 7.6	< 3.3	< 2.6	< 2.1	< 2.1	< 2.9
Benzene	71-43-2	µg/L	< 0.28 J	< 0.21	< 0.26	< 0.26	< 0.23	NA	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21	< 0.26	< 0.26	< 0.23
Bromodichloromethane	75-27-4	µg/L	< 0.21 J	< 0.28	< 0.14	< 0.14	< 0.22	NA	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.14	< 0.14	< 0.22
Bromoform	75-25-2	µg/L	< 0.30 J	< 0.31	< 0.18	< 0.18	< 0.23	NA	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.18	< 0.18	< 0.23
Bromomethane	74-83-9	µg/L	< 0.56 J	< 0.39	< 0.32	< 0.32	< 0.3	NA	< 0.3	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39	< 0.32	< 0.32	< 0.3
Carbon disulfide	75-15-0	µg/L	< 0.18 J	< 0.50	< 0.15	< 0.16	< 0.74	NA	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.15	< 0.16	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.23 J	< 0.24	< 0.18	< 0.18	< 0.26	NA	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24	< 0.18	< 0.18	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.35 J	< 0.27	< 0.14	< 0.19	< 0.39	NA	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27	< 0.14	< 0.19	< 0.39
Chloroethane	75-00-3	µg/L	< 0.39 J	< 0.56	< 0.22	< 0.22	< 0.37	NA	< 0.37	< 0.37	< 0.25	< 0.37	< 0.39	< 0.56	< 0.22	< 0.22	< 0.37
Chloroform	67-66-3	µg/L	< 0.25 J	< 0.20	< 0.16	< 0.16	< 0.23	NA	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	< 0.16	< 0.16	< 0.23
Chloromethane	74-87-3	µg/L	< 0.36 J	< 0.33	< 0.29	< 0.29	< 0.29	NA	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.24 J	< 0.33	< 0.19	< 0.25	< 0.22	NA	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.19	< 0.25	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15 J	< 0.28	< 0.15	< 0.18	< 0.25	NA	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.15	< 0.18	< 0.25
Cyclohexane	110-82-7	µg/L	< 0.18 J	< 0.37	< 0.85	< 0.85	< 1.9	NA	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37	< 0.85	< 0.85	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.19 J	< 0.25	< 0.12	< 0.16	< 0.22	NA	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.12	< 0.16	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.63 J	< 0.73	< 0.88	< 0.88	< 0.92	NA	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73	< 0.88	< 0.88	< 0.92
Ethylbenzene	100-41-4	µg/L	< 0.21 J	< 0.40	< 0.27	< 0.27	< 0.27	NA	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27
Freon 113	76-13-1	µg/L	< 0.77 J	< 0.45	< 0.8	< 0.8	< 0.38	NA	< 0.38	< 0.38	< 0.66	< 0.49	< 0.77	< 0.45	< 0.8	< 0.8	< 0.38
Isopropylbenzene	98-82-8	µg/L	< 0.22 J	< 0.26	< 0.15	< 0.19	< 0.57	NA	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26	< 0.15	< 0.19	< 0.57
Methyl acetate	79-20-9	µg/L	< 1.5 J	< 3.1	< 2.5	< 1.7	< 1.5	NA	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1	< 2.5	< 1.7	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.29 J	< 0.26	< 0.14	< 0.16	< 0.23	NA	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26	< 0.14	< 0.16	< 0.23
Methylcyclohexane	108-87-2	µg/L	< 0.15 J	< 0.22	< 0.11	< 0.11	< 0.35	NA	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22	< 0.11	< 0.11	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.86 J	< 0.81	< 0.16	< 0.16	< 0.3	NA	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.16	< 0.16	< 0.3
o-Xylene	95-47-6	µg/L	< 0.30 J	NA	< 0.45	< 0.45	< 0.25	NA	< 0.25	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.25
Styrene	100-42-5	µg/L	NA	< 0.26	< 0.11	< 0.17	< 0.58	NA	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.17	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	< 0.25 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.44 J	< 0.35	< 0.29	< 0.29	< 0.27	NA	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.29	< 0.29	< 0.27
Toluene	108-88-3	µg/L	< 0.38 J	< 0.22	< 0.15	< 0.15	< 0.3	NA	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22	< 0.15	< 0.15	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.21 J	< 0.51	< 0.16	< 0.16	< 0.25	NA	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.16	< 0.16	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.50 J	< 0.32	< 0.11	< 0.15	< 0.21	NA	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.11	< 0.15	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.33 J	< 0.25	< 0.18	< 0.18	< 0.24	NA	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.18	< 0.18	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.41 J	< 0.28	< 0.25	< 0.25	< 0.54	NA	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.25	< 0.25	< 0.54
Vinyl Chloride	75-01-4	µg/L	NA	< 0.17	< 0.21	< 0.21	< 0.44	NA	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21	< 0.44
Xylene, -m,p	179601-23-1	µg/L	NA	NA	< 0.39	< 0.39	< 0.25	NA	< 0.25	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25
Xylenes	1330-20-7	µg/L	< 0.19 J	< 0.20	< 0.39	< 0.39	< 0.25	NA	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20	< 0.39	< 0.39	< 0.25
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 0.32	< 0.27 J	< 0.23 J	< 0.59	< 0.46	< 0.45	NA	< 0.47	< 0.42	< 0.3	< 0.30	< 0.28	< 0.24 J	< 0.59	< 0.42
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.7	< 1.7 J	< 1.2 J	< 2.1	< 1.5	< 1.4	NA	< 1.5	< 1.3	< 1.6	< 1.6	< 1.7	< 1.2 J	< 2.1	< 1.3
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4	< 1.5 J	< 1.1 J	< 1.7	< 1.3	< 1.3	NA	< 1.3	< 1.2	< 1.3	< 1.3	< 1.6	< 1.1 J	< 1.7	< 1.2
2,4-Dichlorophenol	120-83-2	µg/L	< 1.2	< 1.6 J	< 1.5 J	< 2.1	< 1.3	< 1.3	NA	< 1.3	< 1.2	< 1.2	< 1.2	< 1.6	< 1.5 J	< 2.1	< 1.2
2,4-Dimethylphenol	105-67-9	µg/L	< 1.6	< 1.8 J	< 1.7 J	< 2.1	< 1.8	< 1.8	NA	< 1.8	< 1.7	< 1.5	< 1.5	< 1.9	< 1.8 J	< 2.1	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	< 18	< 6.5 J	< 1.2 J	< 4.5	< 0.81	< 0.78	NA	< 0.81	< 0.74	< 17	< 17	< 6.6	< 1.2 J	< 4.5	< 0.74
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.45	< 0.32 J	< 0.57 J	< 0.49	< 0.24	< 0.23	NA	< 0.24	< 0.22	< 0.43	< 0.43	< 0.32	< 0.58 J	< 0.49	< 0.22
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.49	< 0.26 J	< 0.53 J	< 0.65	< 0.36	< 0.35	NA	< 0.36	< 0.33	< 0.46	< 0.46	< 0.26	< 0.54 J	< 0.64	< 0.33
2-Chloronaphthalene	91-58-7	µg/L	< 0.32	< 0.34 J	< 0.21 J	< 0.52	< 0.46	< 0.44	NA	< 0.46	< 0.42	< 0.3	< 0.30	< 0.35	< 0.21 J	< 0.52	< 0.42
2-Chlorophenol	95-57-8	µg/L	< 1.0	< 1.3 J	< 0.92 J	< 1.6	< 1.2	< 1.1	NA	< 1.2	< 1.1	< 0.97	< 0.97	< 1.3	< 0.94 J	< 1.6	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	< 0.41	< 0.29 J	< 0.8 J	< 0.47	< 0.72	< 0.7	NA	< 0.73	< 0.66	< 0.38	< 0.38	< 0.29	< 0.82 J	< 0.46	< 0.66
2-Methylphenol	95-48-7	µg/L	< 1.1	< 1.3 J	< 1.1 J	< 1.5	< 1.2	< 1.2	NA	< 1.2	< 1.1	< 1	< 1.0	< 1.3	< 1.1 J	< 1.5	< 1.1
2-Nitroaniline	88-74-4	µg/L	< 1.2	< 0.32 J	< 0.52 J	< 0.48	< 0.26	< 0.25	NA	< 0.26	< 0.24	< 1.1	< 1.1	< 0.32	< 0.53 J	< 0.48	< 0.24
2-Nitrophenol	88-75-5	µg/L	< 1.6	< 1.9 J	< 1.6 J	< 2.1	< 1.4	< 1.3	NA	< 1.4	< 1.2	< 1.5	< 1.5	< 1.9	< 1.6 J	< 2.1	< 1.2
3&4-Methylphenol	12-03-3	µg/L	< 0.98	< 1.1 J	< 1.2 J	< 1.6	< 1.1	< 1.1	NA	< 1.1	< 1	< 0.93	< 0.93	< 1.1	< 1.2 J	< 1.6	< 1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.38 J	< 0.56 J	< 1 J	< 4.9	< 0.32	< 0.31	NA	< 0.33	< 0.3	< 0.36	< 0.36	< 0.57	< 1 J	< 4.9	< 0.3
3-Nitroaniline	99-09-2	µg/L	< 1.3 J	< 0.26 J	< 0.34 J	< 0.48	< 0.32	< 0.31	NA	< 0.32	< 0.29	< 1.3	< 1.3	< 0.26	< 0.35 J	< 0.48	< 0.29
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.1	< 1.3 J	< 2.3 J	< 1.3	< 0.56	< 0.55	NA	< 0.57	< 0.51	< 0.99	< 0.99	< 1.3	< 2.4 J	< 1.3	< 0.51
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.38	< 0.25 J	< 0.39 J	< 0.44	< 0.38	< 0.37	NA	< 0.39	< 0.35	< 0.36	< 0.36	< 0.25	< 0.4 J	< 0.44	< 0.35
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.9	< 1.3 J	< 1.3 J	< 2.5	< 1.2	< 1.1	NA	< 1.2	< 1.1	< 1.8	< 1.8	< 1.3	< 1.3 J	< 2.4	< 1.1
Semi-Volatile Organic Compounds																	

Location ID Sample ID Sample Date	CAS	Units	OB-15B OB-15B (112013) 11/20/2013	OB-15B OB-15B (090514) 9/5/2014	OB-16 OB-16(080501) 5/1/2008	OB-16 OB-16(080911) 9/11/2008	OB-16 OB-16(070809) 7/8/2009	OB-16 OB-16(102309) 10/23/2009	OB-16 OB-16 10/29/2009	OB-16 OB-16(052710) 5/27/2010	OB-16 OB-16(051911) 5/19/2011	OB-16 OB-16(041712) 4/17/2012	OB-16 OB-16 (110613) 11/6/2013	OB-16 OB-16 (091014) 9/10/2014	OB-17 OB-17(080501) 5/1/2008	OB-17 OB-17(080911) 9/11/2008	OB-17 OB-17(070809) 7/8/2009
4-Chloroaniline	106-47-8	µg/L	< 0.56 J	< 0.30 J	< 0.37 J	< 0.36	< 0.28	< 0.27	NA	< 0.28	< 0.25	< 0.53	< 0.53 J	< 0.30 J	< 0.37 J	< 0.36	< 0.25
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.33	< 0.38 J	< 0.31 J	< 0.49	< 0.39	< 0.38	NA	< 0.39	< 0.35	< 0.31	< 0.31	< 0.38	< 0.31 J	< 0.49	< 0.35
4-Nitroaniline	100-01-6	µg/L	< 1.8	< 0.30 J	< 0.62 J	< 0.49	< 0.2	< 0.19	NA	< 0.2	< 0.18	< 1.7	< 1.7	< 0.30	< 0.63 J	< 0.48	< 0.18
4-Nitrophenol	100-02-7	µg/L	< 5.5	< 0.91 J	< 1.7 J	< 2.4	< 0.91	< 0.88	NA	< 0.91 J	< 0.83	< 5.2	< 5.2	< 0.92	< 1.7 J	< 2.4	< 0.83
Acenaphthene	83-32-9	µg/L	< 0.022	< 0.021	< 0.017	< 0.017	< 0.018	< 0.031	NA	< 0.032	< 0.014	< 0.014	< 0.020	< 0.021	< 0.017	< 0.017	< 0.016
Acenaphthylene	208-96-8	µg/L	< 0.025	< 0.025	< 0.0074	< 0.0075	< 0.0077	< 0.042	NA	< 0.043	< 0.016	< 0.016	< 0.024	< 0.024	< 0.0075	< 0.0075	< 0.007
Acetophenone	98-86-2	µg/L	< 0.30	< 0.36 J	< 0.38 J	< 0.5	< 0.44	< 0.42	NA	< 0.44	< 0.4	< 0.29	< 0.29	< 0.37	< 0.39 J	< 0.5	< 0.4
Anthracene	120-12-7	µg/L	< 0.022	< 0.021	< 0.022	< 0.023	< 0.023	< 0.027	NA	< 0.028	< 0.01	< 0.01	< 0.020	< 0.021	< 0.023	< 0.022	< 0.021
Atrazine	1912-24-9	µg/L	< 0.52	< 0.42 J	< 0.3 J	< 0.66	< 0.43	< 0.42	NA	< 0.43	< 0.39	< 0.49	< 0.49	< 0.43	< 0.3 J	< 0.66	< 0.39
Benzaldehyde	100-52-7	µg/L	< 3.5	< 0.67 J	< 0.8 J	< 1.7	< 0.44	< 0.43	NA	< 0.45	< 0.4	< 3.3	< 3.3	< 0.68	< 0.82 J	< 1.7	< 0.4
Benzo(a)anthracene	56-55-3	µg/L	< 0.012	< 0.012	< 0.035	< 0.036	< 0.037	< 0.025	NA	< 0.026	< 0.015	< 0.015	< 0.012	< 0.012	< 0.036	< 0.036	< 0.034
Benzo(a)pyrene	50-32-8	µg/L	< 0.013 J	< 0.013	< 0.037	< 0.038	< 0.039	< 0.033	NA	< 0.034	< 0.0049	< 0.0049	< 0.012	< 0.012	< 0.038	< 0.038	< 0.036
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.011	< 0.011	< 0.018	< 0.018	< 0.019	< 0.038	NA	< 0.04	< 0.016	< 0.016	< 0.010	< 0.010	< 0.018	< 0.018	< 0.017
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.017	< 0.016	< 0.012	< 0.013	< 0.013	< 0.031	NA	< 0.032	< 0.01	< 0.01	< 0.016	< 0.016	< 0.013	< 0.013	< 0.012
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.016	< 0.016	< 0.02	< 0.02	< 0.021	< 0.03	NA	< 0.031	< 0.013	< 0.013	< 0.015	< 0.015	< 0.02	< 0.02	< 0.019
Benzyl butyl phthalate	85-68-7	µg/L	< 0.31	< 0.22 J	< 0.67 J	< 0.45	< 0.28	< 0.27	NA	< 0.28	< 0.25	< 0.29	< 0.29	< 0.22	< 0.69 J	< 0.45	< 0.25
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.33	< 0.42 J	< 0.33 J	< 0.56	< 0.27	< 0.26	NA	< 0.27	< 0.25	< 0.31	< 0.31	< 0.42	< 0.34 J	< 0.55	< 0.25
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.33	< 0.43 J	< 0.71 J	< 0.53	< 0.34	< 0.33	NA	< 0.34	< 0.31	< 0.31	< 0.31	< 0.44	< 0.72 J	< 0.53	< 0.31
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.48	< 0.41 J	< 0.61 J	< 0.58	< 0.43	< 0.41	NA	< 0.43	< 0.39	< 0.45	< 0.45	< 0.41	< 0.62 J	< 0.58	< 0.39
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.62	< 0.55 J	< 0.92 J	< 0.81	< 0.36	< 0.35	NA	< 0.36	< 0.33	< 0.59	< 0.59	< 0.56	< 0.94 BJ	< 0.8	< 0.33
Caprolactam	105-60-2	µg/L	< 0.73	< 0.41 J	< 0.52 J	< 0.67	< 0.21	< 0.21	NA	< 0.22	< 0.2	< 0.69	< 0.69	< 0.41	< 0.53 J	< 0.67	< 0.2
Carbazole	86-74-8	µg/L	< 0.38	< 0.17 J	< 0.42 J	< 0.48	< 0.18	< 0.18	NA	< 0.18	< 0.17	< 0.36	< 0.36	< 0.17	< 0.43 J	< 0.48	< 0.17
Chrysene	218-01-9	µg/L	< 0.013	< 0.012	< 0.019	< 0.019	< 0.019	< 0.023	NA	< 0.024	< 0.023	< 0.023	< 0.012	< 0.012	< 0.019	< 0.019	< 0.018
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.018	< 0.017	< 0.021	< 0.022	< 0.022	< 0.024	NA	< 0.025	< 0.023	< 0.023	< 0.017	< 0.017	< 0.022	< 0.022	< 0.02
Dibenzofuran	132-64-9	µg/L	< 0.28	< 0.23 J	< 0.24 J	< 0.52	< 0.33	< 0.32	NA	< 0.34	< 0.3	< 0.27	< 0.27	< 0.23	< 0.25 J	< 0.52	< 0.3
Diethyl phthalate	84-66-2	µg/L	< 0.35	< 0.23 J	< 0.36 J	< 0.39	< 0.18	< 0.18	NA	< 0.18	< 0.17	< 0.33	< 0.33	< 0.24	< 0.37 J	< 0.39	< 0.17
Dimethyl phthalate	131-11-3	µg/L	< 0.30	< 0.26 J	< 0.35 J	< 0.39	< 0.25	< 0.24	NA	< 0.25	< 0.23	< 0.28	< 0.28	< 0.26	< 0.36 J	< 0.39	< 0.23
di-n-butyl phthalate	84-74-2	µg/L	< 0.59	< 0.58 J	< 0.42 J	< 0.54	< 0.21	< 0.2	NA	< 0.21	< 0.19	< 0.56	< 0.56	< 2.1 BJ	< 0.43 J	< 0.53	< 0.19
di-n-octylphthalate	117-84-0	µg/L	< 0.33	< 0.25 J	< 0.5 J	< 0.53	< 0.43	< 0.42	NA	< 0.44	< 0.4	< 0.31	< 0.31	< 0.25	< 0.51 J	< 0.53	< 0.4
Fluoranthene	206-44-0	µg/L	< 0.014	< 0.014	< 0.01	< 0.01	< 0.011	< 0.026	NA	< 0.027	< 0.0096	< 0.0096	< 0.013	< 0.013	< 0.01	< 0.01	< 0.0096
Fluorene	86-73-7	µg/L	< 0.018	< 0.018	< 0.021	< 0.021	< 0.022	< 0.029	NA	< 0.03	< 0.015	< 0.015	< 0.017	< 0.017	< 0.021	< 0.021	< 0.02
Hexachlorobenzene	118-74-1	µg/L	< 0.018	< 0.017	< 0.01	< 0.011	< 0.011	< 0.011	NA	< 0.011	< 0.008	< 0.008	< 0.017	< 0.017	< 0.011	< 0.011	< 0.0099
Hexachlorobutadiene	87-68-3	µg/L	< 0.54	< 0.39 J	< 0.13 J	< 0.4	< 0.41	< 0.4	NA	< 0.14	< 0.13	< 0.51	< 0.51	< 0.39	< 0.14 J	< 0.4	< 0.37
Hexachlorocyclopentadiene	77-47-4	µg/L	< 7.6	< 0.48 J	< 0.11 J	< 4.9	< 0.74	< 0.71	NA	< 0.27	< 0.24	< 7.1	< 7.1	< 0.49	< 0.11 J	< 4.8	< 0.67
Hexachloroethane	67-72-1	µg/L	< 0.59	< 0.29 J	< 0.17 J	< 0.32	< 0.29	< 0.28	NA	< 0.23	< 0.21	< 0.55	< 0.55	< 0.29	< 0.17 J	< 0.32	< 0.26
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.015	< 0.015	< 0.015	< 0.015	< 0.016	< 0.031	NA	< 0.032	< 0.011	< 0.011	< 0.014	< 0.015	< 0.015	< 0.015	< 0.014
Isophorone	78-59-1	µg/L	< 0.29	< 0.34 J	< 0.51 J	< 0.74	< 0.27	< 0.26	NA	< 0.28	< 0.25	< 0.27	< 0.27	< 0.34	< 0.53 J	< 0.74	< 0.25
Naphthalene	91-20-3	µg/L	< 0.038	< 0.037	< 0.015	< 0.015	< 0.015	< 0.02	NA	< 0.02	< 0.016	< 0.016	< 0.036	< 0.036	< 0.015	< 0.015	< 0.014
Nitrobenzene	98-95-3	µg/L	< 0.45	< 0.52 J	< 0.74 J	< 0.71	< 0.28	< 0.27	NA	< 0.28	< 0.25	< 0.42	< 0.42	< 0.52	< 0.76 J	< 0.7	< 0.25
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.32	< 0.38 J	< 0.4 J	< 0.42	< 0.48	< 0.47	NA	< 0.48	< 0.44	< 0.3	< 0.30	< 0.38 J	< 0.41 J	< 0.42	< 0.44
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.32	< 0.21 J	< 0.44 J	< 0.65	< 0.24	< 0.23	NA	< 0.24	< 0.22	< 0.31	< 0.31	< 0.21	< 0.45 J	< 0.65	< 0.22
Pentachlorophenol	87-86-5	µg/L	< 0.11	< 0.11	< 0.23	< 0.24	< 0.25	< 0.24	NA	< 0.075	< 0.29	< 0.1 J	< 0.10	< 0.10	< 0.24	< 0.24	< 0.22
Phenanthrene	85-01-8	µg/L	< 0.022	< 0.022	< 0.018	< 0.018	< 0.019	< 0.038	NA	< 0.04	< 0.016	< 0.016	< 0.021	< 0.021	< 0.018	< 0.018	< 0.017
Phenol	108-95-2	µg/L	< 1.4	< 0.55 J	< 0.72 J	< 1.5	< 0.63	< 0.61	NA	< 0.64	< 0.58	< 1.3	< 1.3	< 0.55	< 0.73 J	< 1.5	< 0.58
Pyrene	129-00-0	µg/L	< 0.016	< 0.016	< 0.013	< 0.013	< 0.013	< 0.024	NA	< 0.024	< 0.0081	< 0.0081	< 0.015	< 0.015	< 0.013	< 0.013	< 0.012
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	165 J	626 J	< 24	< 24	129 BJ	< 26	NA	< 7.8	492	60 J	54.9 J	< 200 B	< 24	683	85.5 B
Antimony, total	7440-36-0	µg/L	< 1.8	< 2.6	< 1.8	< 1.8	< 4	< 2.9	NA	< 2.2	< 1.3	< 1.4	< 1.8	< 2.6	< 1.8	2.5 B	< 4
Arsenic, total	7440-38-2	µg/L	2.9 B	< 2.6	4.6	7.4	5.1	6.1	NA	7.8	9.1	6.9 J	9.9	4.7	< 1.7	< 1.7	< 2.4
Barium, total	7440-39-3	µg/L	61.3 B	41.9 B	81 B	80.4 BJ	88.1 B	90.4 B	NA	92.5 B	123 B	99.9 B	93.6 B	94.3 B	9.6 B	38.6 BJ	11.3 B
Beryllium, total	7440-41-7	µg/L	< 0.17	< 0.40	< 0.15	< 0.15	< 0.4	< 0.4	NA	< 0.24	< 0.24	< 1	< 0.17	< 0.40	< 0.15	< 0.15	< 0.4
Cadmium, total	7440-43-9	µg/L	< 3.0 B	< 0.70	< 0.28	< 0.28	0.6 B	< 0.4	NA	< 0.35	< 0.17	< 0.24	< 0.24	< 0.70	< 0.28	< 0.28	1 B
Calcium, total	7440-70-2	µg/L	24200	23900	138000	123000 J	149000	141000	NA	136000	147000	143000	136000	130000	65300	18700 J	89000
Chromium, total	7440-47-3	µg/L	2.8 B	2.9 B	< 0.53	< 1.6	< 0.9	0.9 B	NA	1.2 B	< 10	< 0.91	< 0.92	< 0.89	0.8 B	< 5.3	< 10
Cobalt, total	7440-48-4	µg/L	< 0.48	< 0.83	1.8 B	< 1.2	1.5 B	< 1.6	NA	0.7 B	< 50	< 50	1.4 B	2.0 B	1 B	< 0.51	< 0.4
Copper, total	7440-50-8	µg/L	< 10 B	< 1.2	< 2.5	< 2.5	< 2	< 1.6	NA	< 2.5	< 0.85	< 10	< 1.0	< 1.2	< 2.5	18.9	< 2
Iron, total	7439-89-6	µg/L	654	1130 J	11100	12200 J	12400	13200	NA	14300	16700	17700	18500	9920	1570	79.9 BJ	3130
Lead, total	7439-92-1	µg/L	< 2.4	1.4 B	3.7	< 1.4	< 1.7	< 1.7	NA	< 1.9	< 3	< 1.7	< 2.4	1.3 B	2.3 B	< 1.4	< 1.7
Magnesium, total	7439-95-4	µg/L	6360	6070	21500	18000	20500	19500	NA	19600	20100	18800	18600	18000	22400	5660	28700
Manganese, total	7439-96-5	µg/L	8750	4720	2860	3250	3030	3440	NA	3440	3210	4180	3600	3780	472	64.5	496
Mercury, total	7439-97-6	µg/L	< 0.20 B	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	NA	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064	< 0.15	< 0.049	< 0.049
Nickel, total	7440-02-0	µg/L	43.3	19.8	< 1.2	< 1.2	< 10	< 10	NA	1.8 B	2.8 J	< 0.94	< 1.6	2.0 B	< 1.2	< 2.4	< 10
Potassium, total	7440-09-7	µg/L	1170 B	934 B	8980 B	10000	9650 B	10100	NA	9470 B	10200	9640 B	9610 B	10800	682 B	1260 B	834 B
Selenium, total	7782-49-2	µg/L	< 2.4	6.2 B	< 1.6	< 1.6	< 3.7	< 3.7	NA	2.1 B	< 1.5	8.7 B	< 2.4	< 3.6	< 1.6	< 1.6	< 3.7
Silicon, total	7440-21-3	µg/L	NA	4040 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	32800 J	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.5	< 1.2	< 1	< 1	< 1	< 1	NA	0.8 B	< 0.72	6.9 B	< 1.5	< 1.2	< 1	< 1	< 1
Sodium, total	7440-23-5	µg/L	4580 B	4120 B	26800	25100	25700	27900	NA	30100	34500	34600	31400	34600	12200	4950 B	15000
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.8	< 1.3	< 1.3	< 2	< 1.5	NA	< 1.8	< 0.17	< 1.7	1.8 B	< 1.8	< 1.3	< 1.3	< 1.5
Vanadium, total	7440-62-2	µg/L	7.6 J	5.5 J	< 0.43	0.6 BJ	< 0.9	< 0.9	NA	< 0.56	< 0.43	< 0.77	3.9 B	2.7 B	< 0.43	< 0.43	< 0.9
Zinc, total	7440-66-6	µg/L	< 20 B	< 7.6	< 4	< 4	< 2.9	< 2.9	NA	< 1.4	5 J	< 20	< 4.4	< 20 B	< 4 B	28.6 J	< 2.9
Other																	
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-17 OB-17(102309) 10/23/2009	OB-17 OB-17(052710) 5/27/2010	OB-17 OB-17(051911) 5/19/2011	OB-17 OB-17(041712) 4/17/2012	OB-17 OB-17 (110613) 11/6/2013	OB-17 OB-17(090314) 9/3/2014	OB-18 OB-18(080501) 5/1/2008	OB-18 OB-18(080911) 9/11/2008	OB-18 OB-18(070809) 7/8/2009	OB-18 OB-18(102309) 10/23/2009	OB-18 OB-18(052710) 5/27/2010	OB-18 OB-18(051911) 5/19/2011	OB-18 OB-18(041712) 4/17/2012	OB-18 OB-18 (110613) 11/6/2013	OB-18 OB-18(09032014) 9/3/2014
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28
1,1-Dichloroethane	75-34-3	µg/L	1.3	1	< 0.16	1	0.91 J	0.94 J	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29	< 0.16	< 0.19	< 0.26	< 0.35
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5
2-Hexanone	591-78-6	µg/L	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1
Acetone	67-64-1	µg/L	< 2.9	< 2.9	< 4.4	< 7.6	< 3.3	< 2.6	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4	< 7.6	< 3.3	< 2.6
Benzene	71-43-2	µg/L	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21
Bromodichloromethane	75-27-4	µg/L	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28
Bromoform	75-25-2	µg/L	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31
Bromomethane	74-83-9	µg/L	< 0.3	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39
Carbon disulfide	75-15-0	µg/L	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50
Carbon tetrachloride	56-23-5	µg/L	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24
Chlorobenzene	108-90-7	µg/L	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.25	< 0.37	< 0.39	< 0.56	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.25	< 0.37	< 0.39	< 0.56
Chloroform	67-66-3	µg/L	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28
Cyclohexane	110-82-7	µg/L	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40
Isopropylbenzene	98-82-8	µg/L	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26
Methyl acetate	79-20-9	µg/L	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1
Methyl tert butyl ether	1634-04-4	µg/L	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26
Methylcyclohexane	108-87-2	µg/L	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81
o-Xylene	95-47-6	µg/L	< 0.25	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	< 0.30	NA
Styrene	100-42-5	µg/L	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA
Tetrachloroethene	127-18-4	µg/L	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35
Toluene	108-88-3	µg/L	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32
Trichloroethene	79-01-6	µg/L	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28
Vinyl Chloride	75-01-4	µg/L	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17
Xylene, -m,p	179601-23-1	µg/L	< 0.25	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 0.44	< 0.43	< 0.42	< 0.32	< 0.33	< 0.29	< 0.24 J	< 0.58	< 0.47	< 0.44	< 0.43	< 0.42	< 0.36	< 0.30	< 0.29
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.4	< 1.4	< 1.3	< 1.7	< 1.7	< 1.8	< 1.2 J	< 2.1	< 1.5	< 1.4	< 1.3	< 1.3	< 1.9	< 1.6	< 1.8
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.3	< 1.3	< 1.2	< 1.4	< 1.4	< 1.6	< 1.1 J	< 1.7	< 1.4	< 1.3	< 1.2	< 1.2	< 1.5	< 1.3	< 1.6
2,4-Dichlorophenol	120-83-2	µg/L	< 1.3	< 1.3	< 1.2	< 1.2	< 1.2	< 1.7	< 1.5 J	< 2	< 1.4	< 1.3	< 1.2	< 1.2	< 1.4	< 1.2	< 1.7
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7	< 1.7	< 1.7	< 1.6	< 1.6	< 1.9	< 1.8 J	< 2.1	< 1.9	< 1.7	< 1.7	< 1.7	< 1.8	< 1.5	< 1.9
2,4-Dinitrophenol	51-28-5	µg/L	< 0.77	< 0.76	< 0.74	< 18	< 18	< 6.8	< 1.2 J	< 4.4	< 0.83	< 0.77	< 0.75	< 0.74	< 20	< 17	< 6.8
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.23	< 0.23	< 0.22	< 0.45	< 0.46	< 0.33	< 0.58 J	< 0.48	< 0.25	< 0.23	< 0.22	< 0.22	< 0.51	< 0.43	< 0.33
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.34	< 0.34	< 0.33	< 0.49	< 0.50	< 0.27	< 0.54 J	< 0.63	< 0.37	< 0.34	< 0.33	< 0.33	< 0.55	< 0.46	< 0.27
2-Chloronaphthalene	91-58-7	µg/L	< 0.43	< 0.43	< 0.42	< 0.32	< 0.32	< 0.36	< 0.21 J	< 0.51	< 0.47	< 0.43	< 0.42	< 0.42	< 0.35	< 0.30	< 0.36
2-Chlorophenol	95-57-8	µg/L	< 1.1	< 1.1	< 1.1	< 1	< 1.0	< 1.3	< 0.94 J	< 1.5	< 1.2	< 1.1	< 1.1	< 1.1	< 1.2	< 0.97	< 1.3
2-Methylnaphthalene	91-57-6	µg/L	< 0.69	< 0.68	< 0.66	< 0.41	< 0.41	< 0.30	< 0.82 J	< 0.46	< 0.74	< 0.69	< 0.67	< 0.66	< 0.46	< 0.38	< 0.30
2-Methylphenol	95-48-7	µg/L	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1	< 1.3	< 1.1 J	< 1.4	< 1.3	< 1.2	< 1.1	< 1.1	< 1.2	< 1.0	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 0.24	< 0.24	< 0.24	< 1.2	< 1.2	< 0.33	< 0.53 J	< 0.47	< 0.26	< 0.24	< 0.24	< 0.24	< 1.3	< 1.1	< 0.33
2-Nitrophenol	88-75-5	µg/L	< 1.3	< 1.3	< 1.2	< 1.6	< 1.6	< 1.9	< 1.6 J	< 2	< 1.4	< 1.3	< 1.3	< 1.2	< 1.8	< 1.5	< 1.9
3&4-Methylphenol	12-03-3	µg/L	< 1.1	< 1.1	< 1	< 0.98	< 0.99	< 1.1	< 1.2 J	< 1.5	< 1.2	< 1.1	< 1.1	< 1	< 1.1	< 0.93	< 1.1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.31	< 0.3	< 0.3	< 0.38	< 0.39	< 0.58	< 1 J	< 4.8	< 0.33	< 0.31	< 0.3	< 0.3	< 0.43	< 0.36	< 0.58
3-Nitroaniline	99-09-2	µg/L	< 0.3	< 0.3	< 0.29	< 1.3	< 1.4	< 0.27	< 0.35 J	< 0.47	< 0.32	< 0.3	< 0.29	< 0.29	< 1.5	< 1.3	< 0.27
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.53	< 0.53	< 0.51	< 1.1	< 1.1	< 1.4	< 2.4 J	< 1.2	< 0.58	< 0.53	< 0.52	< 0.51	< 1.2	< 0.99	< 1.4
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.36	< 0.36	< 0.35	< 0.38	< 0.38	< 0.26	< 0.4 J	< 0.43	< 0.39	< 0.36	< 0.35	< 0.35	< 0.43	< 0.36	< 0.26
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.1	< 1.1	< 1.1	< 1.9	< 2.0	< 1.4	< 1.3 J	< 2.4	< 1.2	< 1.1	< 1.1	< 1.1	< 2.2	< 1.8	< 1.4
Semi-Volatile Organic Compounds																	

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID			OB-17	OB-17	OB-17	OB-17	OB-17	OB-17	OB-18	OB-18	OB-18	OB-18	OB-18	OB-18	OB-18	OB-18	OB-18
Sample ID			OB-17(102309)	OB-17(052710)	OB-17(051911)	OB-17(041712)	OB-17 (110613)	OB-17(090314)	OB-18(080501)	OB-18(080911)	OB-18(070809)	OB-18(102309)	OB-18(052710)	OB-18(051911)	OB-18(041712)	OB-18 (110613)	OB-18(09032014)
Sample Date	CAS	Units	10/23/2009	5/27/2010	5/19/2011	4/17/2012	11/6/2013	9/3/2014	5/1/2008	9/11/2008	7/8/2009	10/23/2009	5/27/2010	5/19/2011	4/17/2012	11/6/2013	9/3/2014
4-Chloroaniline	106-47-8	µg/L	< 0.26	< 0.26	< 0.25	< 0.56	< 0.57 J	< 0.31	< 0.37 J	< 0.35	< 0.28	< 0.26	< 0.26	< 0.25	< 0.63	< 0.53 J	< 0.31
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.37	< 0.36	< 0.35	< 0.33	< 0.34	< 0.40	< 0.31 J	< 0.48	< 0.4	< 0.37	< 0.36	< 0.35	< 0.37	< 0.31	< 0.40
4-Nitroaniline	100-01-6	µg/L	< 0.19	< 0.18	< 0.18	< 1.8	< 1.8	< 0.31	< 0.63 J	< 0.48	< 0.2	< 0.19	< 0.18	< 0.18	< 2	< 1.7	< 0.31
4-Nitrophenol	100-02-7	µg/L	< 0.86	< 0.85 J	< 0.83	< 5.5	< 5.6	< 0.94	< 1.7 J	< 2.4	< 0.93	< 0.86	< 0.84 J	< 0.83	< 6.2	< 5.2	< 0.94
Acenaphthene	83-32-9	µg/L	< 0.03	< 0.03	< 0.014	< 0.015	< 0.022	< 0.021	< 0.017	< 0.017	< 0.018	< 0.03	< 0.03	< 0.014	< 0.016	< 0.020	< 0.021
Acenaphthylene	208-96-8	µg/L	< 0.041	< 0.041	< 0.016	< 0.017	< 0.025	< 0.025	< 0.0075	< 0.0074	< 0.0079	< 0.041	< 0.04	< 0.016	< 0.019	< 0.024	< 0.025
Acetophenone	98-86-2	µg/L	< 0.42	< 0.41	< 0.4	< 0.3	< 0.31	< 0.38	< 0.39 J	< 0.49	< 0.45	< 0.42	< 0.4	< 0.4	< 0.34	< 0.29	< 0.38
Anthracene	120-12-7	µg/L	< 0.027	< 0.026	< 0.01	< 0.011	< 0.022	< 0.021	< 0.023	< 0.022	< 0.024	< 0.027	< 0.026	< 0.01	< 0.012	< 0.020	< 0.021
Atrazine	1912-24-9	µg/L	< 0.41	< 0.4	< 0.39	< 0.52	< 0.52	< 0.44	< 0.3 J	< 0.65	< 0.44	< 0.41	< 0.4	< 0.39	< 0.58	< 0.49	< 0.44
Benzaldehyde	100-52-7	µg/L	< 0.42	< 0.42	< 0.4	< 3.5	< 3.5	< 0.70 J	< 0.82 J	< 1.7	< 0.45	< 0.42	< 0.41	< 0.4	< 3.9	< 3.3	< 0.70 J
Benzo(a)anthracene	56-55-3	µg/L	< 0.025	< 0.024	< 0.015	< 0.016	< 0.012	< 0.012	< 0.036	< 0.035	< 0.038	< 0.025	< 0.024	< 0.015	< 0.018	< 0.012	< 0.012
Benzo(a)pyrene	50-32-8	µg/L	< 0.032	< 0.032	< 0.0049	< 0.0052	< 0.013	< 0.013	< 0.038	< 0.037	< 0.04	< 0.032	< 0.031	< 0.0049	< 0.0058	< 0.012	< 0.013
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.037	< 0.037	< 0.016	< 0.017	< 0.011	< 0.011	< 0.018	< 0.018	< 0.019	< 0.037	< 0.037	< 0.016	< 0.019	< 0.010	< 0.011
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.03	< 0.03	< 0.01	< 0.011	< 0.017	< 0.016	< 0.013	< 0.012	< 0.013	< 0.03	< 0.029	< 0.01	< 0.012	< 0.016	< 0.016
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.029	< 0.029	< 0.013	< 0.013	< 0.016	< 0.015	< 0.02	< 0.02	< 0.021	< 0.029	< 0.029	< 0.013	< 0.015	< 0.015	< 0.015
Benzyl butyl phthalate	85-68-7	µg/L	< 0.26	< 0.26	< 0.25	< 0.31	< 0.31	< 0.23	< 0.69 J	< 0.44	< 0.28	< 0.26	< 0.25	< 0.25	< 0.34	< 0.29	< 0.23
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.26	< 0.26	< 0.25	< 0.33	< 0.33	< 0.44	< 0.34 J	< 0.54	< 0.28	< 0.26	< 0.25	< 0.25	< 0.37	< 0.31	< 0.44
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.32	< 0.32	< 0.31	< 0.33	< 0.33	< 0.45	< 0.72 J	< 0.52	< 0.35	< 0.32	< 0.31	< 0.31	< 0.37	< 0.31	< 0.45
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.41	< 0.4	< 0.39	< 0.48	< 0.49	< 0.42	< 0.62 J	< 0.57	< 0.44	< 0.41	< 0.4	< 0.39	< 0.54	< 0.45	< 0.42
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.34	< 0.34	< 0.33	< 0.62	< 0.63	< 0.58	< 0.94 BJ	< 0.79	< 0.37	< 0.34	< 0.33	< 0.33	< 0.7	< 0.59	< 0.58
Caprolactam	105-60-2	µg/L	< 0.2	< 0.2	< 0.2	< 0.73	< 0.74	< 0.42	< 0.53 J	< 0.66	< 0.22	< 0.2	< 0.2	< 0.2	< 0.82	< 0.69	< 0.42
Carbazole	86-74-8	µg/L	< 0.17	< 0.17	< 0.17	< 0.38	< 0.39	< 0.18	< 0.43 J	< 0.47	< 0.19	< 0.17	< 0.17	< 0.17	< 0.43	< 0.36	< 0.18
Chrysene	218-01-9	µg/L	< 0.023	< 0.023	< 0.023	< 0.025	< 0.013	< 0.012	< 0.019	< 0.019	< 0.02	< 0.023	< 0.022	< 0.023	< 0.028	< 0.012	< 0.012
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023	< 0.023	< 0.023	< 0.024	< 0.018	< 0.017	< 0.022	< 0.021	< 0.023	< 0.023	< 0.023	< 0.023	< 0.027	< 0.017	< 0.017
Dibenzofuran	132-64-9	µg/L	< 0.32	< 0.31	< 0.3	< 0.28	< 0.28	< 0.24	< 0.25 J	< 0.51	< 0.34	< 0.32	< 0.31	< 0.3	< 0.32	< 0.27	< 0.24
Diethyl phthalate	84-66-2	µg/L	< 0.17	< 0.17	< 0.17	< 0.35	< 0.35	< 0.24	< 0.37 J	< 0.38	< 0.19	< 0.17	< 0.17	< 0.17	< 0.39	< 0.33	< 0.24
Dimethyl phthalate	131-11-3	µg/L	< 0.23	< 0.23	< 0.23	< 0.3	< 0.30	< 0.27	< 0.36 J	< 0.38	< 0.25	< 0.23	< 0.23	< 0.23	< 0.34	< 0.28	< 0.27
di-n-butyl phthalate	84-74-2	µg/L	< 0.2	< 0.2	< 0.19	< 0.59	< 0.60	3.6	< 0.43 J	< 0.53	< 0.21	< 0.2	< 0.19	< 0.19	< 0.66	< 0.56	1.2 J
di-n-octylphthalate	117-84-0	µg/L	< 0.41	< 0.41	< 0.4	< 0.33	< 0.33	< 0.26	< 0.51 J	< 0.52	< 0.44	< 0.41	< 0.4	< 0.4	< 0.37	< 0.31	< 0.26
Fluoranthene	206-44-0	µg/L	< 0.025	< 0.025	< 0.0096	< 0.01	< 0.014	< 0.014	< 0.01	< 0.01	< 0.011	< 0.025	< 0.025	< 0.0096	< 0.011	< 0.013	< 0.014
Fluorene	86-73-7	µg/L	< 0.028	< 0.028	< 0.015	< 0.016	< 0.018	< 0.018	< 0.021	< 0.021	< 0.022	< 0.028	< 0.027	< 0.015	< 0.018	< 0.017	< 0.018
Hexachlorobenzene	118-74-1	µg/L	< 0.01	< 0.01	< 0.008	< 0.0085	< 0.018	< 0.017	< 0.011	< 0.01	< 0.011	< 0.01	< 0.01	< 0.008	< 0.0095	< 0.017	< 0.017
Hexachlorobutadiene	87-68-3	µg/L	< 0.39	< 0.13	< 0.13	< 0.54	< 0.55	R	< 0.14 J	< 0.39	< 0.42	< 0.39	< 0.13	< 0.13	< 0.61	< 0.51	R
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.7	< 0.25	< 0.24	< 7.6	< 7.6	< 0.50	< 0.11 J	< 4.8	< 0.76	< 0.7	< 0.25	< 0.24	< 8.5	< 7.1	< 0.50
Hexachloroethane	67-72-1	µg/L	< 0.27	< 0.22	< 0.21	< 0.59	< 0.59	R	< 0.17 J	< 0.32	< 0.3	< 0.27	< 0.21	< 0.21	< 0.65	< 0.55	R
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.03	< 0.03	< 0.011	< 0.011	< 0.015	< 0.015	< 0.015	< 0.015	< 0.016	< 0.03	< 0.03	< 0.011	< 0.013	< 0.014	< 0.015
Isophorone	78-59-1	µg/L	< 0.26	< 0.26	< 0.25	< 0.29	< 0.29	< 0.35	< 0.53 J	< 0.73	< 0.28	< 0.26	< 0.25	< 0.25	< 0.33	< 0.27	< 0.35
Naphthalene	91-20-3	µg/L	< 0.019	< 0.019	< 0.016	< 0.017	< 0.038	< 0.037	< 0.015	< 0.015	< 0.016	< 0.019	< 0.019	< 0.016	< 0.019	< 0.036	0.128
Nitrobenzene	98-95-3	µg/L	< 0.26	< 0.26	< 0.25	< 0.45	< 0.45	< 0.54	< 0.76 J	< 0.69	< 0.28	< 0.26	< 0.26	< 0.25	< 0.5	< 0.42	< 0.54
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.46	< 0.45	< 0.44	< 0.32	< 0.32	< 0.39	< 0.41 J	< 0.41	< 0.49	< 0.46	< 0.44	< 0.44	< 0.36	< 0.30	< 0.39
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.22	< 0.22	< 0.22	< 0.32	< 0.33	< 0.21	< 0.45 J	< 0.64	< 0.24	< 0.22	< 0.22	< 0.22	< 0.36	< 0.31	< 0.21
Pentachlorophenol	87-86-5	µg/L	< 0.23	< 0.07	< 0.29	< 0.11 J	< 0.11	< 0.10	< 0.24	< 0.23	< 0.25	< 0.23	< 0.069	< 0.29	< 0.12 J	< 0.10	< 0.10
Phenanthrene	85-01-8	µg/L	< 0.038	< 0.037	< 0.016	< 0.017	< 0.022	< 0.022	< 0.018	< 0.018	< 0.019	< 0.038	< 0.037	< 0.016	< 0.019	< 0.021	< 0.022
Phenol	108-95-2	µg/L	< 0.6	< 0.59	< 0.58	< 1.4	< 1.4	< 0.57	< 0.73 J	< 1.4	< 0.65	< 0.6	< 0.59	< 0.58	< 1.5	< 1.3	< 0.57
Pyrene	129-00-0	µg/L	< 0.023	< 0.023	< 0.0081	< 0.0086	< 0.016	< 0.016	< 0.013	< 0.013	< 0.014	< 0.023	< 0.023	< 0.0081	< 0.0096	< 0.015	< 0.016
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	< 26	< 7.8	< 200	51.2 J	57.6 J	104 J	< 24	< 114 J	420	57.3 B	< 7.8	236	327	75.2 J	157 J
Antimony, total	7440-36-0	µg/L	< 2.9	< 2.2	< 1.3	< 1.4	< 1.8	< 2.6	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3	< 1.4	< 1.8	< 2.6
Arsenic, total	7440-38-2	µg/L	< 2.4	1.9 B	< 0.92	< 0.97	1.9 B	3.5	< 1.7	< 1.7	< 2.4	< 2.4	< 1.4	< 0.92	< 0.97	< 1.5	< 2.6
Barium, total	7440-39-3	µg/L	12 B	12.1 B	4 J	12.6 J	12.3 B	13.4 B	6.5 B	8.5 BJ	9.4 B	8.5 B	7 B	8.9 J	8.5 J	9.0 B	9.2 B
Beryllium, total	7440-41-7	µg/L	< 0.4	< 0.24	< 0.24	< 0.44	< 0.17	< 0.40	< 0.15	< 0.15	< 0.4	< 0.4	< 0.24	< 0.24	< 0.44	< 0.17	< 0.40
Cadmium, total	7440-43-9	µg/L	< 0.4	< 0.35	< 0.17	< 0.24	< 0.24	< 0.70	< 0.28	< 0.28	0.4 B	< 0.4	< 0.35	< 0.17	< 0.24	< 0.24	< 0.70
Calcium, total	7440-70-2	µg/L	94300	91600	19300	102000	99500	104000	45100	34900 J	48700	44700	45300	50600	50000	54800	53000
Chromium, total	7440-47-3	µg/L	1.1 B	1.5 B	< 0.9	< 0.91	< 0.92	< 0.89	0.9 B	< 1.5	< 10	2.6 B	1.6 B	< 10	< 10	< 0.92	< 0.89
Cobalt, total	7440-48-4	µg/L	< 1.6	< 0.65	< 50	< 0.59	< 0.48	< 0.83	< 0.51	< 0.51	< 0.4	< 1.6	< 0.65	< 0.3	< 0.59	< 0.48	< 0.83
Copper, total	7440-50-8	µg/L	< 1.6	< 2.5	< 0.85	< 1.3	< 1.0	< 1.2	< 2.5	< 2.5	< 2	< 1.6	< 2.5	< 0.85	< 1.3	< 1.0	< 1.2
Iron, total	7439-89-6	µg/L	1730	2620	1350	5200	4020	4300	18.1 B	< 66.8 J	490 J	85.4 B	25 B	278	404	71.0 B	151
Lead, total	7439-92-1	µg/L	< 1.7	< 1.9	< 3	< 1.7	< 2.4	< 1.3	< 1.4	< 1.4	< 1.7	< 1.7	< 1.9	< 0.94	< 1.7	< 2.4	< 1.3
Magnesium, total	7439-95-4	µg/L	29400	29100	5910	31100	32100	31600	9630	7420	10200	8980	9430	10900	10600	11100	11000
Manganese, total	7439-96-5	µg/L	462	538	165	608	326	712	0.8 B	4.9 BJ	9.8 B	8.5 B	< 0.46	6.3 J	9 B	< 15 B	5.8 J
Mercury, total	7439-97-6	µg/L	< 0.082	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064
Nickel, total	7440-02-0	µg/L	< 10	1.7 B	< 10	< 0.94	< 1.6	< 0.75	< 1.2	< 1.2	< 10	< 10	0.7 B	< 10	2.5 B	< 1.6	< 0.75
Potassium, total	7440-09-7	µg/L	878 B	795 B	756 B	775 B	906 B	856 B	< 48 B	288 B	521 B	427 B	369 B	520 J	483 B	485 J	460 B
Selenium, total	7782-49-2	µg/L	< 3.7	3 B	< 1.5	< 2.4	2.6 B	4.5 B	< 1.6	< 1.6	< 3.7	< 3.7	< 1.9	< 1.5	< 2.4	< 2.4	< 3.6
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	15000	NA	NA	NA	NA	NA	NA	NA	NA	6770 B
Silver, total	7440-22-4	µg/L	< 1	< 0.53	< 0.72	< 10	< 1.5	< 1.2	< 1	< 1	< 1	< 1	< 0.53	< 0.72	< 0.85	< 1.5	< 1.2
Sodium, total	7440-23-5	µg/L	16800	15400	6540 B	15000	14800	15000	6090 B	5230 B	6210 B	6490 B	6150 B	6130 B	6030 B	6610 B	6820 B
Thallium, total	7440-28-0	µg/L	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8
Vanadium, total	7440-62-2	µg/L	< 0.9	< 0.56	< 0.43	< 0.77	< 0.72	< 0.87	< 0.43	< 0.43	< 0.9	< 0.9	< 0.56	< 0.43	< 50	< 0.72	< 0.87
Zinc, total	7440-66-6	µg/L	3.5 J	< 20	2.5 J	< 2.8	< 4.4	< 7.6	< 4	< 5.1	< 2.9	3.6 J	< 20	< 1.7	< 2.8	< 20 B	< 7.6
Other																	
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	OB-19 OB-19(080429) 4/29/2008	OB-19 OB-19(080912) 9/12/2008	OB-19 OB-19(070709) 7/7/2009	OB-19 OB-19(102709) 10/27/2009	OB-19 OB-19(060110) 6/1/2010	OB-19 OB-19 (052011) 5/20/2011	OB-19 OB-19 (042512) 4/25/2012	OB-19 OB-19(111113) 11/11/2013	OB-19 OB-19 (090414) 9/4/2014	OB-20A OB-20A(080429) 4/29/2008	OB-20A OB-20A(080915) 9/15/2008	OB-20A OB-20A(070909) 7/9/2009	OB-20A OB-20A(102809) 10/28/2009	OB-20A OB-20A(060210) 6/2/2010
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.16	< 0.24	1	< 0.29	< 0.29	0.54 J	< 0.19	< 0.26	< 0.35	0.63 J	< 0.24	< 0.29	< 0.29	< 0.29
1,1-Dichloroethene	75-35-4	µg/L	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86
Acetone	67-64-1	µg/L	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4	< 5	< 3.3	< 2.6	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9
Benzene	71-43-2	µg/L	0.56 J	0.37 J	1.2	0.39 J	0.29 J	0.9 J	0.32 J	< 0.28	< 0.21	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23
Bromodichloromethane	75-27-4	µg/L	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23
Bromomethane	74-83-9	µg/L	< 0.32	< 0.32	< 0.3	< 0.3 J	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3
Carbon disulfide	75-15-0	µg/L	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	0.22 J	< 0.22	< 0.35	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39
Chloroethane	75-00-3	µg/L	1.5	4.3	6.2	1.4 J	< 0.37	2.8	2.3	< 0.39	< 0.56	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.29 J	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29 J	< 0.29	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25
Cyclohexane	110-82-7	µg/L	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	0.38 J	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
Freon 113	76-13-1	µg/L	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.66	< 0.49	< 0.77	< 0.45	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38
Isopropylbenzene	98-82-8	µg/L	0.59 J	< 0.19	< 0.57	< 0.57	< 0.57	0.61 J	0.28 J	< 0.22	< 0.26	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57
Methyl acetate	79-20-9	µg/L	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23
Methylcyclohexane	108-87-2	µg/L	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3
o-Xylene	95-47-6	µg/L	0.81 J	< 0.45	0.84 J	< 0.25	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA
Styrene	100-42-5	µg/L	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27
Toluene	108-88-3	µg/L	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.27	< 0.15	< 0.38	< 0.22	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54
Vinyl Chloride	75-01-4	µg/L	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44
Xylene, -m,p	179601-23-1	µg/L	< 0.39	< 0.39	0.68 J	< 0.25	NA	NA	NA	NA	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA
Xylenes	1330-20-7	µg/L	0.81 J	< 0.39	1.5	< 0.25	< 0.25	0.36 J	< 0.17	< 0.19	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.24	< 0.61	< 0.42	< 0.44	< 0.49	< 0.42	< 0.34	< 0.34	< 0.28	< 0.24	NA	< 0.42	< 0.46	< 0.5
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.2	< 2.2	< 1.3	< 1.4	< 1.5	< 1.3	< 1.7	< 1.7	< 1.8	< 1.2	< 2	< 1.3	< 1.4	< 1.6
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.1	< 1.7	< 1.2	< 1.3	< 1.4	< 1.2	< 1.4	< 1.4	< 1.6	< 1.1	< 1.6	< 1.2	< 1.3	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 1.5	< 2.1	< 1.2	< 1.3	< 1.4	< 1.2	< 1.3	< 1.3	< 1.7	< 1.5	< 1.9	< 1.2	< 1.3	< 1.4
2,4-Dimethylphenol	105-67-9	µg/L	< 1.8	< 2.2	< 1.7	< 1.7	< 1.9	< 1.7	< 1.7	< 1.7	< 1.9	< 1.8	< 2	< 1.7	< 1.8	< 1.9
2,4-Dinitrophenol	51-28-5	µg/L	< 1.2	< 4.6	< 0.74	< 0.78 J	< 0.86	< 0.74	< 18	< 18	< 6.7	< 1.2	< 4.2	< 0.74	< 0.8	< 0.87
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.59	< 0.5	< 0.22	< 0.23 J	< 0.26	< 0.22	< 0.47	< 0.47	< 0.33	< 0.58	< 0.45	< 0.22	< 0.24 J	< 0.26
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.54	< 0.67	< 0.33	< 0.34	< 0.38	< 0.33	< 0.51	< 0.51	< 0.26	< 0.54	< 0.6	< 0.33	< 0.35	< 0.38
2-Chloronaphthalene	91-58-7	µg/L	< 0.22	< 0.53	< 0.42	< 0.44	< 0.48	< 0.42	< 0.33	< 0.33	< 0.36	< 0.21	< 0.48	< 0.42	< 0.45	< 0.49
2-Chlorophenol	95-57-8	µg/L	< 0.95	< 1.6	< 1.1	< 1.1	< 1.2	< 1.1	< 1.1	< 1.1	< 1.3	< 0.94	< 1.5	< 1.1	< 1.2	< 1.3
2-Methylnaphthalene	91-57-6	µg/L	< 0.83	< 0.48	< 0.66	< 0.69	< 0.77	< 0.66	< 0.43	< 0.43	< 0.30	< 0.82	< 0.43	< 0.66	< 0.72	< 0.77
2-Methylphenol	95-48-7	µg/L	< 1.1	< 1.5	< 1.1	< 1.2	< 1.3	< 1.1	< 1.2	< 1.2	< 1.3	< 1.1	< 1.4	< 1.1	< 1.2	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 0.54	< 0.49	< 0.24	< 0.25	< 0.27	< 0.24	< 1.2	< 1.2	< 0.33	< 0.53	< 0.45	< 0.24	< 0.26	< 0.28
2-Nitrophenol	88-75-5	µg/L	< 1.6	< 2.1	< 1.2	< 1.3	< 1.4	< 1.2	< 1.7	< 1.7	< 1.9	< 1.6	< 1.9	< 1.2	< 1.3	< 1.5
3&4-Methylphenol	12-03-3	µg/L	< 1.2	< 1.6	< 1	< 1.1	< 1.2	< 1	< 1	< 1.0	< 1.1	< 1.2	< 1.5	< 1	< 1.1	< 1.2
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1	< 5	< 0.3	< 0.31	< 0.34	< 0.3	< 0.4	< 0.40	< 0.58	< 1	< 4.6	< 0.3	< 0.32	< 0.35
3-Nitroaniline	99-09-2	µg/L	< 0.35	< 0.5	< 0.29	< 0.3	< 0.33	< 0.29	< 1.4	< 1.4 J	< 0.27	< 0.35	< 0.45	< 0.29	< 0.31	< 0.34
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.4	< 1.3	< 0.51	< 0.54	< 0.6	< 0.51	< 1.1	< 1.1	< 1.4	< 2.4	< 1.2	< 0.51	< 0.56	< 0.6
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.41	< 0.46	< 0.35	< 0.37	< 0.41	< 0.35	< 0.4	< 0.40	< 0.26	< 0.4	< 0.41	< 0.35	< 0.38	< 0.41
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.3	< 2.5	< 1.1	< 1.1	< 1.2	< 1.1	< 2	< 2.0	< 1.3	< 1.3	< 2.3	< 1.1	< 1.1	< 1.2
Semi-Volatile Organic Compounds																

Location ID Sample ID Sample Date	CAS	Units	OB-19 OB-19(080429) 4/29/2008	OB-19 OB-19(080912) 9/12/2008	OB-19 OB-19(070709) 7/7/2009	OB-19 OB-19(102709) 10/27/2009	OB-19 OB-19(060110) 6/1/2010	OB-19 OB-19 (052011) 5/20/2011	OB-19 OB-19 (042512) 4/25/2012	OB-19 OB-19(111113) 11/11/2013	OB-19 OB-19 (090414) 9/4/2014	OB-20A OB-20A(080429) 4/29/2008	OB-20A OB-20A(080915) 9/15/2008	OB-20A OB-20A(070909) 7/9/2009	OB-20A OB-20A(102809) 10/28/2009	OB-20A OB-20A(060210) 6/2/2010
4-Chloroaniline	106-47-8	µg/L	< 0.38	< 0.37	< 0.25	< 0.27	< 0.29	< 0.25	< 0.59	< 0.59	< 0.31	< 0.37	< 0.33	< 0.25	< 0.28	< 0.3
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.32	< 0.5	< 0.35	< 0.37	< 0.41	< 0.35	< 0.35	< 0.35	< 0.39	< 0.31	< 0.45	< 0.35	< 0.38	< 0.42
4-Nitroaniline	100-01-6	µg/L	< 0.64	< 0.5	< 0.18	< 0.19	< 0.21	< 0.18	< 1.8	< 1.8 J	< 0.31	< 0.63	< 0.45	< 0.18	< 0.19	< 0.21
4-Nitrophenol	100-02-7	µg/L	< 1.7	< 2.5	< 0.83	< 0.87	< 0.96	< 0.83	< 5.8	< 5.8	< 0.94	< 1.7	< 2.3	< 0.83	< 0.9	< 0.97
Acenaphthene	83-32-9	µg/L	< 0.017	< 0.018	< 0.016	< 0.031	< 0.034	< 0.014	< 0.015	< 0.023	< 0.021	< 0.017	< 0.016	< 0.016	< 0.032	< 0.034
Acenaphthylene	208-96-8	µg/L	< 0.0076	< 0.0077	< 0.007	< 0.041	< 0.046	< 0.016	< 0.018	< 0.026	< 0.024	< 0.0075	< 0.007	< 0.007	< 0.043	< 0.046
Acetophenone	98-86-2	µg/L	< 0.39	< 0.51	< 0.4	< 0.42	< 0.46	< 0.4	< 0.32	< 0.32	< 0.38	< 0.39	NA	< 0.4	< 0.43	< 0.47
Anthracene	120-12-7	µg/L	< 0.023	< 0.023	< 0.021	< 0.027	< 0.03	< 0.01	< 0.011	< 0.023	< 0.021	< 0.023	< 0.021	< 0.021	< 0.028	< 0.03
Atrazine	1912-24-9	µg/L	< 0.31	< 0.68	< 0.39	< 0.41 J	< 0.45	< 0.39	< 0.54	< 0.54	< 0.44	< 0.3	NA	< 0.39	< 0.43	< 0.46
Benzaldehyde	100-52-7	µg/L	< 0.83	< 1.8	< 0.4	< 0.43	< 0.47	< 0.4	< 3.6	< 3.6	< 0.70 J	< 0.82	NA	< 0.4	< 0.44	< 0.48
Benzo(a)anthracene	56-55-3	µg/L	< 0.037	< 0.037	< 0.034	< 0.025	< 0.028	< 0.015	< 0.017	< 0.013	< 0.012	< 0.036	< 0.034	< 0.034	< 0.026	< 0.028
Benzo(a)pyrene	50-32-8	µg/L	< 0.039	< 0.039	< 0.036	< 0.032	< 0.036	< 0.0049	< 0.0054	< 0.014 J	< 0.013	< 0.038	< 0.036	< 0.036	< 0.033	< 0.036
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.018	< 0.019	< 0.017	< 0.038	< 0.042	< 0.016	< 0.018	< 0.011	< 0.010	< 0.018	< 0.017	< 0.017	< 0.039	< 0.042
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.013	< 0.013	< 0.012	< 0.03	< 0.033	< 0.01	< 0.011	< 0.017 J	< 0.016	< 0.013	< 0.012	< 0.012	< 0.031	< 0.034
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.02	< 0.021	< 0.019	< 0.03	< 0.033	< 0.013	< 0.014	< 0.016	< 0.015	< 0.02	< 0.019	< 0.019	< 0.031	< 0.033
Benzyl butyl phthalate	85-68-7	µg/L	< 0.69	< 0.46	< 0.25	< 0.26	< 0.29	< 0.25	< 0.32	< 0.32	< 0.23	< 0.69	< 0.42	< 0.25	< 0.27	< 0.3
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.35	< 0.57	< 0.25	< 0.26	< 0.29	< 0.25	< 0.34	< 0.34	< 0.43	< 0.34	< 0.52	< 0.25	< 0.27	< 0.29
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.73	< 0.54	< 0.31	< 0.33	< 0.36	< 0.31	< 0.34 J	< 0.34	< 0.45	< 0.72	< 0.49	< 0.31	< 0.34	< 0.36
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.63	< 0.6	< 0.39	< 0.41	< 0.45	< 0.39	< 0.5	< 0.50	< 0.42	< 0.62	< 0.54	< 0.39	< 0.42	< 0.46
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.95	< 0.83	< 0.33	< 0.34	< 0.38	< 0.33	< 0.65	< 0.65	< 0.57	< 0.94 J	< 0.75	< 2	< 2.2 J	< 0.38
Caprolactam	105-60-2	µg/L	< 0.53	< 0.69	< 0.2	< 0.21	< 0.23	< 0.2	< 0.77 J	< 0.77	< 0.42	< 0.53	NA	< 0.2	< 0.21	< 0.23
Carbazole	86-74-8	µg/L	< 0.43	< 0.5	< 0.17	< 0.17	< 0.19	< 0.17	< 0.4	< 0.40	< 0.17	< 0.43	< 0.45	< 0.17	< 0.18	< 0.19
Chrysene	218-01-9	µg/L	< 0.019	< 0.019	< 0.018	< 0.023	< 0.026	< 0.023	< 0.026	< 0.013	< 0.012	< 0.019	< 0.018	< 0.018	< 0.024	< 0.026
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.022	< 0.022	< 0.02	< 0.024	< 0.026	< 0.023	< 0.025	< 0.018 J	< 0.017	< 0.022	< 0.02	< 0.02	< 0.024	< 0.026
Dibenzofuran	132-64-9	µg/L	< 0.25	< 0.54	< 0.3	< 0.32	< 0.35	< 0.3	< 0.29	< 0.29	< 0.24	< 0.25	< 0.49	< 0.3	< 0.33	< 0.36
Diethyl phthalate	84-66-2	µg/L	< 0.37	< 0.4	< 0.17	< 0.17	< 0.19	< 0.17	< 0.36	< 0.36	< 0.24	< 0.37	< 0.36	< 0.17	< 0.18	< 0.19
Dimethyl phthalate	131-11-3	µg/L	< 0.37	< 0.4	< 0.23	< 0.24	< 0.26	< 0.23	< 0.31	< 0.31	< 0.27	< 0.36	< 0.36	< 0.23	< 0.24	< 0.26
di-n-butyl phthalate	84-74-2	µg/L	< 0.43	< 0.55	< 0.19	< 0.2	< 0.22	< 0.19	< 0.62	< 0.62	< 7.9 B	< 0.43	< 0.5	< 0.19	< 0.21	< 0.22
di-n-octylphthalate	117-84-0	µg/L	< 0.52	< 0.55	< 0.4	< 0.42	< 0.46	< 0.4	< 0.34	< 0.34	< 0.26	< 0.51	< 0.5	< 0.4	< 0.43	< 0.46
Fluoranthene	206-44-0	µg/L	< 0.01	< 0.011	< 0.0096	< 0.026	< 0.028	< 0.0096	< 0.011	< 0.015	< 0.014	< 0.01	< 0.0096	< 0.0096	< 0.026	< 0.029
Fluorene	86-73-7	µg/L	< 0.021	< 0.022	< 0.02	< 0.028	< 0.031	< 0.015	< 0.017	< 0.019	< 0.018	< 0.021	< 0.02	< 0.02	< 0.029	< 0.032
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.011	< 0.0099	< 0.01	< 0.012	< 0.008	< 0.0089	< 0.018	< 0.017	< 0.011	< 0.0099	< 0.0099	< 0.011	< 0.012
Hexachlorobutadiene	87-68-3	µg/L	< 0.14	< 0.41	< 0.37	< 0.39	< 0.15	< 0.13	< 0.57	< 0.57	R	< 0.14	< 0.38	< 0.37	< 0.4 J	< 0.15
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.11	< 5	< 0.67	< 0.71	< 0.28	< 0.24	< 7.9	< 7.9	< 0.50	< 0.11	< 4.5	< 0.67	< 0.73	< 0.29
Hexachloroethane	67-72-1	µg/L	< 0.18	< 0.33	< 0.26	< 0.28	< 0.24	< 0.21	< 0.61	< 0.61	R	< 0.17	< 0.3	< 0.26	< 0.29	< 0.25
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.016	< 0.016	< 0.014	< 0.031	< 0.034	< 0.011	< 0.012	< 0.016 J	< 0.015	< 0.015	< 0.014	< 0.014	< 0.032	< 0.034
Isophorone	78-59-1	µg/L	< 0.53	< 0.76	< 0.25	< 0.26	< 0.29	< 0.25	< 0.3	< 0.30	< 0.35	< 0.53	< 0.69	< 0.25	< 0.27	< 0.29
Naphthalene	91-20-3	µg/L	0.264	< 0.015	0.693	< 0.019	< 0.022	0.765	< 0.018	< 0.039	< 0.037	< 0.015	< 0.014	< 0.014	< 0.02	< 0.022
Nitrobenzene	98-95-3	µg/L	< 0.77	< 0.73	< 0.25	< 0.27	< 0.29	< 0.25	< 0.47	< 0.47	< 0.54	< 0.76	< 0.66	< 0.25	< 0.28	< 0.3
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.42	< 0.44	< 0.44	< 0.46	< 0.51	< 0.44	< 0.34	< 0.34	< 0.39	< 0.41	< 0.39	< 0.44	< 0.48	< 0.52
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.45	< 0.67	< 0.22	< 0.23	< 0.25	< 0.22	< 0.34	< 0.34	< 0.21	< 0.45	< 0.61	< 0.22	< 0.23	< 0.25
Pentachlorophenol	87-86-5	µg/L	< 0.24	< 0.25	< 0.22	< 0.23	< 0.079	< 0.29	< 0.11	< 0.11	< 0.10	< 0.24	< 0.22	< 0.22	< 0.24 J	< 0.08
Phenanthrene	85-01-8	µg/L	< 0.018	< 0.019	< 0.017	< 0.038	< 0.042	< 0.016	< 0.017	< 0.023	< 0.022	< 0.018	< 0.017	< 0.017	< 0.039	< 0.042
Phenol	108-95-2	µg/L	< 0.74	< 1.5	< 0.58	< 0.61	< 0.67	< 0.58	< 1.4	< 1.4	< 0.57	< 0.73	< 1.4	< 0.58	< 0.63	< 0.68
Pyrene	129-00-0	µg/L	< 0.013	< 0.013	< 0.012	< 0.023	< 0.026	< 0.0081	< 0.009	< 0.017	< 0.016	< 0.013	< 0.012	< 0.012	< 0.024	< 0.026
Metals - Total																
Aluminum, total	7429-90-5	µg/L	48.1 B	< 56.5 J	< 200	114 J	120 J	136 B	55.4 B	89.6 J	65.0 J	216	367 J	< 200	158 B	192 B
Antimony, total	7440-36-0	µg/L	< 1.8	< 1.8	< 4	< 2.9	< 2.2	1.3 B	< 6	< 1.8	< 2.6	< 1.8	< 1.8	< 4	< 2.9	3.2 B
Arsenic, total	7440-38-2	µg/L	< 1.7	4 J	< 2.4	< 2.4	< 1.4	< 0.92	< 0.97	< 1.5	6.0	3.7	7.8	< 3	< 2.4	7.9
Barium, total	7440-39-3	µg/L	64.2 B	78.8 BJ	116 B	109 B	61.7 J	118 B	94.5 B	78.1 B	80.9 B	91.9 B	113 B	121 B	160 B	92.9 B
Beryllium, total	7440-41-7	µg/L	< 0.15	< 0.15	< 0.4	< 0.4	< 0.24	< 0.24	< 0.44	< 0.17	< 0.40	< 0.15	< 0.15	< 1	< 0.4	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.28	< 0.4	0.6 B	< 0.4	< 0.35	< 0.17	< 3	< 0.24	< 0.70	< 0.28	0.3 B	< 0.4	< 0.4	< 0.35
Calcium, total	7440-70-2	µg/L	9740	16300	20400	20400	10500	18100	12600	13300	14600	23500	23300	27000	33700	22200
Chromium, total	7440-47-3	µg/L	0.7 B	0.9 BJ	1.2 B	1.2 B	< 10	1 B	< 0.91	< 10 B	1.4 B	1.1 B	1.1 BJ	< 10	< 10	< 0.59
Cobalt, total	7440-48-4	µg/L	0.7 B	1.5 BJ	0.4 B	< 1.6	< 0.65	0.6 B	< 0.59	< 0.48	< 0.83	3.4 B	3.5 B	< 50	< 1.6	< 0.65
Copper, total	7440-50-8	µg/L	8.1 B	< 0.7	3.6 B	< 1.6 J	< 2.5	2.6 B	< 1.3	2.3 J	< 1.2	5.6 B	1.4 B	< 10	< 1.6	< 2.5
Iron, total	7439-89-6	µg/L	10100	20000	37500 J	20500	19300	20700	15900	14600	25500 J	28200	24400	26800 J	30900 J	31400
Lead, total	7439-92-1	µg/L	1.4 B	< 1.4	< 1.7	< 1.7	< 1.9	3.5	< 1.7	< 2.4	< 1.3	2.1 B	< 1.4	< 1.7	< 1.7	1.9 B
Magnesium, total	7439-95-4	µg/L	1600 B	2850 B	3280 B	3530 B	1610 B	2720 B	2080 B	2650 B	2590 B	2600 B	2450 B	3130 B	3370 B	2310 B
Manganese, total	7439-96-5	µg/L	180	755	447	394 J	351	353	322	386	1150	885	1300	685	964	1160
Mercury, total	7439-97-6	µg/L	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082
Nickel, total	7440-02-0	µg/L	1.3 B	< 2	< 0.6	1.4 J	0.7 B	3.1 B	< 0.94	< 1.6	< 0.75	2.5 B	4.5 B	< 10	1.8 B	< 10
Potassium, total	7440-09-7	µg/L	717 B	1220 BJ	1160 B	1370 B	978 B	1230 B	1020 B	965 B	1060 B	1700 B	2430 B	2170 B	2840 J	1840 B
Selenium, total	7782-49-2	µg/L	< 1.6	2.3 B	< 10	< 3.7	3.1 B	< 1.5	< 2.4	4.4 B	< 3.6	< 1.6	< 1.6	< 3.7	< 3.7	< 10
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	5330	NA	3020 B	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1	< 1	< 1	< 1	< 0.53	< 0.72	< 0.85	1.7 B	1.4 B	< 1	< 1	< 1	< 1	< 0.53
Sodium, total	7440-23-5	µg/L	2160 B	< 3200	2790 B	3500 B	2370 J	2510 B	2680 B	3370 B	3080 B	2390 B	3230 B	2920 B	3290 B	2050 B
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8	< 1.3	< 1.3	< 1.5	1.5 B	< 1.8
Vanadium, total	7440-62-2	µg/L	1.5 B	1.9 BJ	2.3 BJ	1.8 B	2.6 J	1.5 B	1.6 B	< 50 B	2.4 B	1.9 B	3.3 B	< 50	< 0.9	2.7 B
Zinc, total	7440-66-6	µg/L	22.7	< 27.4 J	20.2 J	10.3 B	8.8 J	61.6	15.8 B	11.4 B	17.6 B	17.4 B	84.9	9.3 BJ	18.4 B	12.1 J
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	OB-20A OB-20A(051811) 5/18/2011	OB-20A OB-20A (042712) 4/27/2012	OB-20A OB-20A (110813) & DUP 11/8/2013	OB-20A OB-20A (090514) 9/5/2014	OB-20B OB-20B(080429) 4/29/2008	OB-20B OB-20B(080915) 9/15/2008	OB-20B OB-20B(070909) 7/9/2009	OB-20B OB-20B(102809) 10/28/2009	OB-20B OB-20B(060210) 6/2/2010	OB-20B OB-20B(051811) 5/18/2011	OB-20B OB-20B (042712) 4/27/2012	OB-20B OB-20B (110813) 11/8/2013	OB-20B OB-20B (090514) 9/5/2014
Volatile Organic Compounds															
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24 [< 0.24]	< 0.24	< 0.25 [< 0.25]	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.24	< 0.24	< 0.25	< 0.32
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.2 [< 0.2]	< 0.2	< 0.20 [< 0.20]	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.2	< 0.2	< 0.20	< 0.39
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23 [< 0.23]	< 0.23	< 0.21 [< 0.21]	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.21	< 0.28
1,1-Dichloroethane	75-34-3	µg/L	< 0.19 [< 0.19]	< 0.19	< 0.26 [< 0.26]	< 0.35	0.4 J	< 0.24	< 0.29	< 0.29	0.46 J	0.36 J	0.36 J	< 0.26	< 0.35
1,1-Dichloroethene	75-35-4	µg/L	< 0.28 [< 0.28]	< 0.28	< 0.34 [< 0.34]	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.28	< 0.28	< 0.34	< 0.50
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.15 [< 0.15]	< 0.15	< 0.22 [< 0.22]	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.15	< 0.15	< 0.22	< 0.22
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3 [< 1.3]	< 1.3*	< 1.3 [< 1.3]	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.3	< 1.3*	< 1.3	< 1.2
1,2-Dibromoethane	106-93-4	µg/L	< 0.21 [< 0.21]	< 0.21*	< 0.16 [< 0.16]	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.21	< 0.21*	< 0.16	< 0.23
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18 [< 0.18]	< 0.18	< 0.20 [< 0.20]	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.18	< 0.18	< 0.20	< 0.16
1,2-Dichloroethane	107-06-2	µg/L	< 0.18 [< 0.18]	< 0.18	< 0.22 [< 0.22]	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.18	< 0.18	< 0.22	< 0.30
1,2-Dichloropropane	78-87-5	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.28 [< 0.28]	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.22	< 0.22	< 0.28	< 0.43
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.29 [< 0.29]	< 0.29	< 0.31 [< 0.31]	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.29	< 0.29	< 0.31	< 0.26
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.26 [< 0.26]	< 0.26	< 0.30 [< 0.30]	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.26	< 0.26	< 0.30	< 0.24
2-Butanone (MEK)	78-93-3	µg/L	< 2.9 [< 2.9]	< 2.9	< 3.2 [< 3.2]	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 2.9	< 2.9	< 3.2	< 2.5
2-Hexanone	591-78-6	µg/L	< 3 [< 3]	< 3	< 1.7 [< 1.7]	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 3	< 3	< 1.7	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.2 [< 1.2]	< 1.2	< 1.5 [< 1.5]	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 1.2	< 1.2	< 1.5	< 1.1
Acetone	67-64-1	µg/L	< 7.6 [< 7.6]	< 5	< 3.3 [< 3.3]	< 2.6	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 7.6	< 5	7.3 J	< 2.6
Benzene	71-43-2	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.28 [< 0.28]	< 0.21	1.4	0.9 J	0.83 J	0.77 J	1.1	0.86 J	0.66 J	0.52 J	0.37 J
Bromodichloromethane	75-27-4	µg/L	< 0.23 [< 0.23]	< 0.23	< 0.21 [< 0.21]	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.23	< 0.23	< 0.21	< 0.28
Bromoform	75-25-2	µg/L	< 0.24 [< 0.24]	< 0.24	< 0.30 [< 0.30]	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.24	< 0.24	< 0.30	< 0.31
Bromomethane	74-83-9	µg/L	< 0.31 [< 0.31]	< 0.31	< 0.56 [< 0.56]	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.31	< 0.31	< 0.56	< 0.39
Carbon disulfide	75-15-0	µg/L	< 0.18 [< 0.18]	< 0.18	< 0.18 [< 0.18]	< 0.50	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.18	< 0.18	< 0.18	< 0.50
Carbon tetrachloride	56-23-5	µg/L	< 0.19 [< 0.19]	< 0.19	< 0.23 [< 0.23]	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.19	< 0.19	< 0.23	< 0.24
Chlorobenzene	108-90-7	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.35 [< 0.35]	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.22	< 0.22	< 0.35	< 0.27
Chloroethane	75-00-3	µg/L	< 0.37 [< 0.37]	< 0.37	< 0.39 [< 0.39]	< 0.56	2.1	1.9	1.6	1.2	1.3	1.5	1.6 J	1.5	1.1
Chloroform	67-66-3	µg/L	< 0.21 [< 0.21]	< 0.21	< 0.25 [< 0.25]	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21	< 0.25	< 0.20
Chloromethane	74-87-3	µg/L	< 0.22 J [< 0.22 J]	< 0.22	< 0.36 [< 0.36]	< 0.33	< 0.29	< 0.29 J	< 0.29	< 0.29	< 0.29	< 0.22 J	< 0.22	< 0.36	< 0.33
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.24 [< 0.24]	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.24	< 0.33
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.22 [< 0.22]	< 0.22	< 0.15 [< 0.15]	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.22	< 0.22	< 0.15	< 0.28
Cyclohexane	110-82-7	µg/L	< 0.29 [< 0.29]	< 0.29	0.21 J [R]	< 0.37	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	0.68 J	0.43 J	0.70 J	0.70 J
Dibromochloromethane	124-48-1	µg/L	< 0.2 [< 0.2]	< 0.2	< 0.19 [< 0.19]	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.2	< 0.2	< 0.19	< 0.25
Dichlorodifluoromethane	75-71-8	µg/L	< 0.31 J [< 0.31 J]	< 0.31	< 0.63 [< 0.63]	< 0.73	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.31 J	< 0.31	< 0.63	< 0.73
Ethylbenzene	100-41-4	µg/L	< 0.21 [< 0.21]	< 0.21	< 0.21 [< 0.21]	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.21	< 0.21	< 0.21	< 0.40
Freon 113	76-13-1	µg/L	< 0.49 [< 0.49]	< 0.49	< 0.77 J [< 0.77 J]	< 0.45	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.49	< 0.49	< 0.77	< 0.45
Isopropylbenzene	98-82-8	µg/L	< 0.19 [< 0.19]	< 0.19	< 0.22 [< 0.22]	< 0.26	1.4 J	< 0.19	< 0.57	< 0.57	1 J	0.48 J	< 0.19	0.34 J	0.37 J
Methyl acetate	79-20-9	µg/L	< 2.9 [< 2.9]	< 2.9	< 1.5 [< 1.5]	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 2.9	< 2.9	< 1.5	< 3.1
Methyl tert butyl ether	1634-04-4	µg/L	< 0.18 [< 0.18]	< 0.18	< 0.29 [< 0.29]	< 0.26	< 0.14	< 0.16	< 0.23	< 0.23	< 0.23	< 0.18	< 0.18	< 0.29	< 0.26
Methylcyclohexane	108-87-2	µg/L	< 0.18 [< 0.18]	< 0.18	< 0.15 [< 0.15]	< 0.22	0.25 J	< 0.11	< 0.35	< 0.35	< 0.35	0.4 J	0.45 J	0.50 J	0.52 J
Methylene chloride	75-09-2	µg/L	< 0.2 [< 0.2]	< 0.2	< 0.86 [< 0.86]	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81
o-Xylene	95-47-6	µg/L	NA	NA	< 0.30 [< 0.30]	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	< 0.30	NA
Styrene	100-42-5	µg/L	< 0.23 [< 0.23]	< 0.23	NA [NA]	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.23	< 0.23	NA	< 0.26
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	< 0.25 [< 0.25]	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA
Tetrachloroethene	127-18-4	µg/L	< 0.32 [< 0.32]	< 0.32	< 0.44 [< 0.44]	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.32	< 0.32	< 0.44	< 0.35
Toluene	108-88-3	µg/L	< 0.15 [< 0.15]	< 0.15	< 0.38 [< 0.38]	< 0.22	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.15	< 0.15	< 0.38	< 0.22
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.31 [< 0.31]	< 0.31	< 0.21 [< 0.21]	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.31	< 0.31	< 0.21	< 0.51
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19 [< 0.19]	< 0.19	< 0.50 [< 0.50]	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.19	< 0.19	< 0.50	< 0.32
Trichloroethene	79-01-6	µg/L	< 0.21 [< 0.21]	< 0.21	< 0.33 [< 0.33]	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.21	< 0.21	< 0.33	< 0.25
Trichlorofluoromethane	75-69-4	µg/L	< 0.35 [< 0.35]	< 0.35	< 0.41 [< 0.41]	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.35	< 0.35	< 0.41	< 0.28
Vinyl Chloride	75-01-4	µg/L	< 0.27 [< 0.27]	< 0.27	NA [NA]	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.27	< 0.27	NA	< 0.17
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA [NA]	NA	3.2	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.17 [< 0.17]	< 0.17	< 0.19 [< 0.19]	< 0.20	3.2	< 0.39	< 0.25	< 0.25	4.4	< 0.17	< 0.17	0.22 J	0.39 J
Semi-Volatile Organic Compounds															
1,1'-Biphenyl	92-52-4	µg/L	< 0.42 [< 0.42]	< 0.33	< 0.30 [< 0.30]	< 0.27 J	< 0.22	NA	< 0.42	< 0.46	< 0.45	< 0.42	< 0.3	< 0.30	< 0.27 J
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.3 [< 1.3]	< 1.7	< 1.6 [< 1.6]	< 1.7 J	< 1.1	< 2	< 1.3	< 1.4	< 1.4	< 1.3	< 1.6	< 1.6	< 1.7 J
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.2 [< 1.2]	< 1.4	< 1.3 [< 1.3]	< 1.5 J	< 1	< 1.6	< 1.2	< 1.3	< 1.3	< 1.2	< 1.3	< 1.3	< 1.5 J
2,4-Dichlorophenol	120-83-2	µg/L	< 1.2 [< 1.2]	< 1.3	< 1.2 [< 1.2]	< 1.6 J	< 1.4	< 1.9	< 1.2	< 1.3	< 1.3	< 1.2	< 1.2	< 1.2	< 1.6 J
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7 [< 1.7]	< 1.7	< 1.5 [< 1.5]	< 1.8 J	< 1.7	< 2	< 1.7	< 1.8	< 1.8	< 1.7	< 1.5	< 1.5	< 1.8 J
2,4-Dinitrophenol	51-28-5	µg/L	< 0.74 [< 0.74 J]	< 18	< 17 [< 17]	< 6.5 J	< 1.1	< 4.2	< 0.74	< 0.8	< 0.78	< 0.74	< 17	< 17	< 6.5 J
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.22 [< 0.22]	< 0.47	< 0.43 [< 0.43]	< 0.32 J	< 0.54	< 0.45	< 0.22	< 0.24 J	< 0.23	< 0.22	< 0.43	< 0.43	< 0.32 J
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.33 [< 0.33]	< 0.51	< 0.46 [< 0.46]	< 0.26 J	< 0.5	< 0.6	< 0.33	< 0.35	< 0.35	< 0.33	< 0.46	< 0.46	< 0.26 J
2-Chloronaphthalene	91-58-7	µg/L	< 0.42 [< 0.42]	< 0.33	< 0.30 [< 0.30]	< 0.34 J	< 0.2	< 0.48	< 0.42	< 0.45	< 0.44	< 0.42	< 0.3	< 0.30	< 0.34 J
2-Chlorophenol	95-57-8	µg/L	< 1.1 [< 1.1]	< 1.1	< 0.97 [< 0.97]	< 1.3 J	< 0.87	< 1.5	< 1.1	< 1.2	< 1.1	< 1.1	< 0.97	< 0.97	< 1.3 J
2-Methylnaphthalene	91-57-6	µg/L	< 0.66 [< 0.66]	< 0.42	< 0.38 [< 0.38]	< 0.29 J	< 0.76	< 0.43	< 0.66	< 0.72	< 0.7	< 0.66	< 0.38	< 0.38	< 0.29 J
2-Methylphenol	95-48-7	µg/L	< 1.1 [< 1.1]	< 1.1	< 1.0 [< 1.0]	< 1.3 J	< 1	< 1.4	< 1.1	< 1.2	< 1.2	< 1.1	< 1	< 1.0	< 1.3 J
2-Nitroaniline	88-74-4	µg/L	< 0.24 [< 0.24]	< 1.2	< 1.1 [< 1.1]	< 0.32 J	< 0.5	< 0.45	< 0.24	< 0.26	< 0.25	< 0.24	< 1.1	< 1.1	< 0.32 J
2-Nitrophenol	88-75-5	µg/L	< 1.2 [< 1.2]	< 1.7	< 1.5 [< 1.5]	< 1.9 J	< 1.5	< 1.9	< 1.2	< 1.3	< 1.3	< 1.2	< 1.5	< 1.5	< 1.9 J
3&4-Methylphenol	12-03-3	µg/L	< 1 [< 1]	< 1	< 0.93 [< 0.93]	< 1.1 J	< 1.1	< 1.5	< 1	< 1.1	< 1.1	< 1	< 0.93	< 0.93	< 1.1 J
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.3 [< 0.3]	< 0.4	< 0.36 [< 0.36]	< 0.56 J	< 0.97	< 4.6	< 0.3	< 0.32	< 0.31	< 0.3	< 0.36	< 0.36	< 0.56 J
3-Nitroaniline	99-09-2	µg/L	< 0.29 [< 0.29]	< 1.4	< 1.3 [< 1.3]	< 0.26 J	< 0.32	< 0.45	< 0.29	< 0.31	< 0.31	< 0.29	< 1.3	< 1.3	< 0.26 J
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.51 [< 0.51]	< 1.1	< 0.99 [< 0.99]	< 1.3 J	< 2.2	< 1.2	< 0.51	< 0.56	< 0.55	< 0.51	< 0.99	< 0.99	< 1.3 J
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.35 [< 0.35]	< 0.39	< 0.36 [< 0.36]	< 0.25 J	< 0.37	< 0.41	< 0.35	< 0.38	< 0.37	< 0.35	< 0.36	< 0.36	< 0.25 J
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.1 [< 1.1]	< 2	< 1.8 [< 1.8]	< 1.3 J	< 1.2	< 2.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.8	< 1.8	< 1.3 J
Semi-Volatile Organic Compounds															

Location ID Sample ID Sample Date	CAS	Units	OB-20A OB-20A(051811) 5/18/2011	OB-20A OB-20A (042712) 4/27/2012	OB-20A OB-20A (110813) & DUP 11/8/2013	OB-20A OB-20A (090514) 9/5/2014	OB-20B OB-20B(080429) 4/29/2008	OB-20B OB-20B(080915) 9/15/2008	OB-20B OB-20B(070909) 7/9/2009	OB-20B OB-20B(102809) 10/28/2009	OB-20B OB-20B(060210) 6/2/2010	OB-20B OB-20B(051811) 5/18/2011	OB-20B OB-20B (042712) 4/27/2012	OB-20B OB-20B (110813) 11/8/2013	OB-20B OB-20B (090514) 9/5/2014
4-Chloroaniline	106-47-8	µg/L	< 0.25 [< 0.25]	< 0.58	< 0.53 [< 0.53]	< 0.30 J	< 0.35	< 0.33	< 0.25	< 0.28	< 0.27	< 0.25	< 0.53	< 0.53	< 0.30 J
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.35 [< 0.35]	< 0.34	< 0.31 [< 0.31]	< 0.38 J	< 0.29	< 0.45	< 0.35	< 0.38	< 0.38	< 0.35	< 0.31	< 0.31	< 0.38 J
4-Nitroaniline	100-01-6	µg/L	< 0.18 [< 0.18]	< 1.8	< 1.7 [< 1.7]	< 0.30 J	< 0.59	< 0.45	< 0.18	< 0.19	< 0.19	< 0.18	< 1.7	< 1.7	< 0.30 J
4-Nitrophenol	100-02-7	µg/L	< 0.83 [< 0.83]	< 5.7	< 5.2 [< 5.2]	< 0.91 J	< 1.6	< 2.3	< 0.83	< 0.9	< 0.88	< 0.83	< 5.2	< 5.2	< 0.91 J
Acenaphthene	83-32-9	µg/L	< 0.014 [< 0.014]	< 0.015	0.134 [0.153]	0.131	< 0.016	< 0.016	< 0.016	< 0.032	< 0.031	< 0.014	< 0.014	0.122	< 0.023
Acenaphthylene	208-96-8	µg/L	< 0.016 [< 0.016]	< 0.018	< 0.024 [< 0.024]	< 0.024	< 0.007	< 0.007	< 0.007	< 0.043	< 0.042	< 0.016	< 0.016	< 0.024	< 0.026
Acetophenone	98-86-2	µg/L	< 0.4 [< 0.4]	< 0.32	< 0.29 [< 0.29]	< 0.36 J	< 0.36	NA	< 0.4	< 0.43	< 0.42	< 0.4	< 0.29	< 0.29	< 0.36 J
Anthracene	120-12-7	µg/L	< 0.01 [< 0.01]	< 0.011	< 0.020 [< 0.020]	< 0.020	< 0.021	< 0.021	< 0.021	< 0.028	< 0.027	< 0.01	< 0.01	< 0.020	< 0.023
Atrazine	1912-24-9	µg/L	< 0.39 [< 0.39]	< 0.54	< 0.49 [< 0.49]	< 0.42 J	< 0.28	NA	< 0.39	< 0.43	< 0.42	< 0.39	< 0.49	< 0.49	< 0.42 J
Benzaldehyde	100-52-7	µg/L	< 0.4 [< 0.4]	< 3.6	< 3.3 [< 3.3]	< 0.67 J	< 0.76	NA	< 0.4	< 0.44	< 0.43	< 0.4	< 3.3	< 3.3	< 0.67 J
Benzo(a)anthracene	56-55-3	µg/L	< 0.015 [< 0.015]	< 0.017	< 0.012 [< 0.012]	< 0.012	< 0.034	< 0.034	< 0.034	< 0.026	< 0.025	< 0.015	< 0.015	< 0.012	< 0.013
Benzo(a)pyrene	50-32-8	µg/L	< 0.0049 [< 0.0049]	< 0.0054	< 0.012 [< 0.012]	< 0.012	< 0.036	< 0.036	< 0.036	< 0.033	< 0.033	< 0.0049	< 0.0049	< 0.012	< 0.014
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.016 [< 0.016]	< 0.018	< 0.010 [< 0.010]	< 0.010	< 0.017	< 0.017	< 0.017	< 0.039	< 0.038	< 0.016	< 0.016	< 0.010	< 0.011
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.01 [< 0.01]	< 0.011	< 0.016 [< 0.016]	< 0.016	< 0.012	< 0.012	< 0.012	< 0.031	< 0.031	< 0.01	< 0.01	< 0.016	< 0.017
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.013 [< 0.013]	< 0.014	< 0.015 [< 0.015]	< 0.015	< 0.019	< 0.019	< 0.019	< 0.031	< 0.03	< 0.013	< 0.013	< 0.015	< 0.016
Benzyl butyl phthalate	85-68-7	µg/L	< 0.25 [< 0.25]	< 0.32	< 0.29 [< 0.29]	< 0.22 J	< 0.64	< 0.42	< 0.25	< 0.27	< 0.27	< 0.25	< 0.29	< 0.29	< 0.22 J
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.25 [< 0.25]	< 0.34	< 0.31 [< 0.31]	< 0.42 J	< 0.32	< 0.52	< 0.25	< 0.27	< 0.26	< 0.25	< 0.31	< 0.31	< 0.42 J
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.31 [< 0.31]	< 0.34	< 0.31 [< 0.31]	< 0.43 J	< 0.67	< 0.49	< 0.31	< 0.34	< 0.33	< 0.31	< 0.31	< 0.31	< 0.43 J
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.39 [< 0.39]	< 0.5	< 0.45 [< 0.45]	< 0.41 J	< 0.58	< 0.54	< 0.39	< 0.42	< 0.41	< 0.39	< 0.45	< 0.45	< 0.41 J
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.33 [< 0.33]	< 0.65	< 0.59 [< 0.59]	< 0.55 J	< 0.88	< 0.75	< 0.33	< 6.8 J	1.5 J	< 0.33	< 0.59	< 0.59	< 0.55 J
Caprolactam	105-60-2	µg/L	< 0.2 [< 0.2]	< 0.76	< 0.69 [< 0.69]	< 0.41 J	< 0.49	NA	< 0.2	< 0.21	< 0.21	< 0.2	< 0.69	1.8 J	< 0.41 J
Carbazole	86-74-8	µg/L	< 0.17 [< 0.17]	< 0.4	< 0.36 [< 0.36]	< 0.17 J	< 0.4	< 0.45	< 0.17	< 0.18	< 0.18	< 0.17	< 0.36	< 0.36	< 0.17 J
Chrysene	218-01-9	µg/L	< 0.023 [< 0.023]	< 0.026	< 0.012 [< 0.012]	< 0.012	< 0.018	< 0.018	< 0.018	< 0.024	< 0.023	< 0.023	< 0.023	< 0.012	< 0.013
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023 [< 0.023]	< 0.025	< 0.017 [< 0.017]	< 0.017	< 0.02	< 0.02	< 0.02	< 0.024	< 0.024	< 0.023	< 0.023	< 0.017	< 0.018
Dibenzofuran	132-64-9	µg/L	< 0.3 [< 0.3]	< 0.29	< 0.27 [< 0.27]	< 0.23 J	< 0.23	< 0.49	< 0.3	< 0.33	< 0.32	< 0.3	< 0.27	< 0.27	< 0.23 J
Diethyl phthalate	84-66-2	µg/L	< 0.17 [< 0.17]	< 0.36	< 0.33 [< 0.33]	< 0.23 J	< 0.34	< 0.36	< 0.17	< 0.18	< 0.18	< 0.17	< 0.33	3.4	< 0.23 J
Dimethyl phthalate	131-11-3	µg/L	< 0.23 [< 0.23]	< 0.31	< 0.28 [< 0.28]	< 0.26 J	< 0.34	< 0.36	< 0.23	< 0.24	1.5 J	< 0.23	< 0.28	< 0.28	< 0.26 J
di-n-butyl phthalate	84-74-2	µg/L	< 0.19 [< 0.19]	< 0.61	< 0.56 [< 0.56]	< 0.58 J	< 0.4	< 0.5	< 0.19	< 0.21	< 0.2	< 0.19	< 0.56	< 0.56	< 4.2 BJ
di-n-octylphthalate	117-84-0	µg/L	< 0.4 [< 0.4]	< 0.34	< 0.31 [< 0.31]	< 0.25 J	< 0.48	< 0.5	< 0.4	< 0.43	< 0.42	< 0.4	< 0.31	< 0.31	< 0.25 J
Fluoranthene	206-44-0	µg/L	< 0.0096 [< 0.0096]	< 0.011	< 0.013 [< 0.013]	< 0.013	< 0.0096	< 0.0096	< 0.0096	< 0.026	< 0.026	< 0.0096	< 0.0096	< 0.013	< 0.015
Fluorene	86-73-7	µg/L	< 0.015 [< 0.015]	< 0.016	< 0.017 [< 0.017]	< 0.017	< 0.02	< 0.02	< 0.02	< 0.029	< 0.029	< 0.015	< 0.015	< 0.017	< 0.019
Hexachlorobenzene	118-74-1	µg/L	< 0.008 [< 0.008]	< 0.0088	< 0.017 [< 0.017]	< 0.017	< 0.0099	< 0.0099	< 0.0099	< 0.011	< 0.011	< 0.008	< 0.008	< 0.017	< 0.018
Hexachlorobutadiene	87-68-3	µg/L	< 0.13 [< 0.13]	< 0.57	< 0.51 [< 0.51]	< 0.39 J	< 0.13	< 0.38	< 0.37	< 0.4 J	< 0.14	< 0.13	< 0.51	< 0.51	< 0.39 J
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.24 [< 0.24]	< 7.9	< 7.1 [< 7.1]	< 0.48 J	< 0.1	< 4.5	< 0.67	< 0.73	< 0.26	< 0.24	< 7.1	< 7.1	< 0.48 J
Hexachloroethane	67-72-1	µg/L	< 0.21 [< 0.21]	< 0.61	< 0.55 [< 0.55]	< 0.29 J	< 0.16	< 0.3	< 0.26	< 0.29	< 0.22	< 0.21	< 0.55	< 0.55	< 0.29 J
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.011 [< 0.011]	< 0.012	< 0.014 [< 0.014]	< 0.014	< 0.014	< 0.014	< 0.014	< 0.032	< 0.031	< 0.011	< 0.011	< 0.014	< 0.016
Isophorone	78-59-1	µg/L	< 0.25 [< 0.25]	< 0.3	< 0.27 [< 0.27]	< 0.34 J	< 0.49	< 0.69	< 0.25	< 0.27	< 0.26	< 0.25	< 0.27	< 0.27	< 0.34 J
Naphthalene	91-20-3	µg/L	< 0.016 [< 0.016]	< 0.018	0.140 [0.178]	< 0.036	0.355	0.815	0.663	< 0.02	0.59	0.321	0.942	1.66	1.00
Nitrobenzene	98-95-3	µg/L	< 0.25 [< 0.25]	< 0.46	< 0.42 [< 0.42]	< 0.52 J	< 0.71	< 0.66	< 0.25	< 0.28	< 0.27	< 0.25	< 0.42	< 0.42	< 0.52 J
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.44 [< 0.44]	< 0.33	< 0.30 [< 0.30]	< 0.38 J	< 0.38	< 0.39	< 0.44	< 0.48	< 0.47	< 0.44	< 0.3	< 0.30	< 0.38 J
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.22 [< 0.22]	< 0.34	< 0.31 [< 0.31]	< 0.21 J	0.6 J	0.61 J	0.69 J	< 0.23	0.64 J	< 0.22	< 0.31	0.92 J	0.50 J
Pentachlorophenol	87-86-5	µg/L	< 0.29 [< 0.29]	< 0.11 J	< 0.10 [< 0.10]	< 0.10	< 0.22	< 0.22	< 0.22	< 0.24 J	< 0.072	< 0.29	< 0.1 J	< 0.10	< 0.11
Phenanthrene	85-01-8	µg/L	< 0.016 [< 0.016]	< 0.017	< 0.021 [< 0.021]	< 0.021	< 0.017	< 0.017	< 0.017	< 0.039	< 0.038	< 0.016	< 0.016	< 0.021	< 0.023
Phenol	108-95-2	µg/L	< 0.58 [< 0.58]	< 1.4	< 1.3 [< 1.3]	< 0.55 J	< 0.68	< 1.4	< 0.58	< 0.63	< 0.61	< 0.58	< 1.3	< 1.3	< 0.55 J
Pyrene	129-00-0	µg/L	< 0.0081 [< 0.0081]	< 0.009	< 0.015 [< 0.015]	< 0.015	< 0.012	< 0.012	< 0.012	< 0.024	< 0.024	< 0.0081	< 0.0081	< 0.015	< 0.017
Metals - Total															
Aluminum, total	7429-90-5	µg/L	1050 J [393 J]	972	2310 J [335 J]	238 J	101 B	107 BJ	< 26	27.4 B	80.9 B	53.3 J	299	430	120 J
Antimony, total	7440-36-0	µg/L	< 1.3 [< 1.3]	< 1.4	< 1.8 [< 1.8]	< 2.6	< 1.8	< 1.8	< 4	< 2.9	< 2.2	< 1.3	< 1.4	< 1.8	< 2.6
Arsenic, total	7440-38-2	µg/L	< 0.92 [< 0.92]	< 3	7.2 [5.7]	7.7	< 1.7	3.8	< 3	< 2.4	< 1.4	< 0.92	< 0.97	< 1.5	2.7 B
Barium, total	7440-39-3	µg/L	121 B [122 B]	129 B	142 B [133 B]	100 B	52.4 B	57.4 B	58.7 B	50.5 B	39.2 B	47.9 B	58.7 B	77.8 B	67.5 B
Beryllium, total	7440-41-7	µg/L	< 0.24 [< 0.24]	< 0.44	< 0.17 [< 0.17]	< 0.40	0.4 B	0.3 B	< 1	< 0.4	< 0.24	< 0.24	< 0.44	< 0.17	< 0.40
Cadmium, total	7440-43-9	µg/L	< 3 [< 0.17]	0.4 J	1.7 B [< 0.24]	< 0.70	< 0.28	< 0.28	< 0.4	< 0.4	0.6 B	< 0.17	0.4 J	< 0.24	< 0.70
Calcium, total	7440-70-2	µg/L	19400 [20300]	19100	26300 [28400]	23300	41300	44400	45200	41200	32600	39400	43700	56600	48200
Chromium, total	7440-47-3	µg/L	2.8 J [1.6 J]	1.8 B	5.0 B [1.6 B]	1.6 B	< 0.53	< 0.53	< 0.9	< 10	< 0.59	2.2 J	< 0.91	6.0 B	1.1 B
Cobalt, total	7440-48-4	µg/L	2.4 J [2.2 J]	0.9 J	1.8 B [1.1 B]	< 0.83	19 B	19.8 B	21 B	17.8 B	15.6 B	18.8 B	22.4 B	27.8 B	24.0 B
Copper, total	7440-50-8	µg/L	8.6 B [3.6 J]	7.3 J	32.4 J [2.4 J]	< 1.2	6.1 B	1.6 B	< 10	< 1.6	< 2.5	< 0.85	5.1 J	2.3 B	< 1.2
Iron, total	7439-89-6	µg/L	28100 [27800]	20100	36900 [38200]	29500 J	26400	29200	32000	26100 J	22600	27000	31100	41500	35500 J
Lead, total	7439-92-1	µg/L	5.6 [2.8 B]	3 J	11.2 J [< 2.4 J]	< 1.3	3.8	< 1.4	< 1.7	< 1.7	< 1.9	2.5 B	2.8 J	< 2.4	< 1.3
Magnesium, total	7439-95-4	µg/L	2400 B [2360 B]	2290 B	3290 B [3100 B]	2430 B	8100	8580	8920	7160	5780	7510	7940	10800	8850
Manganese, total	7439-96-5	µg/L	507 [534]	444	869 [895]	828	6800	7060	7850	6230	4990	6600	6820	8630	8210
Mercury, total	7439-97-6	µg/L	< 0.088 [< 0.088]	< 0.075	0.18 B [< 0.089]	< 0.064	< 0.15	< 0.049	< 0.049	< 0.082	< 0.082	< 0.088	< 0.075	< 0.089	< 0.064
Nickel, total	7440-02-0	µg/L	6.3 B [5 B]	< 10	3.5 B [< 1.6]	< 0.75	3.6 B	3.5 B	4.6 BJ	3.6 B	4.1 J	4.7 B	< 10	5.8 B	3.6 B
Potassium, total	7440-09-7	µg/L	1610 B [1570 B]	1950 B	2430 B [2290 B]	1880 B	2530 B	2580 B	2520 B	2200 J	2180 B	2220 B	2580 B	2920 B	2620 B
Selenium, total	7782-49-2	µg/L	< 1.5 [< 1.5]	< 2.4	< 2.4 [2.8 B]	< 3.6	< 1.6	2.7 B	< 3.7	< 3.7	< 10	< 1.5	< 2.4	3.4 B	< 3.6
Silicon, total	7440-21-3	µg/L	NA	7300 J	NA [NA]	2860 B	NA	NA	NA	NA	NA	NA	11400	NA	4050 B
Silver, total	7440-22-4	µg/L	< 0.72 [< 0.72]	< 0.85	2.0 B [2.0 B]	2.1 B	< 1	< 1	< 10	1.2 B	< 0.53	< 0.72	1.7 J	4.1 B	2.6 B
Sodium, total	7440-23-5	µg/L	2000 B [2040 B]	3060 B	3050 B [3280 B]	2700 B	4370 B	4620 B	4300 B	3930 B	3590 B	3850 B	4120 B	4650 B	4300 B
Thallium, total	7440-28-0	µg/L	< 0.17 [< 0.17]	< 1.7	< 1.3 [< 1.3]	< 1.8	< 1.3	< 1.3	< 1.5	1.6 B	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8
Vanadium, total	7440-62-2	µg/L	3.1 B [1.7 B]	3.1 B	5.8 B [1.4 B]	1.7 B	1.9 B	3.1 B	< 0.9	< 0.9	2.5 B	< 0.43	2.4 B	< 0.72	3.6 B
Zinc, total	7440-66-6	µg/L	48.1 [40.3]	44.6 J	268 J [37.7 J]	22.8	10.2 B	8.9 B	5.1 BJ	9.7 B	15.4 J	8.5 J	< 20	9.5 B	10.1 B
Other															
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-22 OB-22(080501) 5/1/2008	OB-22 OB-22(070809) 7/8/2009	OB-22 OB-22(052810) 5/28/2010	OB-22 OB-22(051911) 5/19/2011	OB-22 OB-22 (041912) 4/19/2012	OB-23 OB-23(080502) 5/2/2008	OB-23 OB-23(070809) 7/8/2009	OB-23 OB-23(052810) 5/28/2010	OB-23 OB-23(051911) 5/19/2011	OB-24 OB-24(080430) 4/30/2008	OB-24 OB-24(080911) 9/11/2008	OB-24 OB-24(070809) 7/8/2009	OB-24 OB-24(102609) 10/26/2009	OB-24 OB-24(052810) 5/28/2010	OB-24 OB-24(051911) 5/19/2011
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.26	< 0.26	< 0.2	< 0.24	< 0.24	< 0.26	< 0.26	< 0.2	< 0.24 [< 0.24]	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.13	< 0.24	< 0.24	< 0.12	< 0.2	< 0.13	< 0.24	< 0.24	< 0.12	< 0.13 [< 0.13]	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.17	< 0.23	< 0.23	< 0.13	< 0.23	< 0.17	< 0.23	< 0.23	< 0.13	< 0.17 [< 0.17]	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13
1,1-Dichloroethane	75-34-3	µg/L	< 0.16	< 0.29	< 0.29	< 0.16	< 0.19	< 0.16	< 0.29	< 0.29	< 0.16	< 0.16 [< 0.16]	< 0.24	< 0.29	< 0.29	< 0.29	< 0.16
1,1-Dichloroethene	75-35-4	µg/L	< 0.29	< 0.4	< 0.4	< 0.24	< 0.28	< 0.29	< 0.4	< 0.4	< 0.24	< 0.29 [< 0.29]	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1.3	< 0.56	< 0.56	< 0.16	< 0.15	< 1.3	< 0.56	< 0.56	< 0.16	< 1.3 [< 1.3]	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 2.4	< 1.1	< 1.1	< 1.2	< 1.3*	< 2.4	< 1.1	< 1.1	< 1.2	< 2.4 [< 2.4]	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2
1,2-Dibromoethane	106-93-4	µg/L	< 0.17	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.17	< 0.39	< 0.39	< 0.39	< 0.17 [< 0.17]	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.26	< 0.26	< 0.15	< 0.18	< 0.18	< 0.26	< 0.26	< 0.15	< 0.18 [< 0.18]	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15
1,2-Dichloroethane	107-06-2	µg/L	< 0.35	< 0.33	< 0.33	< 0.31	< 0.18	< 0.35	< 0.33	< 0.33	< 0.31	< 0.35 [< 0.35]	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.27	< 0.27	< 0.23	< 0.22	< 0.18	< 0.27	< 0.27	< 0.23	< 0.18 [< 0.18]	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.26	< 0.25	< 0.25	< 0.19	< 0.29	< 0.26	< 0.25	< 0.25	< 0.19	< 0.26 [< 0.26]	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.32	< 0.28	< 0.28	< 0.22	< 0.26	< 0.32	< 0.28	< 0.28	< 0.22	< 0.32 [< 0.32]	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22
2-Butanone (MEK)	78-93-3	µg/L	< 2.3	< 1.6	< 1.6	< 1.7	< 2.9	< 2.3	< 1.6	< 1.6	< 1.7	< 2.3 [< 2.3]	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.4	< 1.4	< 1.9	< 1.7 [< 1.7]	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.9	< 0.86	< 0.86	< 0.74	< 1.2	< 1.9	< 0.86	< 0.86	< 0.74	< 1.9 [< 1.9]	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74
Acetone	67-64-1	µg/L	< 2.1	< 2.9	< 2.9	< 4.4	< 7.6	< 2.1	< 2.9	< 2.9	< 4.4	< 2.1 [< 2.1]	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4
Benzene	71-43-2	µg/L	< 0.26	< 0.23	< 0.23	< 0.26	< 0.22	< 0.26	< 0.23	< 0.23	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.23	< 0.23	< 0.23	< 0.26
Bromodichloromethane	75-27-4	µg/L	< 0.14	< 0.22	< 0.22	< 0.18	< 0.23	< 0.14	< 0.22	< 0.22	< 0.18	< 0.14 [< 0.14]	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18
Bromoform	75-25-2	µg/L	< 0.18	< 0.23	< 0.23	< 0.42	< 0.24	< 0.18	< 0.23	< 0.23	< 0.42	< 0.18 [< 0.18]	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42
Bromomethane	74-83-9	µg/L	< 0.32	< 0.3	< 0.3	< 0.24	< 0.31	< 0.32	< 0.3	< 0.3	< 0.24	< 0.32 [< 0.32]	< 0.32	< 0.3	< 0.3	< 0.3	< 0.24
Carbon disulfide	75-15-0	µg/L	< 0.15	< 0.74	< 0.74	< 0.13	< 0.18	< 0.15	< 0.74	< 0.74	< 0.13	< 0.15 [< 0.15]	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13
Carbon tetrachloride	56-23-5	µg/L	< 0.18	< 0.26	< 0.26	< 0.35	< 0.19	< 0.18	< 0.26	< 0.26	< 0.35	< 0.18 [< 0.18]	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35
Chlorobenzene	108-90-7	µg/L	< 0.14	< 0.39	< 0.39	< 0.15	< 0.22	< 0.14	< 0.39	< 0.39	< 0.15	< 0.14 [< 0.14]	< 0.19	< 0.39	< 0.39	< 0.39	< 0.15
Chloroethane	75-00-3	µg/L	< 0.22	< 0.37	< 0.37	< 0.25	< 0.37	< 0.22	< 0.37	< 0.37	< 0.25	< 0.22 [< 0.22]	< 0.22	< 0.37	< 0.37	< 0.37	< 0.25
Chloroform	67-66-3	µg/L	< 0.16	< 0.23	< 0.23	< 0.14	< 0.21	< 0.16	< 0.23	< 0.23	< 0.14	< 0.16 [< 0.16]	< 0.16	< 0.23	< 0.23	< 0.23	< 0.14
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	< 0.29	< 0.29	< 0.29	< 0.34	< 0.29 [< 0.29]	< 0.29	< 0.29	< 0.29	< 0.29	< 0.34
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.19	< 0.22	< 0.22	< 0.24	< 0.22	< 0.19	< 0.22	< 0.22	< 0.24	< 0.19 [< 0.19]	< 0.25	< 0.22	< 0.22	< 0.22	< 0.24
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.25	< 0.25	< 0.16	< 0.15 [< 0.15]	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.85	< 1.9	< 1.9	< 0.43	< 0.29	< 0.85	< 1.9	< 1.9	< 0.43	< 0.85 [< 0.85]	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43
Dibromochloromethane	124-48-1	µg/L	< 0.12	< 0.22	< 0.22	< 0.16	< 0.2	< 0.12	< 0.22	< 0.22	< 0.16	< 0.12 [< 0.12]	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16
Dichlorodifluoromethane	75-71-8	µg/L	< 0.88	< 0.92	< 0.92	< 0.39	< 0.31	< 0.88	< 0.92	< 0.92	< 0.39	< 0.88 [< 0.88]	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	< 0.27	< 0.27	< 0.27	< 0.31	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.27	< 0.27	< 0.31
Isopropylbenzene	98-82-8	µg/L	< 0.15	< 0.57	< 0.57	< 0.31	< 0.19	< 0.15	< 0.57	< 0.57	< 0.31	< 0.15 [< 0.15]	< 0.19	< 0.57	< 0.57	< 0.57	< 0.31
Methyl acetate	79-20-9	µg/L	< 2.5	< 1.5	< 1.5	< 1.3	< 2.9	< 2.5	< 1.5	< 1.5	< 1.3	< 2.5 [< 2.5]	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3
Methyl tert butyl ether	1634-04-4	µg/L	< 0.14	< 0.23	< 0.23	< 0.2	< 0.18	< 0.14	0.65 J	< 0.23	< 0.2	0.27 J [< 0.14]	< 0.16	< 0.23	0.3 J	< 0.23	< 0.2
Methylcyclohexane	108-87-2	µg/L	< 0.11	< 0.35	< 0.35	< 0.16	< 0.18	< 0.11	< 0.35	< 0.35	< 0.16	< 0.11 [< 0.11]	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16
Methylene chloride	75-09-2	µg/L	< 0.16	< 0.3	< 0.3	< 0.2	< 0.2	< 0.16	< 0.3	< 0.3	< 0.2	< 0.16 [< 0.16]	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2
o-Xylene	95-47-6	µg/L	< 0.45	< 0.25	NA	NA	NA	< 0.45	< 0.25	NA	NA	< 0.45 [< 0.45]	< 0.45	< 0.25	< 0.25	NA	NA
Styrene	100-42-5	µg/L	< 0.11	< 0.58	< 0.58	< 0.48	< 0.23	< 0.11	< 0.58	< 0.58	< 0.48	< 0.11 [< 0.11]	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.29	< 0.27	< 0.27	< 0.24	< 0.32	< 0.29	< 0.27	< 0.27	< 0.24	< 0.29 [< 0.29]	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24
Toluene	108-88-3	µg/L	< 0.15	< 0.3	< 0.3	< 0.27	< 0.15	< 0.15	< 0.3	< 0.3	< 0.27	< 0.15 [< 0.15]	< 0.15	< 0.3	< 0.3	< 0.3	< 0.27
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.16	< 0.25	< 0.25	< 0.3	< 0.31	< 0.16	< 0.25	< 0.25	< 0.3	< 0.16 [< 0.16]	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.11	< 0.21	< 0.21	< 0.22	< 0.19	< 0.11	< 0.21	< 0.21	< 0.22	< 0.11 [< 0.11]	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22
Trichloroethene	79-01-6	µg/L	< 0.18	< 0.24	< 0.24	< 0.22	< 0.21	< 0.18	< 0.24	< 0.24	< 0.22	< 0.18 [< 0.18]	< 0.18	< 0.24	< 0.24	< 0.24	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.25	< 0.54	< 0.54	< 0.23	< 0.35	< 0.25	< 0.54	< 0.54	< 0.23	< 0.25 [< 0.25]	< 0.25	< 0.54	< 0.54	< 0.54	< 0.23
Vinyl Chloride	75-01-4	µg/L	< 0.21	< 0.44	< 0.44	< 0.22	< 0.27	< 0.21	< 0.44	< 0.44	< 0.22	< 0.21 [< 0.21]	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22
Xylene, -m,p	179601-23-1	µg/L	< 0.39	< 0.25	NA	NA	NA	< 0.39	< 0.25	NA	NA	< 0.39 [< 0.39]	< 0.39	< 0.25	< 0.25	NA	NA
Xylenes	1330-20-7	µg/L	< 0.39	< 0.25	< 0.25	< 0.28	< 0.17	< 0.39	< 0.25	< 0.25	< 0.28	< 0.39 [< 0.39]	< 0.39	< 0.25	< 0.25	< 0.25	< 0.28
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 0.25 J	< 0.47	< 0.42	< 0.42	NA	< 0.24 J	< 0.42	< 0.47	< 0.42	< 0.22 [< 0.23]	< 0.58	< 0.47	< 0.47	< 0.45	< 0.42
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.2 J	< 1.5	< 1.3	< 1.3	NA	< 1.2 J	< 1.3	< 1.5	< 1.3	< 1.1 [< 1.2]	< 2.1	< 1.5	< 1.5	< 1.4	< 1.3
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.1 J	< 1.4	< 1.2	< 1.2	NA	< 1.1 J	< 1.2	< 1.3	< 1.2	< 1 [< 1.1]	< 1.7	< 1.4	< 1.4	< 1.3	< 1.2
2,4-Dichlorophenol	120-83-2	µg/L	< 1.6 J	< 1.4	< 1.2	< 1.2	NA	< 1.5 J	< 1.2	< 1.3	< 1.2	< 1.4 [< 1.5]	< 2	< 1.4	< 1.4	< 1.3	< 1.2
2,4-Dimethylphenol	105-67-9	µg/L	< 1.9 J	< 1.9	< 1.7	< 1.7	NA	< 1.8 J	< 1.7	< 1.8	< 1.7	< 1.7 [< 1.7]	< 2.1	< 1.8	< 1.9	< 1.8	< 1.7
2,4-Dinitrophenol	51-28-5	µg/L	< 1.2 J	< 0.83	< 0.74	< 0.74	NA	< 1.2 J	< 0.74	< 0.81	< 0.74	< 1.1 [< 1.2]	< 4.4	< 0.82	< 0.83	< 0.79	< 0.74
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.61 J	< 0.25	< 0.22	< 0.22	NA	< 0.59 J	< 0.22	< 0.24	< 0.22	< 0.54 [< 0.57]	< 0.48	< 0.24	< 0.25	< 0.24	< 0.22
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.56 J	< 0.37	< 0.33	< 0.33	NA	< 0.54 J	< 0.33	< 0.36	< 0.33	< 0.5 [< 0.53]	< 0.63	< 0.36	< 0.37	< 0.35	< 0.33
2-Chloronaphthalene	91-58-7	µg/L	< 0.22 J	< 0.47	< 0.42	< 0.42	NA	< 0.22 J	< 0.42	< 0.46	< 0.42	< 0.2 [< 0.21]	< 0.51	< 0.46	< 0.47	< 0.45	< 0.42
2-Chlorophenol	95-57-8	µg/L	< 0.98 J	< 1.2	< 1.1	< 1.1	NA	< 0.95 J	< 1.1	< 1.2	< 1.1	< 0.87 [< 0.92]	< 1.5	< 1.2	< 1.2	< 1.2	< 1.1
2-Methylnaphthalene	91-57-6	µg/L	< 0.86 J	< 0.74	< 0.66	< 0.66	NA	< 0.83 J	< 0.66	< 0.73	< 0.66	< 0.76 [< 0.8]	< 0.46	< 0.73	< 0.74	< 0.71	< 0.66
2-Methylphenol	95-48-7	µg/L	< 1.2 J	< 1.3	< 1.1	< 1.1	NA	< 1.1 J	< 1.1	< 1.2	< 1.1	< 1 [< 1.1]	< 1.4	< 1.2	< 1.3	< 1.2	< 1.1
2-Nitroaniline	88-74-4	µg/L	< 0.56 J	< 0.26	< 0.24	< 0.24	NA	< 0.54 J	< 0.24	< 0.26	< 0.24	< 0.5 [< 0.52]	< 0.47	< 0.26	< 0.26	< 0.25	< 0.24
2-Nitrophenol	88-75-5	µg/L	< 1.7 J	< 1.4	< 1.2	< 1.2	NA	< 1.6 J	< 1.2	< 1.4	< 1.2	< 1.5 [< 1.6]	< 2	< 1.4	< 1.4	< 1.3	< 1.2
3&4-Methylphenol	12-03-3	µg/L	< 1.2 J	< 1.2	< 1	< 1	NA	< 1.2 J	< 1	< 1.1	< 1	< 1.1 [< 1.2]	< 1.5	< 1.2	< 1.2	< 1.1	< 1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1 J	< 0.33	< 0.3	< 0.3	NA	< 1.1 J	< 0.3	< 0.33	< 0.3	< 0.97 [< 1]	< 4.8	< 0.33	< 0.33	< 0.32	< 0.3
3-Nitroaniline	99-09-2	µg/L	< 0.36 J	< 0.32	< 0.29	< 0.29	NA	< 0.35 J	< 0.29	< 0.32	< 0.29	< 0.32 [< 0.34]	< 0.47	< 0.32	< 0.32	< 0.31	< 0.29
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.5 J	< 0.58	< 0.51	< 0.51	NA	< 2.4 J	< 0.51	< 0.57	< 0.51	< 2.2 [< 2.3]	< 1.2	< 0.57	< 0.58	< 0.55	< 0.51
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.42 J	< 0.39	< 0.35	< 0.35	NA	< 0.41 J	< 0.35	< 0.39	< 0.35	< 0.37 [< 0.39]	< 0.43	< 0.39	< 0.39	< 0.38	< 0.35
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.4 J	< 1.2	< 1.1	< 1.1	NA	< 1.3 J	< 1.1	< 1.2	< 1.1	< 1.2 [< 1.3]	< 2.4	< 1.2	< 1.2	< 1.1	< 1.1
Semi-Volatile Organic Compounds																	

Location ID Sample ID Sample Date	CAS	Units	OB-22 OB-22(080501) 5/1/2008	OB-22 OB-22(070809) 7/8/2009	OB-22 OB-22(052810) 5/28/2010	OB-22 OB-22(051911) 5/19/2011	OB-22 OB-22 (041912) 4/19/2012	OB-23 OB-23(080502) 5/2/2008	OB-23 OB-23(070809) 7/8/2009	OB-23 OB-23(052810) 5/28/2010	OB-23 OB-23(051911) 5/19/2011	OB-24 OB-24(080430) 4/30/2008	OB-24 OB-24(080911) 9/11/2008	OB-24 OB-24(070809) 7/8/2009	OB-24 OB-24(102609) 10/26/2009	OB-24 OB-24(052810) 5/28/2010	OB-24 OB-24(051911) 5/19/2011
4-Chloroaniline	106-47-8	µg/L	< 0.39 J	< 0.28	< 0.25	< 0.25	NA	< 0.38 J	< 0.25	< 0.28	< 0.25	< 0.35 [< 0.37]	< 0.35	< 0.28	< 0.28	< 0.27	< 0.25
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.33 J	< 0.4	< 0.35	< 0.35	NA	< 0.32 J	< 0.35	< 0.39	< 0.35	< 0.29 [< 0.31]	< 0.48	< 0.39	< 0.4	< 0.38	< 0.35
4-Nitroaniline	100-01-6	µg/L	< 0.66 J	< 0.2	< 0.18	< 0.18	NA	< 0.64 J	< 0.18	< 0.2	< 0.18	< 0.59 [< 0.62]	< 0.48	< 0.2	< 0.2	< 0.19	< 0.18
4-Nitrophenol	100-02-7	µg/L	< 1.8 J	< 0.93	< 0.83	< 0.83	NA	< 1.7 J	< 0.83	< 0.91	< 0.83	< 1.6 [< 1.7]	< 2.4	< 0.92	< 0.93	< 0.89	< 0.83
Acenaphthene	83-32-9	µg/L	< 0.018	< 0.018	< 0.032	< 0.014	NA	0.414	1.03	0.828	1.83	< 0.016 [< 0.017]	< 0.017	< 0.018	< 0.033	< 0.031	< 0.014
Acenaphthylene	208-96-8	µg/L	< 0.0079	< 0.0079	< 0.044	< 0.016	NA	< 0.0076	< 0.007	< 0.043	< 0.016	< 0.007 [< 0.0074]	< 0.0074	< 0.0078	< 0.044	< 0.042	< 0.016
Acetophenone	98-86-2	µg/L	< 0.41 J	< 0.45	< 0.4	< 0.4	NA	< 0.39 J	< 0.4	< 0.44	< 0.4	< 0.36 [< 0.38]	< 0.49	< 0.44	< 0.45	< 0.43	< 0.4
Anthracene	120-12-7	µg/L	< 0.024	< 0.024	< 0.028	< 0.01	NA	< 0.023	< 0.021	< 0.028	< 0.01	< 0.021 [< 0.022]	< 0.022	< 0.023	< 0.029	< 0.028	< 0.01
Atrazine	1912-24-9	µg/L	< 0.32 J	< 0.44	< 0.39	< 0.39	NA	< 0.31 J	< 0.39	< 0.43	< 0.39	< 0.28 [< 0.3]	< 0.65	< 0.43	< 0.44	< 0.42	< 0.39
Benzaldehyde	100-52-7	µg/L	< 0.86 J	< 0.45	< 0.4	< 0.4	NA	< 0.83 J	< 0.4	< 0.45	< 0.4	< 0.76 [< 0.8]	< 1.7	< 0.45	< 0.45	< 0.43	< 0.4
Benzo(a)anthracene	56-55-3	µg/L	< 0.038	< 0.038	< 0.026	< 0.015	NA	< 0.037	< 0.034	< 0.026	< 0.015	< 0.034 [< 0.035]	< 0.035	< 0.037	< 0.027	< 0.025	< 0.015
Benzo(a)pyrene	50-32-8	µg/L	< 0.04	< 0.04	< 0.034	< 0.0049	NA	< 0.039	< 0.036	< 0.034	< 0.0049	< 0.036 [< 0.037]	< 0.037	< 0.039	< 0.035	< 0.033	< 0.0049
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.019	< 0.019	< 0.04	< 0.016	NA	< 0.018	< 0.017	< 0.04	< 0.016	< 0.017 [< 0.018]	< 0.018	< 0.019	< 0.04	< 0.038	< 0.016
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.013	< 0.013	< 0.032	< 0.01	NA	< 0.013	< 0.012	< 0.032	< 0.01	< 0.012 [< 0.012]	< 0.012	< 0.013	< 0.032	< 0.031	< 0.01
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.021	< 0.021	< 0.031	< 0.013	NA	< 0.02	< 0.019	< 0.031	< 0.013	< 0.019 [< 0.02]	< 0.02	< 0.021	< 0.032	< 0.03	< 0.013
Benzyl butyl phthalate	85-68-7	µg/L	< 0.72 J	< 0.28	< 0.25	< 0.25	NA	< 0.69 J	< 0.25	< 0.28	< 0.25	< 0.64 [< 0.67]	< 0.44	< 0.28	< 0.28	< 0.27	< 0.25
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.36 J	< 0.28	< 0.25	< 0.25	NA	< 0.35 J	< 0.25	< 0.27	< 0.25	< 0.32 [< 0.33]	< 0.54	< 0.28	< 0.28	< 0.27	< 0.25
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.76 J	< 0.35	< 0.31	< 0.31	NA	< 0.73 J	< 0.31	< 0.34	< 0.31	< 0.67 [< 0.71]	< 0.52	< 0.34	< 0.35	< 0.33	< 0.31
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.65 J	< 0.44	< 0.39	< 0.39	NA	< 0.63 J	< 0.39	< 0.43	< 0.39	< 0.58 [< 0.61]	< 0.57	< 0.43	< 0.44	< 0.42	< 0.39
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.99 J	< 0.37	< 0.33	1.4 J	NA	< 0.95 J	< 2	< 0.36	< 0.33	< 0.88 [< 0.92]	< 0.79	< 0.36	< 0.37	< 0.35	< 0.33
Caprolactam	105-60-2	µg/L	< 0.55 J	< 0.22	< 0.2	< 0.2	NA	< 0.53 J	< 0.2	< 0.22	< 0.2	< 0.49 [< 0.52]	< 0.66	< 0.22	< 0.22	< 0.21	< 0.2
Carbazole	86-74-8	µg/L	< 0.45 J	< 0.19	< 0.17	< 0.17	NA	0.59 J	< 0.17	< 0.18	< 0.17	< 0.4 [< 0.42]	< 0.47	< 0.18	< 0.19	< 0.18	< 0.17
Chrysene	218-01-9	µg/L	< 0.02	< 0.02	< 0.024	< 0.023	NA	< 0.019	< 0.018	< 0.024	< 0.023	< 0.018 [< 0.019]	< 0.019	< 0.02	< 0.025	< 0.024	< 0.023
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023	< 0.023	< 0.025	< 0.023	NA	< 0.022	< 0.02	< 0.025	< 0.023	< 0.02 [< 0.021]	< 0.021	< 0.022	< 0.025	< 0.024	< 0.023
Dibenzofuran	132-64-9	µg/L	< 0.26 J	< 0.34	< 0.3	< 0.3	NA	< 0.25 J	0.69 J	< 0.34	0.86 J	< 0.23 [< 0.24]	< 0.51	< 0.34	< 0.34	< 0.33	< 0.3
Diethyl phthalate	84-66-2	µg/L	< 0.39 J	< 0.19	< 0.17	< 0.17	NA	< 0.37 J	< 0.17	< 0.18	< 0.17	< 0.34 [< 0.36]	< 0.38	< 0.18	< 0.19	< 0.18	< 0.17
Dimethyl phthalate	131-11-3	µg/L	< 0.38 J	< 0.25	< 0.23	< 0.23	NA	< 0.37 J	< 0.23	< 0.25	< 0.23	< 0.34 [< 0.35]	< 0.38	< 0.25	< 0.25	< 0.24	< 0.23
di-n-butyl phthalate	84-74-2	µg/L	< 0.45 J	< 0.21	< 0.19	< 0.19	NA	< 0.43 J	< 0.19	< 0.21	< 0.19	< 0.4 [< 0.42]	< 0.53	< 0.21	< 0.21	< 0.21	< 0.19
di-n-octylphthalate	117-84-0	µg/L	< 0.54 J	< 0.44	< 0.4	< 0.4	NA	< 0.52 J	< 0.4	< 0.44	< 0.4	< 0.48 [< 0.5]	< 0.52	< 0.44	< 0.44	< 0.42	< 0.4
Fluoranthene	206-44-0	µg/L	< 0.011	< 0.011	< 0.027	< 0.0096	NA	< 0.01	< 0.0096	< 0.027	< 0.0096	< 0.0096 [< 0.01]	< 0.01	< 0.011	< 0.027	< 0.026	< 0.0096
Fluorene	86-73-7	µg/L	< 0.022	< 0.022	< 0.03	< 0.015	NA	0.347	0.538	0.497	0.865	< 0.02 [< 0.021]	< 0.021	< 0.022	< 0.03	< 0.029	< 0.015
Hexachlorobenzene	118-74-1	µg/L	< 0.011	< 0.011	< 0.011	< 0.008	NA	< 0.011	< 0.0099	< 0.011	< 0.008	< 0.0099 J [< 0.01 J]	< 0.01	< 0.011	< 0.011	< 0.011	< 0.008
Hexachlorobutadiene	87-68-3	µg/L	< 0.14 J	< 0.42	< 0.13	< 0.13	NA	< 0.14 J	< 0.37	< 0.14	< 0.13	< 0.13 [< 0.13]	< 0.39	< 0.41	< 0.42 J	< 0.14	< 0.13
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.12 J	< 0.76	< 0.24	< 0.24	NA	< 0.11 J	< 0.67	< 0.27	< 0.24	< 0.1 [< 0.11]	< 4.8	< 0.75	< 0.76	< 0.26	< 0.24
Hexachloroethane	67-72-1	µg/L	< 0.18 J	< 0.3	< 0.21	< 0.21	NA	< 0.18 J	< 0.26	< 0.23	< 0.21	< 0.16 [< 0.17]	< 0.32	< 0.29	< 0.3	< 0.22	< 0.21
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.016	< 0.016	< 0.032	< 0.011	NA	< 0.016	< 0.014	< 0.032	< 0.011	< 0.014 [< 0.015]	< 0.015	< 0.016	< 0.033	< 0.031	< 0.011
Isophorone	78-59-1	µg/L	< 0.55 J	< 0.28	< 0.25	< 0.25	NA	< 0.53 J	< 0.25	< 0.28	< 0.25	< 0.49 [< 0.51]	< 0.73	< 0.28	< 0.28	< 0.27	< 0.25
Naphthalene	91-20-3	µg/L	< 0.016	< 0.016	< 0.021	< 0.016	NA	< 0.015	< 0.014	< 0.02	0.207	< 0.014 [< 0.015]	< 0.015	< 0.015	< 0.021	< 0.02	< 0.016
Nitrobenzene	98-95-3	µg/L	< 0.79 J	< 0.28	< 0.25	< 0.25	NA	< 0.77 J	< 0.25	< 0.28	< 0.25	< 0.71 [< 0.74]	< 0.69	< 0.28	< 0.28	< 0.27	< 0.25
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.43 J	< 0.49	< 0.44	< 0.44	NA	< 0.42 J	< 0.44	< 0.48	< 0.44	< 0.38 [< 0.4]	< 0.41	< 0.49	< 0.49	< 0.47	< 0.44
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.47 J	< 0.24	< 0.22	< 0.22	NA	< 0.45 J	1.6 J	1.1 J	< 0.22	< 0.41 [< 0.44]	< 0.64	< 0.24	< 0.24	< 0.23	< 0.22
Pentachlorophenol	87-86-5	µg/L	< 0.25	< 0.25	< 0.076	< 0.29	NA	< 0.24	< 0.22	< 0.075	< 0.29	< 0.22 J [< 0.23 J]	< 0.23	< 0.25	< 0.25	< 0.073	< 0.29
Phenanthrene	85-01-8	µg/L	< 0.019	< 0.019	< 0.04	< 0.016	NA	< 0.018	0.24	< 0.04	0.268	< 0.017 [< 0.018]	< 0.018	< 0.019	< 0.041	< 0.039	< 0.016
Phenol	108-95-2	µg/L	< 0.77 J	< 0.65	< 0.58	< 0.58	NA	< 0.74 J	< 0.58	< 0.64	< 0.58	< 0.68 [< 0.72]	< 1.4	< 0.64	< 0.65	< 0.62	< 0.58
Pyrene	129-00-0	µg/L	< 0.014	< 0.014	< 0.025	< 0.0081	NA	< 0.013	< 0.012	< 0.024	< 0.0081	< 0.012 [< 0.013]	< 0.013	< 0.013	< 0.025	< 0.024	< 0.0081
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	1560	2280	577	528	NA	< 24	177 B	127 B	69 J	< 24 [< 24]	686	1020	250	18.8 B	513
Antimony, total	7440-36-0	µg/L	< 1.8	< 4	< 2.2	3.9 J	NA	< 1.8 B	< 4	< 2.2	2.9 J	< 1.8 [< 1.8]	< 2.5	< 4	< 2.9	< 2.2	< 1.3
Arsenic, total	7440-38-2	µg/L	< 1.7	< 2.4	< 1.4	< 0.92	NA	< 1.7	< 2.4	2.2 B	< 0.92	1.7 B [< 1.7]	2.5 BJ	< 2.4	< 2.4	< 1.4	< 0.92
Barium, total	7440-39-3	µg/L	17.3 B	22.5 B	17.9 B	17 B	NA	499	436	630	494	33.7 B [35 B]	52.5 BJ	44.7 B	38.9 B	37.5 B	46.1 B
Beryllium, total	7440-41-7	µg/L	< 0.15	< 0.4	< 0.24	< 0.24	NA	< 0.15	< 0.4	< 1	< 0.24	< 0.15 [< 0.15]	< 0.15	< 0.4	< 0.4	< 1	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.28	0.6 B	< 0.35	< 0.17	NA	< 0.28	0.5 B	0.4 B	< 0.17	< 0.28 [< 0.28]	< 0.28	0.9 B	< 0.4	< 0.35	< 0.17
Calcium, total	7440-70-2	µg/L	36200	31900	32900	40700	NA	127000	117000	137000	136000	84800 J [87900 J]	91400 J	97600	96800	93900	97000
Chromium, total	7440-47-3	µg/L	2.3 B	< 10	1.7 B	< 10	NA	1.3 B	< 10	2.7 B	< 10	2.5 B [1.1 B]	< 1.8	< 10	< 0.9	1.4 B	< 0.9
Cobalt, total	7440-48-4	µg/L	0.6 B	1 B	< 0.65	< 0.3	NA	2.9 B	1.2 B	2.5 B	< 50	< 0.51 [< 0.51]	< 0.51	0.5 B	< 1.6	< 0.65	< 50
Copper, total	7440-50-8	µg/L	< 2.5	18.2 J	< 2.5	< 0.85	NA	4.3 B	< 10	4.9 J	2.4 B	< 2.5 [< 2.5]	3.7 B	< 10	< 1.6	< 2.5	< 0.85
Iron, total	7439-89-6	µg/L	1600	2960	709	696	NA	7760	42300	47300	47500	287 J [223 J]	1520 J	2130	493	77.5 B	1110
Lead, total	7439-92-1	µg/L	2.3 B	< 1.7	< 1.9	< 0.94	NA	2.5 B	7.5	2.2 B	5.5 J	1.5 B [1.6 B]	< 1.4	< 1.7	< 1.7	< 1.9	4.2 J
Magnesium, total	7439-95-4	µg/L	7860	6230	7520	6250	NA	16600	12400	14800	15600	21000 J [21700 J]	20700	24200	23400	23500	25000
Manganese, total	7439-96-5	µg/L	39.4	64.2	10 B	15.4	NA	1130	1400	1550	2360	262 J [272 J]	742	789	341	310	1450
Mercury, total	7439-97-6	µg/L	< 0.15	< 0.049	< 0.082	< 0.088	NA	< 0.15	< 0.049	< 0.082	< 0.088	< 0.15 [< 0.15]	< 0.049	< 0.049	< 0.082	< 0.082	0.095 B
Nickel, total	7440-02-0	µg/L	2.3 B	< 10	1.6 B	< 10	NA	5.3 B	< 10	4.8 B	4.8 J	1.5 B [< 1.2]	< 1.5	< 10	0.8 B	1 B	< 10
Potassium, total	7440-09-7	µg/L	1470 B	1360 B	958 J	3540 B	NA	14300	10000	12200	10700	2200 B [2270 B]	3740 B	2340 B	2300 B	2150 J	2220 B
Selenium, total	7782-49-2	µg/L	< 1.6	< 10	2.5 B	< 10	NA	< 1.6	< 10	3.6 B	< 1.5	< 1.6 [< 1.6]	< 1.6	< 3.7	< 3.7	2.8 B	< 1.5
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1	< 1	< 0.53	< 0.72	NA	< 1	< 1	2.1 B	1.1 B	< 1 [< 1]	< 1	< 1	< 1	< 0.53	< 0.72
Sodium, total	7440-23-5	µg/L	14300	13500	17800	15300	NA	368000	86900	94400	63500	13200 [13700]	12200	14700	14900	15300	15400
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.5	< 1.8	< 0.17	NA	< 1.3	< 1.5	< 1.8	< 0.17	< 1.3 [< 1.3]	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17
Vanadium, total	7440-62-2	µg/L	2.4 B	3.3 BJ	0.8 B	< 50	NA	< 0.43	< 0.9	< 0.56	< 0.43	1 B [1.2 B]	3.3 B	3.9 BJ	1.6 B	0.7 B	2.5 J
Zinc, total	7440-66-6	µg/L	< 4 B	24.1 J	< 20	4.2 J	NA	63.7	47.9	17 J	63.9	< 4 [< 4]	< 6.5	< 2.9	9.6 B	< 1.4	2.9 J
Other																	
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-24 OB-24(041812) 4/18/2012	OB-24 OB-24 (110613) & DUP 11/6/2013	OB-24 OB-24(090314) 9/3/2014	OB-25 OB-25(080429) 4/29/2008	OB-25 OB-25(080918) 9/18/2008	OB-25 OB-25(070609) 7/6/2009	OB-25 OB-25(102609) 10/26/2009	OB-25 OB-25(060110) 6/1/2010	OB-25 OB-25 (052011) 5/20/2011	OB-25 OB-25 (042012) 4/20/2012	OB-25 OB-25 (111213) 11/12/2013	OB-25 OB-25 (090914) 9/9/2014	OB-26 OB-26(080509) 5/9/2008	OB-26 OB-26(080916) 9/16/2008
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.25 [< 0.25]	< 0.32	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	< 0.25	< 0.32	< 0.24	< 0.24
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.2	< 0.20 [< 0.20]	< 0.39	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2	< 0.20	< 0.39	< 0.13	< 0.13
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.21 [< 0.21]	< 0.28	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21	< 0.28	< 0.17	< 0.17
1,1-Dichloroethane	75-34-3	µg/L	< 0.19	< 0.26 [< 0.26]	< 0.35	< 0.16	< 0.24	< 0.29	< 0.29	< 0.29	< 0.16	< 0.19	< 0.26	< 0.35	< 0.16	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.28	< 0.34 [< 0.34]	< 0.50	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	< 0.34	< 0.50	< 0.29	< 0.29
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.15	< 0.22 [< 0.22]	< 0.22	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	< 0.22	< 0.22	< 1.3	< 1.3
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3*	< 1.3 [< 1.3]	< 1.2	< 2.4	< 1.3	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.3	< 1.2	< 2.4	< 1.3
1,2-Dibromoethane	106-93-4	µg/L	< 0.21*	< 0.16 [< 0.16]	< 0.23	< 0.17	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.16	< 0.23	< 0.17	< 0.18
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.20 [< 0.20]	< 0.16	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	< 0.20	< 0.16	< 0.18	< 0.18
1,2-Dichloroethane	107-06-2	µg/L	< 0.18	< 0.22 [< 0.22]	< 0.30	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	< 0.22	< 0.30	< 0.35	< 0.35
1,2-Dichloropropane	78-87-5	µg/L	< 0.22	< 0.28 [< 0.28]	< 0.43	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	< 0.28	< 0.43	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.29	< 0.31 [< 0.31]	< 0.26	< 0.26	< 0.26	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	< 0.31	< 0.26	< 0.26	< 0.26
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.26	< 0.30 [< 0.30]	< 0.24	< 0.32	< 0.22	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	< 0.30	< 0.24	< 0.32	< 0.22
2-Butanone (MEK)	78-93-3	µg/L	< 2.9	< 3.2 [< 3.2]	< 2.5	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9	< 3.2	< 2.5	< 2.3	< 2.3
2-Hexanone	591-78-6	µg/L	< 3	< 1.7 [< 1.7]	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.9	< 3	< 1.7	< 1.7	< 1.7	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.2	< 1.5 [< 1.5]	< 1.1	< 1.9	< 1.3	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2	< 1.5	< 1.1	< 1.9	< 1.3
Acetone	67-64-1	µg/L	< 7.6	< 3.3 [< 3.3]	< 2.6	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 4.4	< 7.6	< 3.3	< 2.6	< 2.1	< 2.1
Benzene	71-43-2	µg/L	< 0.22	< 0.28 [< 0.28]	0.50	< 0.26	< 0.26	< 0.23	< 0.23	< 0.23	< 0.26	< 0.22	< 0.28	< 0.21	< 0.26	< 0.26
Bromodichloromethane	75-27-4	µg/L	< 0.23	< 0.21 [< 0.21]	< 0.28	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	< 0.21	< 0.28	< 0.14	< 0.14
Bromoform	75-25-2	µg/L	< 0.24	< 0.30 [< 0.30]	< 0.31	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	< 0.30	< 0.31	< 0.18	< 0.18
Bromomethane	74-83-9	µg/L	< 0.31	< 0.56 [< 0.56]	< 0.39	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.24	< 0.31	< 0.56	< 0.39	< 0.32	< 0.32
Carbon disulfide	75-15-0	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.50	< 0.15	< 0.16	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	< 0.18	< 0.50	< 0.15	< 0.16
Carbon tetrachloride	56-23-5	µg/L	< 0.19	< 0.23 [< 0.23]	< 0.24	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	< 0.23	< 0.24	< 0.18	< 0.18
Chlorobenzene	108-90-7	µg/L	< 0.22	< 0.35 [< 0.35]	< 0.27	< 0.14	< 0.19	< 0.39	< 0.39	< 0.39	< 0.15	< 0.22	< 0.35	< 0.27	< 0.14	< 0.19
Chloroethane	75-00-3	µg/L	< 0.37	< 0.39 [< 0.39]	< 0.56	< 0.22	< 0.22	< 0.37	< 0.37	< 0.37	< 0.25	< 0.37	< 0.39	< 0.56	< 0.22	< 0.22
Chloroform	67-66-3	µg/L	< 0.21	< 0.25 [< 0.25]	< 0.20	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.14	< 0.21	< 0.25	< 0.20	< 0.16	< 0.16
Chloromethane	74-87-3	µg/L	< 0.22	< 0.36 [< 0.36]	< 0.33	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	< 0.36	< 0.33	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.24 [< 0.24]	< 0.33	< 0.19	< 0.25	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	< 0.24	< 0.33	< 0.19	< 0.25
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.22	< 0.15 [< 0.15]	< 0.28	< 0.15	< 0.18	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	< 0.15	< 0.28	< 0.15	< 0.18
Cyclohexane	110-82-7	µg/L	< 0.29	< 0.18 [< 0.18]	< 0.37	< 0.85	< 0.85	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	< 0.18	< 0.37	< 0.85	< 0.85
Dibromochloromethane	124-48-1	µg/L	< 0.2	< 0.19 [< 0.19]	< 0.25	< 0.12	< 0.16	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	< 0.19	< 0.25	< 0.12	< 0.16
Dichlorodifluoromethane	75-71-8	µg/L	< 0.31	< 0.63 [< 0.63]	< 0.73	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	< 0.63	< 0.73	< 0.88	< 0.88
Ethylbenzene	100-41-4	µg/L	< 0.21	< 0.21 [< 0.21]	< 0.40	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	< 0.21	< 0.40	< 0.27	< 0.27
Freon 113	76-13-1	µg/L	< 0.49	< 0.77 [< 0.77]	< 0.45	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.66	< 0.49	< 0.77	< 0.45	< 0.8	< 0.8
Isopropylbenzene	98-82-8	µg/L	< 0.19	< 0.22 [< 0.22]	< 0.26	< 0.15	< 0.19	< 0.57	< 0.57	< 0.57	< 0.31	< 0.19	< 0.22	< 0.26	< 0.15	< 0.19
Methyl acetate	79-20-9	µg/L	< 2.9	< 1.5 [< 1.5]	< 3.1	< 2.5	< 1.7	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 3.1	< 2.5	< 1.7
Methyl tert butyl ether	1634-04-4	µg/L	< 0.18	< 0.29 [< 0.29]	< 0.26	0.25 J	< 0.16	171	< 0.23	< 0.23	< 0.2	< 0.18	< 0.29	< 0.26	< 0.14	< 0.16
Methylcyclohexane	108-87-2	µg/L	< 0.18	< 0.15 [< 0.15]	< 0.22	< 0.11	< 0.11	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	< 0.15	< 0.22	< 0.11	< 0.11
Methylene chloride	75-09-2	µg/L	< 0.2	< 0.86 [< 0.86]	< 0.81	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.86	< 0.81	< 0.16	< 0.16
o-Xylene	95-47-6	µg/L	NA	< 0.30 [< 0.30]	NA	< 0.45	< 0.45	< 0.25	< 0.25	NA	NA	NA	< 0.30	NA	< 0.45	< 0.45
Styrene	100-42-5	µg/L	< 0.23	NA [NA]	< 0.26	< 0.11	< 0.17	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	NA	< 0.26	< 0.11	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	< 0.25 [< 0.25]	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.32	< 0.44 [< 0.44]	< 0.35	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	< 0.44	< 0.35	< 0.29	< 0.29
Toluene	108-88-3	µg/L	< 0.15	< 0.38 [< 0.38]	< 0.22	< 0.15	< 0.15	< 0.3	0.72 J	< 0.3	< 0.27	< 0.15	< 0.38	18.4	< 0.15	< 0.15
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.31	< 0.21 [< 0.21]	< 0.51	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	< 0.21	< 0.51	< 0.16	< 0.16
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.50 [< 0.50]	< 0.32	< 0.11	< 0.15	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	< 0.50	< 0.32	< 0.11	< 0.15
Trichloroethene	79-01-6	µg/L	< 0.21	< 0.33 [< 0.33]	< 0.25	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	< 0.33	< 0.25	< 0.18	< 0.18
Trichlorofluoromethane	75-69-4	µg/L	< 0.35	< 0.41 [< 0.41]	< 0.28	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.23	< 0.35	< 0.41	< 0.28	< 0.25	< 0.25
Vinyl Chloride	75-01-4	µg/L	< 0.27	NA [NA]	< 0.17	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	NA	< 0.17	< 0.21	< 0.21
Xylene, -m,p	179601-23-1	µg/L	NA	NA [NA]	NA	< 0.39	< 0.39	< 0.25	< 0.25	NA	NA	NA	NA	NA	< 0.39	< 0.39
Xylenes	1330-20-7	µg/L	< 0.17	< 0.19 [< 0.19]	< 0.20	< 0.39	< 0.39	< 0.25	< 0.25	< 0.25	< 0.28	< 0.17	< 0.19	< 0.20	< 0.39	< 0.39
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.31	< 0.34 [< 0.32]	< 0.27	< 0.23	< 0.58	< 0.47	< 0.47	< 0.49	< 0.47	< 0.31	NA	< 0.29	< 0.23	< 0.55
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.6	< 1.7 [< 1.6]	< 1.7	< 1.2	< 2.1	< 1.5	< 1.5	< 1.5	< 1.5	< 1.6	NA	< 1.8	< 1.1	< 2
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.3	< 1.4 [< 1.3]	< 1.5	< 1.1	< 1.7	< 1.4	< 1.4	< 1.4	< 1.4	< 1.3	NA	< 1.6	< 1.1	< 1.6
2,4-Dichlorophenol	120-83-2	µg/L	< 1.2	< 1.3 [< 1.2]	< 1.6	< 1.5	< 2	< 1.4	< 1.4	< 1.4	< 1.4	< 1.2	NA	< 1.7	< 1.5	< 1.9
2,4-Dimethylphenol	105-67-9	µg/L	< 1.6	< 1.7 [< 1.6]	< 1.8	< 1.7	< 2.1	< 1.8	< 1.9	< 1.9	< 1.8	< 1.6	NA	< 2.0	< 1.7	< 2
2,4-Dinitrophenol	51-28-5	µg/L	< 17	< 18 [< 17]	< 6.5	< 1.2	< 4.4	< 0.82	< 0.83	< 0.86	< 0.82	< 17	NA	< 6.9	< 1.1	< 4.2
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.43	< 0.47 [< 0.44]	< 0.32	< 0.57	< 0.48	< 0.24	< 0.25 J	< 0.26	< 0.24	< 0.44	NA	< 0.34	< 0.57	< 0.45
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.47	< 0.51 [< 0.48]	< 0.26	< 0.53	< 0.63	< 0.36	< 0.37	< 0.38	< 0.36	< 0.48	NA	< 0.27	< 0.52	< 0.6
2-Chloronaphthalene	91-58-7	µg/L	< 0.3	< 0.33 [< 0.31]	< 0.34	< 0.21	< 0.51	< 0.46	< 0.47	< 0.48	< 0.46	< 0.31	NA	< 0.36	< 0.21	< 0.48
2-Chlorophenol	95-57-8	µg/L	< 0.99	< 1.1 [< 1.0]	< 1.3	< 0.92	< 1.5	< 1.2	< 1.2	< 1.2	< 1.2	< 1	NA	< 1.3	< 0.91	< 1.5
2-Methylnaphthalene	91-57-6	µg/L	< 0.39	< 0.43 [< 0.40]	< 0.29	< 0.8	< 0.46	< 0.73	< 0.74	< 0.77	< 0.73	< 0.4	NA	< 0.31	< 0.8	< 0.43
2-Methylphenol	95-48-7	µg/L	< 1.1	< 1.2 [< 1.1]	< 1.3	< 1.1	< 1.4	< 1.2	< 1.3	< 1.3	< 1.2	< 1.1	NA	< 1.4	< 1.1	< 1.4
2-Nitroaniline	88-74-4	µg/L	< 1.1	< 1.2 [< 1.2]	< 0.32	< 0.52	< 0.47	< 0.26	< 0.26	< 0.27	< 0.26	< 1.2	NA	< 0.34	< 0.52	< 0.45
2-Nitrophenol	88-75-5	µg/L	< 1.5	< 1.7 [< 1.6]	< 1.9	< 1.6	< 2	< 1.4	< 1.4	< 1.4	< 1.4	< 1.6	NA	< 2.0	< 1.6	< 1.9
3&4-Methylphenol	12-03-3	µg/L	< 0.94	< 1.0 [< 0.96]	< 1.1	< 1.2	< 1.5	< 1.2	< 1.2	< 1.2	< 1.2	< 0.96	NA	< 1.1	< 1.1 J	< 1.5
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.37	< 0.40 [< 0.38]	< 0.56	< 1	< 4.8	< 0.33	< 0.33	< 0.34	< 0.33	< 0.37	NA	< 0.60	< 1	< 4.6
3-Nitroaniline	99-09-2	µg/L	< 1.3	< 1.4 [< 1.3]	< 0.26	< 0.34	< 0.47	< 0.32	< 0.32	< 0.33	< 0.32	< 1.3	NA	< 0.28	< 0.34	< 0.45
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1	< 1.1 [< 1.0]	< 1.3	< 2.3	< 1.2	< 0.57	< 0.58	< 0.6	< 0.57	< 1	NA	< 1.4	< 2.3	< 1.2
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.36	< 0.40 [< 0.37]	< 0.25	< 0.39	< 0.43	< 0.39	< 0.39	< 0.41	< 0.39	< 0.37	NA	< 0.26	< 0.39	< 0.41
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.9	< 2.0 [< 1.9]	< 1.3	< 1.3	< 2.4	< 1.2	< 1.2	< 1.2	< 1.2	< 1.9	NA	< 1.4	< 1.3	< 2.3
Semi-Volatile Organic Compounds																

Location ID Sample ID Sample Date	CAS	Units	OB-24 OB-24(041812) 4/18/2012	OB-24 OB-24 (110613) & DUP 11/6/2013	OB-24 OB-24(090314) 9/3/2014	OB-25 OB-25(080429) 4/29/2008	OB-25 OB-25(080918) 9/18/2008	OB-25 OB-25(070609) 7/6/2009	OB-25 OB-25(102609) 10/26/2009	OB-25 OB-25(060110) 6/1/2010	OB-25 OB-25 (052011) 5/20/2011	OB-25 OB-25 (042012) 4/20/2012	OB-25 OB-25 (111213) 11/12/2013	OB-25 OB-25 (090914) 9/9/2014	OB-26 OB-26(080509) 5/9/2008	OB-26 OB-26(080916) 9/16/2008
4-Chloroaniline	106-47-8	µg/L	< 0.54	< 0.59 J [< 0.55 J]	< 0.30	< 0.37	< 0.35	< 0.28	< 0.28	< 0.29	< 0.28	< 0.55	NA	< 0.32 J	< 0.36	< 0.33
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.32	< 0.35 [< 0.33]	< 0.38	< 0.31	< 0.48	< 0.39	< 0.4	< 0.41	< 0.39	< 0.32	NA	< 0.41	< 0.3	< 0.45
4-Nitroaniline	100-01-6	µg/L	< 1.7	< 1.8 [< 1.7]	< 0.30	< 0.62	< 0.48	< 0.2	< 0.2	< 0.21	< 0.2	< 1.7	NA	< 0.32	< 0.61	< 0.45
4-Nitrophenol	100-02-7	µg/L	< 5.3	< 5.8 [< 5.4]	< 0.91	< 1.7	< 2.4	< 0.92	< 0.93	< 0.96	< 0.92	< 5.4	NA	< 0.96	< 1.6	< 2.3
Acenaphthene	83-32-9	µg/L	< 0.014	< 0.023 [< 0.021]	< 0.020	< 0.017	< 0.017	< 0.018	< 0.033	< 0.034	< 0.015	< 0.014	NA	< 0.022	< 0.017	< 0.016
Acenaphthylene	208-96-8	µg/L	< 0.016	< 0.026 [< 0.025]	< 0.024	< 0.0074	< 0.0074	< 0.0078	< 0.044	< 0.046	< 0.018	< 0.017	NA	< 0.025	< 0.0073	< 0.007
Acetophenone	98-86-2	µg/L	< 0.29	< 0.32 [< 0.30]	< 0.36	< 0.38	< 0.49	< 0.44	< 0.45	< 0.46	< 0.44	< 0.3	NA	< 0.39	< 0.38	< 0.47
Anthracene	120-12-7	µg/L	< 0.01	< 0.023 [< 0.021]	< 0.020	< 0.022	< 0.022	< 0.023	< 0.029	< 0.03	< 0.011	< 0.01	NA	< 0.022	< 0.022	< 0.021
Atrazine	1912-24-9	µg/L	< 0.5	< 0.54 [< 0.51]	< 0.42	< 0.3	< 0.65	< 0.43	< 0.44	< 0.45	< 0.43	< 0.51	NA	< 0.45	< 0.29	< 0.62
Benzaldehyde	100-52-7	µg/L	< 3.3	< 3.6 [< 3.4]	< 0.67 J	< 0.8	< 1.7	< 0.45	< 0.45	< 0.47	< 0.45	< 3.4	NA	< 0.71	NA	< 1.6
Benzo(a)anthracene	56-55-3	µg/L	< 0.015	< 0.013 [< 0.012]	< 0.012	< 0.035	< 0.035	< 0.037	< 0.027	< 0.028	< 0.017	< 0.016	NA	< 0.012	< 0.035	< 0.034
Benzo(a)pyrene	50-32-8	µg/L	< 0.005	< 0.014 [< 0.013]	< 0.012	< 0.037	< 0.037	< 0.039	< 0.035	< 0.036	< 0.0054	< 0.0051	NA	< 0.013	< 0.037	< 0.036
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.017	< 0.011 [< 0.011]	< 0.010	< 0.018	< 0.018	< 0.019	< 0.04	< 0.042	< 0.018	< 0.017	NA	< 0.011	< 0.018	< 0.017
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.011	< 0.017 [< 0.016]	< 0.016	< 0.012	< 0.012	< 0.013	< 0.032	< 0.033	< 0.011	< 0.011	NA	< 0.017	< 0.012	< 0.012
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.013	< 0.016 [< 0.015]	< 0.015	< 0.02	< 0.02	< 0.021	< 0.032	< 0.033	< 0.014	< 0.013	NA	< 0.016	< 0.02	< 0.019
Benzyl butyl phthalate	85-68-7	µg/L	< 0.29	< 0.32 [< 0.30]	< 0.22	< 0.67	< 0.44	< 0.28	< 0.28	< 0.29	< 0.28	< 0.3	NA	< 0.24	< 0.66	< 0.42
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.31	< 0.34 [< 0.32]	< 0.42	< 0.33	< 0.54	< 0.28	< 0.28	< 0.29	< 0.28	< 0.32	NA	< 0.45	< 0.33	< 0.52
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.31	< 0.34 [< 0.32]	< 0.43	< 0.71	< 0.52	< 0.34	< 0.35	< 0.36	< 0.34	< 0.32	NA	< 0.46	< 0.7	< 0.49
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.46	< 0.50 [< 0.47]	< 0.41	< 0.61	< 0.57	< 0.43	< 0.44	< 0.45	< 0.43	< 0.47	NA	< 0.43	< 0.6	< 0.54
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.6	< 0.65 [< 0.61]	< 0.55	< 0.92 J	< 0.79	< 0.36	< 0.37	< 0.38	< 0.36	< 0.61	NA	< 0.59	< 0.91	< 0.75
Caprolactam	105-60-2	µg/L	< 0.7	< 0.77 [< 0.72]	< 0.41	< 0.52	< 0.66	< 0.22	< 0.22	< 0.23	< 0.22	< 0.71	NA	< 0.43	< 0.51	< 0.63
Carbazole	86-74-8	µg/L	< 0.37	< 0.40 [< 0.38]	< 0.17	< 0.42	< 0.47	< 0.18	< 0.19	< 0.19	< 0.18	< 0.37	NA	< 0.18	< 0.41	< 0.45
Chrysene	218-01-9	µg/L	< 0.024	< 0.013 [< 0.012]	< 0.012	< 0.019	< 0.019	< 0.02	< 0.025	< 0.026	< 0.026	< 0.024	NA	< 0.013	< 0.018	< 0.018
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023	< 0.018 [< 0.017]	< 0.017	< 0.021	< 0.021	< 0.022	< 0.025	< 0.026	< 0.025	< 0.023	NA	< 0.018	< 0.021	< 0.02
Dibenzofuran	132-64-9	µg/L	< 0.27	< 0.29 [< 0.28]	< 0.23	< 0.24	< 0.51	< 0.34	< 0.34	< 0.35	< 0.34	< 0.27	NA	< 0.24	< 0.24	< 0.49
Diethyl phthalate	84-66-2	µg/L	< 0.33	< 0.36 [< 0.34]	< 0.23	< 0.36	< 0.38	< 0.18	< 0.19	< 0.19	< 0.18	< 0.34	NA	< 0.25	< 0.36	< 0.36
Dimethyl phthalate	131-11-3	µg/L	< 0.29	< 0.31 [< 0.29]	< 0.26	< 0.35	< 0.38	< 0.25	< 0.25	< 0.26	< 0.25	< 0.29	NA	< 0.28	< 0.35	< 0.36
di-n-butyl phthalate	84-74-2	µg/L	< 0.57	< 0.62 [< 0.58]	2.7	< 0.42	< 0.53	< 0.21	< 0.21	< 0.22	< 0.21	< 0.58	NA	< 2.1 BJ	< 0.42	< 0.5
di-n-octylphthalate	117-84-0	µg/L	< 0.31	< 0.34 [< 0.32]	< 0.25	< 0.5	< 0.52	< 0.44	< 0.44	< 0.46	< 0.44	< 0.32	NA	< 0.27	< 0.5	< 0.5
Fluoranthene	206-44-0	µg/L	< 0.0098	< 0.015 [< 0.014]	< 0.013	< 0.01	< 0.01	< 0.011	< 0.027	< 0.028	< 0.011	< 0.0099	NA	< 0.014	< 0.01	< 0.0096
Fluorene	86-73-7	µg/L	< 0.015	< 0.019 [< 0.018]	< 0.017	< 0.021	< 0.021	< 0.022	< 0.03	< 0.031	< 0.017	< 0.015	NA	< 0.018	< 0.02	< 0.02
Hexachlorobenzene	118-74-1	µg/L	< 0.0082	< 0.018 [< 0.017]	< 0.017	< 0.01	< 0.01	< 0.011	< 0.011	< 0.012	< 0.0089	< 0.0083	NA	< 0.018	< 0.01	< 0.0099
Hexachlorobutadiene	87-68-3	µg/L	< 0.52	< 0.57 [< 0.53]	R	< 0.13	< 0.39	< 0.41	< 0.42 J	< 0.15	< 0.14	< 0.53	NA	< 0.41	< 0.13	< 0.38
Hexachlorocyclopentadiene	77-47-4	µg/L	< 7.3	< 7.9 [< 7.4]	< 0.48	< 0.11	< 4.8	< 0.75	< 0.76	< 0.28	< 0.27	< 7.4	NA	< 0.51	< 0.11	< 4.5
Hexachloroethane	67-72-1	µg/L	< 0.56	< 0.61 [< 0.57]	R	< 0.17	< 0.32	< 0.29	< 0.3	< 0.24	< 0.23	< 0.57	NA	< 0.31	< 0.17	< 0.3
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.011	< 0.016 [< 0.015]	< 0.014	< 0.015	< 0.015	< 0.016	< 0.033	< 0.034	< 0.012	< 0.011	NA	< 0.015	< 0.015	< 0.014
Isophorone	78-59-1	µg/L	< 0.28	< 0.30 [< 0.28]	< 0.34	< 0.51	< 0.73	< 0.28	< 0.28	< 0.29	< 0.28	< 0.28	NA	< 0.36	< 0.51	< 0.69
Naphthalene	91-20-3	µg/L	< 0.017	< 0.039 [< 0.037]	< 0.036	< 0.015	< 0.015	< 0.015	< 0.021	< 0.022	< 0.018	< 0.017	NA	< 0.038	< 0.014	< 0.014
Nitrobenzene	98-95-3	µg/L	< 0.43	< 0.47 [< 0.44]	< 0.52	< 0.74	< 0.69	< 0.28	< 0.28	< 0.29	< 0.28	< 0.43	NA	< 0.55	< 0.73	< 0.66
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.31	< 0.34 [< 0.31]	< 0.38	< 0.4	< 0.41	< 0.49	< 0.49	< 0.51	< 0.49	< 0.31	NA	< 0.40 J	< 0.4	< 0.39
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.31	< 0.34 [< 0.32]	< 0.21	< 0.44	< 0.64	< 0.24	< 0.24	< 0.25	< 0.24	< 0.32	NA	< 0.22	< 0.43	< 0.61
Pentachlorophenol	87-86-5	µg/L	< 0.1 J	< 0.11 [< 0.10]	< 0.10	< 0.23	< 0.23	< 0.25	< 0.25	< 0.079	< 0.32	< 0.1 J	NA	< 0.11	< 0.23	< 0.22 J
Phenanthrene	85-01-8	µg/L	< 0.016	< 0.023 [< 0.022]	< 0.021	< 0.018	< 0.018	< 0.019	< 0.041	< 0.042	< 0.017	< 0.016	NA	< 0.022	< 0.018	< 0.017
Phenol	108-95-2	µg/L	< 1.3	< 1.4 [< 1.3]	< 0.55	< 0.72	< 1.4	< 0.64	< 0.65	< 0.67	< 0.64	< 1.3	NA	< 0.58	< 0.71	< 1.4
Pyrene	129-00-0	µg/L	< 0.0083	< 0.017 [< 0.016]	< 0.015	< 0.013	< 0.013	< 0.013	< 0.025	< 0.026	< 0.009	< 0.0084	NA	< 0.016	< 0.013	< 0.012
Metals - Total																
Aluminum, total	7429-90-5	µg/L	216	179 B [202]	129 J	8080	43100	17700	3440	5520	1770	5640	12400	1840	914	504
Antimony, total	7440-36-0	µg/L	< 1.4	< 1.8 [< 1.8]	< 2.6	< 1.8	3.1 B	< 4	< 2.9	< 2.2	< 1.3	< 6	< 1.8	< 2.6	< 1.8	< 1.8
Arsenic, total	7440-38-2	µg/L	< 0.97	< 1.5 [< 1.5]	< 2.6	2.1 B	19.8	8.4 J	< 2.4	1.7 B	< 0.92	2.1 J	9.6 J	< 2.6	< 1.7 B	2.7 B
Barium, total	7440-39-3	µg/L	40.2 B	49.6 B [49.6 B]	36.4 B	60.6 B	232	108 B	35.3 B	113 J	29.9 B	51.9 B	98.8 B	36.6 B	17 B	32.1 B
Beryllium, total	7440-41-7	µg/L	< 0.44	< 0.17 [< 0.17]	< 0.40	0.4 B	1.4	3.3 J	< 0.4	< 1	< 0.24	< 0.44	0.70 B	< 0.40	< 0.15	< 0.15
Cadmium, total	7440-43-9	µg/L	< 3	0.30 B [0.40 B]	< 0.70	< 0.28	2.1 BJ	< 0.4	< 0.4	< 3	< 0.17	< 3	9.9	0.90 B	< 0.28	< 0.28
Calcium, total	7440-70-2	µg/L	98300	99100 [99500]	98000	50400	48700	45200	36600	50700	36800	39900	29200	33500	6190	12400
Chromium, total	7440-47-3	µg/L	< 0.91	< 0.92 [1.7 B]	< 0.89	9.4 B	51.1	24.1	4.6 B	7.5 B	1.6 B	6.9 J	15.4	3.1 B	< 1.3 B	< 0.53
Cobalt, total	7440-48-4	µg/L	< 0.59	< 0.48 [< 0.48]	< 0.83	5.2 B	34.6 B	12.5 B	3 B	10.9 B	0.7 B	2.9 J	9.6 J	1.1 B	< 0.51	< 0.51
Copper, total	7440-50-8	µg/L	< 10	< 1.0 [< 1.0]	< 1.2	43.4	124	57.4	95.9	95	11.5	32.9	76.5	8.4 B	7.1 B	3 B
Iron, total	7439-89-6	µg/L	464	274 [309]	220	11000	69500	28300	5180	7880	2410	7710	22900	2580	894	511
Lead, total	7439-92-1	µg/L	< 1.7	< 3.0 B [< 2.4]	< 1.3	13.8	45.7	19.9	4.3	53.6	4.2	17.2	40.3	3.8	1.7 B	< 1.4
Magnesium, total	7439-95-4	µg/L	24700	25300 [25400]	24500	11300	20900	13300	7640	12100	7700	9730	9500	7410	2070 B	3750 B
Manganese, total	7439-96-5	µg/L	628	2470 [2420]	599	321	2110	735	137	1080	65.5	213	901	50.6	124	20.7
Mercury, total	7439-97-6	µg/L	< 0.075	< 0.089 [< 0.089]	< 0.064	< 0.15	0.15 B	0.071 B	< 0.082	< 0.082	< 0.088	< 0.075	< 0.20 B	< 0.064	< 0.15	< 0.049
Nickel, total	7440-02-0	µg/L	< 10	< 1.6 [< 1.6]	< 0.75	12.8 B	72.2	29	6.5 B	14.3	3.9 B	8.5 J	26.3	3.8 B	1.8 B	< 1.2
Potassium, total	7440-09-7	µg/L	2150 B	2220 B [2260 B]	2210 B	8200 B	11000	8490 B	6790 B	6920 B	5730 B	6650 B	5990 B	7030 B	856 B	1490 B
Selenium, total	7782-49-2	µg/L	< 10	< 2.4 [< 2.4]	< 3.6	< 1.6	4.5 B	< 3.7	< 3.7	3.3 B	< 1.5	< 2.4	2.7 B	< 3.6	< 1.6	< 1.6
Silicon, total	7440-21-3	µg/L	NA	NA [NA]	15700	NA	NA	NA	NA	NA	NA	NA	NA	49900	NA	NA
Silver, total	7440-22-4	µg/L	1.6 J	< 1.5 [< 1.5]	< 1.2	< 1	< 1	4.9 B	< 1	< 0.53	< 0.72	1.4 B	< 10 B	< 1.2	< 1	< 1
Sodium, total	7440-23-5	µg/L	16500	15500 [15500]	15800	43300	37400 J	42800	37500	45600 J	41100	54200	42700	45000	2100 B	3820 B
Thallium, total	7440-28-0	µg/L	< 1.7	< 1.3 [< 1.3]	< 1.8	< 1.3	< 1.3	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	< 1.3	< 1.8	< 1.3	< 1.3
Vanadium, total	7440-62-2	µg/L	< 50	4.4 B [4.0 B]	< 50 B	13 B	77.8	30.2 B	6.4 B	14 B	2.6 B	12.1 B	20.1 B	3.4 B	1.8 B	1.4 B
Zinc, total	7440-66-6	µg/L	< 2.8	< 4.4 [< 4.4]	< 7.6	61.4	262	112	24.8	123	19.6 B	56.2	152	26.0	< 12 B	13.3 B
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-26 OB-26(070209) 7/2/2009	OB-26 OB-26(102209) 10/22/2009	OB-26 OB-26(052610) 5/26/2010	OB-26 OB-26(051711) 5/17/2011	OB-26 OB-26 (042012) 4/20/2012	OB-27 OB-27(060110) 6/1/2010	OB-27 OB-27(051811) 5/18/2011	OB-27 OB-27 (042512) 4/25/2012	OB-27 OB-27(111113) & DUP 11/11/2013	OB-27 OB-27 (091014) 9/10/2014	OB-28 OB-28(052710) 5/27/2010	OB-28 OB-28(051911) 5/19/2011	OB-28 OB-28(041712) 4/17/2012	OB-28 OB-28 (091014) 9/10/2014
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.26	< 0.26	< 0.26	< 0.2	< 0.24	1.2	2.5	< 0.24	< 0.25 [< 0.25]	< 0.32	< 0.26	< 0.2	< 0.24	< 0.32
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.24	< 0.24	< 0.24	< 0.12	< 0.2	< 0.24	< 0.12	< 0.2	< 0.20 [< 0.20]	< 0.39	< 0.24	< 0.12	< 0.2	< 0.39
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23	< 0.23	< 0.13	< 0.23	< 0.23	< 0.13	< 0.23	< 0.21 [< 0.21]	< 0.28	< 0.23	< 0.13	< 0.23	< 0.28
1,1-Dichloroethane	75-34-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.16	< 0.19	28.3	89.3 J	3.7	0.43 J [0.46 J]	< 0.35	< 0.29	< 0.16	< 0.19	< 0.35
1,1-Dichloroethene	75-35-4	µg/L	< 0.4	< 0.4	< 0.4	< 0.24	< 0.28	< 0.4	< 0.24	< 0.28	< 0.34 [< 0.34]	< 0.50	< 0.4	< 0.24	< 0.28	< 0.50
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.56	< 0.56	< 0.56	< 0.16	< 0.15	< 0.56	< 0.16	< 0.15	< 0.22 [< 0.22]	< 0.22	< 0.56	< 0.16	< 0.15	< 0.22
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.1	< 1.1	< 1.1	< 1.2	< 1.3*	< 1.1	< 1.2	< 1.3*	< 1.3 [< 1.3]	< 1.2	< 1.1	< 1.2	< 1.3*	< 1.2
1,2-Dibromoethane	106-93-4	µg/L	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21*	< 0.39	< 0.39	< 0.21*	< 0.16 [< 0.16]	< 0.23	< 0.39	< 0.39	< 0.21*	< 0.23
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.26	< 0.26	< 0.26	< 0.15	< 0.18	< 0.26	< 0.15	< 0.18	< 0.20 [< 0.20]	< 0.16	< 0.26	< 0.15	< 0.18	< 0.16
1,2-Dichloroethane	107-06-2	µg/L	< 0.33	< 0.33	< 0.33	< 0.31	< 0.18	< 0.33	< 0.31	< 0.18	< 0.22 [< 0.22]	< 0.30	< 0.33	< 0.31	< 0.18	< 0.30
1,2-Dichloropropane	78-87-5	µg/L	< 0.27	< 0.27	< 0.27	< 0.23	< 0.22	< 0.27	< 0.23	< 0.22	< 0.28 [< 0.28]	< 0.43	< 0.27	< 0.23	< 0.22	< 0.43
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.25	< 0.25	< 0.25	< 0.19	< 0.29	< 0.25	< 0.19	< 0.29	< 0.31 [< 0.31]	< 0.26	< 0.25	< 0.19	< 0.29	< 0.26
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.28	< 0.28	< 0.28	< 0.22	< 0.26	< 0.28	< 0.22	< 0.26	< 0.30 [< 0.30]	< 0.24	< 0.28	< 0.22	< 0.26	< 0.24
2-Butanone (MEK)	78-93-3	µg/L	< 1.6	< 1.6	< 1.6	< 1.7	< 2.9	< 1.6	< 1.7	< 2.9	< 3.2 [< 3.2]	< 2.5	< 1.6	< 1.7	< 2.9	< 2.5
2-Hexanone	591-78-6	µg/L	< 1.4	< 1.4	< 1.4	< 1.9	< 3	< 1.4	< 1.9	< 3	< 1.7 [< 1.7]	< 1.7	< 1.4	< 1.9	< 3	< 1.7
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.86	< 0.86	< 0.86	< 0.74	< 1.2	< 0.86	< 0.74	< 1.2	< 1.5 [< 1.5]	< 1.1	< 0.86	< 0.74	< 1.2	< 1.1
Acetone	67-64-1	µg/L	< 2.9	< 2.9	< 2.9	< 4.4	< 7.6	< 2.9	< 4.4	< 5	< 3.3 [< 3.3]	< 2.6	< 2.9	< 4.4	< 7.6	< 2.6
Benzene	71-43-2	µg/L	< 0.23	< 0.23	< 0.23	< 0.26	< 0.22	5.9	6.5	5.5	3.5 [3.5]	2.6	< 0.23	< 0.26	< 0.22	< 0.21
Bromodichloromethane	75-27-4	µg/L	< 0.22	< 0.22	< 0.22	< 0.18	< 0.23	< 0.22	< 0.18	< 0.23	< 0.21 [< 0.21]	< 0.28	< 0.22	< 0.18	< 0.23	< 0.28
Bromoform	75-25-2	µg/L	< 0.23	< 0.23	< 0.23	< 0.42	< 0.24	< 0.23	< 0.42	< 0.24	< 0.30 [< 0.30]	< 0.31	< 0.23	< 0.42	< 0.24	< 0.31
Bromomethane	74-83-9	µg/L	< 0.3	< 0.3	< 0.3	< 0.24	< 0.31	< 0.3	< 0.24	< 0.31	< 0.56 [< 0.56]	< 0.39	< 0.3	< 0.24	< 0.31	< 0.39
Carbon disulfide	75-15-0	µg/L	< 0.74	< 0.74	< 0.74	< 0.13	< 0.18	< 0.74	< 0.13	< 0.18	< 0.18 [< 0.18]	< 0.50	< 0.74	< 0.13	< 0.18	< 0.50
Carbon tetrachloride	56-23-5	µg/L	< 0.26	< 0.26	< 0.26	< 0.35	< 0.19	< 0.26	< 0.35	< 0.19	< 0.23 [< 0.23]	< 0.24	< 0.26	< 0.35	< 0.19	< 0.24
Chlorobenzene	108-90-7	µg/L	< 0.39	< 0.39	< 0.39	< 0.15	< 0.22	< 0.39	< 0.15	< 0.22	< 0.35 [< 0.35]	< 0.27	< 0.39	< 0.15	< 0.22	< 0.27
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.25	< 0.37	159	176	208	80.8 [82.1]	89.4	< 0.37	< 0.25	< 0.37	< 0.56
Chloroform	67-66-3	µg/L	< 0.23	< 0.23	< 0.23	< 0.14	< 0.21	< 0.23	< 0.14	< 0.21	< 0.25 [< 0.25]	< 0.20	< 0.23	< 0.14	< 0.21	< 0.20
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.34	< 0.22	< 0.29	< 0.34	< 0.22	< 0.36 [< 0.36]	< 0.33	< 0.29	< 0.34	< 0.22	< 0.33
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.24	< 0.22	0.49 J	0.46 J	0.6 J	0.35 J [0.34 J]	< 0.33	< 0.22	< 0.24	< 0.22	< 0.33
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.25	< 0.25	< 0.25	< 0.16	< 0.22	< 0.25	< 0.16	< 0.22	< 0.15 [< 0.15]	< 0.28	< 0.25	< 0.16	< 0.22	< 0.28
Cyclohexane	110-82-7	µg/L	< 1.9	< 1.9	< 1.9	< 0.43	< 0.29	2 J	1.9 J	3.3 J	1.6 J [1.5 J]	1.3 J	< 1.9	< 0.43	< 0.29	< 0.37
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.16	< 0.2	< 0.22	< 0.16	< 0.2	< 0.19 [< 0.19]	< 0.25	< 0.22	< 0.16	< 0.2	< 0.25
Dichlorodifluoromethane	75-71-8	µg/L	< 0.92	< 0.92	< 0.92	< 0.39	< 0.31	< 0.92	< 0.39	< 0.31	< 0.63 [< 0.63]	< 0.73	< 0.92	< 0.39	< 0.31	< 0.73
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.27	< 0.31	< 0.21	0.97 J	2.7	< 0.21	< 0.21 [< 0.21]	< 0.40	< 0.27	< 0.31	< 0.21	< 0.40
Freon 113	76-13-1	µg/L	< 0.38	< 0.38	< 0.38	< 0.66	< 0.49	< 0.38	< 0.66	< 0.49	< 0.77 [< 0.77]	< 0.45	< 0.38	< 0.66	< 0.49	< 0.45
Isopropylbenzene	98-82-8	µg/L	< 0.57	< 0.57	< 0.57	< 0.31	< 0.19	3.1	4.4	3.1	3.4 [3.5]	2.8	< 0.57	< 0.31	< 0.19	< 0.26
Methyl acetate	79-20-9	µg/L	< 1.5	< 1.5	< 1.5	< 1.3	< 2.9	< 1.5	< 1.3	< 2.9	< 1.5 [< 1.5]	< 3.1	< 1.5	< 1.3	< 2.9	< 3.1
Methyl tert butyl ether	1634-04-4	µg/L	< 0.23	< 0.23	< 0.23	< 0.2	< 0.18	< 0.23	< 0.2	< 0.18	< 0.29 [< 0.29]	< 0.26	< 0.23	< 0.2	< 0.18	< 0.26
Methylcyclohexane	108-87-2	µg/L	< 0.35	< 0.35	< 0.35	< 0.16	< 0.18	1.1 J	1.4 J	0.79 J	1.0 J [1.1 J]	1.0 J	< 0.35	< 0.16	< 0.18	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	0.85 J	1.2 J	0.99 J	< 0.86 [< 0.86]	< 0.81	< 0.3	< 0.2	< 0.2	< 0.81
o-Xylene	95-47-6	µg/L	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	< 0.30 [< 0.30]	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.58	< 0.58	< 0.58	< 0.48	< 0.23	< 0.58	< 0.48	< 0.23	NA [NA]	< 0.26	< 0.58	< 0.48	< 0.23	< 0.26
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	< 0.25 [< 0.25]	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.27	< 0.27	< 0.27	< 0.24	< 0.32	< 0.27	< 0.24	< 0.32	< 0.44 [< 0.44]	< 0.35	< 0.27	< 0.24	< 0.32	< 0.35
Toluene	108-88-3	µg/L	< 0.3	< 0.3	< 0.3	< 0.27	< 0.15	1.3	1.5	< 0.15	< 0.38 [< 0.38]	< 0.22	< 0.3	< 0.27	< 0.15	< 0.22
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.25	< 0.25	< 0.25	< 0.3	< 0.31	< 0.25	< 0.3	< 0.31	< 0.21 [< 0.21]	< 0.51	< 0.25	< 0.3	< 0.31	< 0.51
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.21	< 0.21	< 0.21	< 0.22	< 0.19	< 0.21	< 0.22	< 0.19	< 0.50 [< 0.50]	< 0.32	< 0.21	< 0.22	< 0.19	< 0.32
Trichloroethene	79-01-6	µg/L	< 0.24	< 0.24	< 0.24	< 0.22	< 0.21	< 0.24	< 0.22	< 0.21	< 0.33 [< 0.33]	< 0.25	< 0.24	< 0.22	< 0.21	< 0.25
Trichlorofluoromethane	75-69-4	µg/L	< 0.54	< 0.54	< 0.54	< 0.23	< 0.35	< 0.54	< 0.23	< 0.35	< 0.41 [< 0.41]	< 0.28	< 0.54	< 0.23	< 0.35	< 0.28
Vinyl Chloride	75-01-4	µg/L	< 0.44	< 0.44	< 0.44	< 0.22	< 0.27	< 0.44	< 0.22	< 0.27	NA [NA]	< 0.17	< 0.44	< 0.22	< 0.27	< 0.17
Xylene, -m,p	179601-23-1	µg/L	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.25	< 0.25	< 0.25	< 0.28	< 0.17	5.4	17.9	0.32 J	0.43 J [0.22 J]	< 0.20	< 0.25	< 0.28	< 0.17	< 0.20
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.42	< 0.42	< 0.47	< 0.45	< 0.32	< 0.47	< 0.42	< 0.31	< 0.30 [< 0.34]	< 0.28	< 0.47	< 0.42	< 0.31	< 0.28
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.3	< 1.3	< 1.5	< 1.4	< 1.7	< 1.5	< 1.3	< 1.6	< 1.6 [< 1.7]	< 1.7	< 1.5	< 1.3	< 1.6	< 1.7
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.2	< 1.2	< 1.4	< 1.3	< 1.4	< 1.4	< 1.2	< 1.3	< 1.3 [< 1.4]	< 1.6	< 1.4	< 1.2	< 1.3	< 1.6
2,4-Dichlorophenol	120-83-2	µg/L	< 1.2	< 1.2	< 1.4	< 1.3	< 1.2	< 1.4	< 1.2	< 1.2	< 1.2 [< 1.3]	< 1.7	< 1.4	< 1.2	< 1.2	< 1.6
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7	< 1.7	< 1.8	< 1.8	< 1.6	< 1.9	< 1.7	< 1.5	< 1.5 [< 1.7]	< 1.9	< 1.9	< 1.7	< 1.6	< 1.9
2,4-Dinitrophenol	51-28-5	µg/L	< 0.74	< 0.74	< 0.82	< 0.79	< 18	< 0.83	< 0.74	< 17	< 17 [< 18]	< 6.6	< 0.83	< 0.74	< 17	< 6.6
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.22	< 0.22	< 0.24	< 0.24	< 0.45	< 0.25	< 0.22	< 0.43	< 0.43 [< 0.47]	< 0.33	< 0.25	< 0.22	< 0.44	< 0.32
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.33	< 0.33	< 0.36	< 0.35	< 0.49	< 0.37	< 0.33	< 0.47	< 0.46 [< 0.51]	< 0.26	< 0.37	< 0.33	< 0.48	< 0.26
2-Chloronaphthalene	91-58-7	µg/L	< 0.42	< 0.42	< 0.46	< 0.45	< 0.32	< 0.47	< 0.42	< 0.3	< 0.30 [< 0.33]	< 0.35	< 0.47	< 0.42	< 0.31	< 0.35
2-Chlorophenol	95-57-8	µg/L	< 1.1	< 1.1	< 1.2	< 1.2	< 1	< 1.2	< 1.1	< 0.98	< 0.97 [< 1.1]	< 1.3	< 1.2	< 1.1	< 1	< 1.3
2-Methylnaphthalene	91-57-6	µg/L	< 0.66	< 0.66	< 0.73	< 0.71	< 0.41	< 0.74	0.88 J	0.8 J	0.92 J [0.91 J]	0.69 J	< 0.74	< 0.66	< 0.4	< 0.29
2-Methylphenol	95-48-7	µg/L	< 1.1	< 1.1	< 1.2	< 1.2	< 1.1	< 1.3	< 1.1	< 1.1	< 1.0 [< 1.2]	< 1.3	< 1.3	< 1.1	< 1.1	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 0.24	< 0.24	< 0.26	< 0.25	< 1.2	< 0.26	< 0.24	< 1.1	< 1.1 [< 1.2]	< 0.32	< 0.26	< 0.24	< 1.1	< 0.32
2-Nitrophenol	88-75-5	µg/L	< 1.2	< 1.2	< 1.4	< 1.3	< 1.6	< 1.4	< 1.2	< 1.5	< 1.5 [< 1.7]	< 1.9	< 1.4	< 1.2	< 1.5	< 1.9
3&4-Methylphenol	12-03-3	µg/L	< 1	< 1	< 1.2	< 1.1	< 0.98	< 1.2	< 1	< 0.93	< 0.93 [< 1.0]	< 1.1	< 1.2	< 1	< 0.95	< 1.1
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.3	< 0.3	< 0.33	< 0.32	< 0.38	< 0.33	< 0.3	< 0.36	< 0.36 [< 0.40]	< 0.57	< 0.33	< 0.3	< 0.37	< 0.57
3-Nitroaniline	99-09-2	µg/L	< 0.29	< 0.29	< 0.32	< 0.31	< 1.3	< 0.32	< 0.29	< 1.3	< 1.3 [< 1.4]	< 0.27	< 0.32	< 0.29	< 1.3	< 0.26
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.51	< 0.51	< 0.57	< 0.55	< 1.1	< 0.58	< 0.51	< 1	< 0.99 [< 1.1]	< 1.4	< 0.58	< 0.51	< 1	< 1.3
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.35	< 0.35	< 0.39	< 0.38	< 0.38	< 0.39	< 0.35	< 0.36	< 0.36 [< 0.40]	< 0.25	< 0.39	< 0.35	< 0.37	< 0.25
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.1	< 1.1	< 1.2	< 1.1	< 1.9	< 1.2	< 1.1	< 1.8	< 1.8 [< 2.0]	< 1.3	< 1.2	< 1.1	< 1.9	< 1.3
Semi-Volatile Organic Compounds																

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	OB-26 OB-26(070209) 7/2/2009	OB-26 OB-26(102209) 10/22/2009	OB-26 OB-26(052610) 5/26/2010	OB-26 OB-26(051711) 5/17/2011	OB-26 OB-26 (042012) 4/20/2012	OB-27 OB-27(060110) 6/1/2010	OB-27 OB-27(051811) 5/18/2011	OB-27 OB-27 (042512) 4/25/2012	OB-27 OB-27(111113) & DUP 11/11/2013	OB-27 OB-27 (091014) 9/10/2014	OB-28 OB-28(052710) 5/27/2010	OB-28 OB-28(051911) 5/19/2011	OB-28 OB-28(041712) 4/17/2012	OB-28 OB-28 (091014) 9/10/2014
4-Chloroaniline	106-47-8	µg/L	< 0.25	< 0.25	< 0.28	< 0.27	< 0.56	< 0.28	< 0.25	< 0.53	< 0.53 [< 0.59]	< 0.31 J	< 0.28	< 0.25	< 0.54	< 0.30 J
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.35	< 0.35	< 0.39	< 0.38	< 0.33	< 0.4	< 0.35	< 0.32	< 0.31 [< 0.35]	< 0.39	< 0.4	< 0.35	< 0.32	< 0.38
4-Nitroaniline	100-01-6	µg/L	< 0.18	< 0.18	< 0.2	< 0.19	< 1.8	< 0.2	< 0.18	< 1.7	< 1.7 [< 1.8]	< 0.31	< 0.2	< 0.18	< 1.7	< 0.30
4-Nitrophenol	100-02-7	µg/L	< 0.83	< 0.83	< 0.92	< 0.89	< 5.5	< 0.93	< 0.83	< 5.3 J	< 5.2 [< 5.8]	< 0.93	< 0.93 J	< 0.83	< 5.4	< 0.92
Acenaphthene	83-32-9	µg/L	< 0.016	< 0.029	< 0.032	< 0.015	< 0.015	0.471	0.566	0.374	0.588 [0.548]	0.491	< 0.033	< 0.014	< 0.014	< 0.021
Acenaphthylene	208-96-8	µg/L	< 0.007	< 0.039	< 0.044	< 0.017	< 0.017	< 0.044	< 0.016	< 0.016	< 0.024 [< 0.026]	< 0.024	< 0.044	< 0.016	< 0.017	< 0.024
Acetophenone	98-86-2	µg/L	< 0.4	< 0.4	< 0.44	< 0.43	< 0.3	< 0.45	< 0.4	< 0.29	< 0.29 [< 0.32]	< 0.37	< 0.45	< 0.4	< 0.29	< 0.37
Anthracene	120-12-7	µg/L	< 0.021	< 0.026	< 0.028	< 0.011	< 0.011	0.124	0.138	< 0.01	0.172 [0.128]	0.147	< 0.029	< 0.01	< 0.01	< 0.021
Atrazine	1912-24-9	µg/L	< 0.39	< 0.39	< 0.43	< 0.42	< 0.52	< 0.44	< 0.39	< 0.49	< 0.49 [< 0.54]	< 0.43	< 0.44	< 0.39	< 0.5	< 0.43
Benzaldehyde	100-52-7	µg/L	< 0.4	< 0.4	< 0.45	< 0.43	< 3.5	< 0.45	< 0.4	< 3.3	< 3.3 [< 3.6]	< 0.69	< 0.45	< 0.4	< 3.4	< 0.68
Benzo(a)anthracene	56-55-3	µg/L	< 0.034	< 0.024	< 0.026	< 0.016	< 0.016	< 0.027	< 0.015	< 0.015	< 0.012 [< 0.013]	< 0.012	< 0.027	< 0.015	< 0.016	< 0.012
Benzo(a)pyrene	50-32-8	µg/L	< 0.036	< 0.031	< 0.034	< 0.0053	< 0.0052	< 0.035	< 0.0049	< 0.0049	< 0.012 [< 0.014]	< 0.013	< 0.035	< 0.0049	< 0.0051	< 0.012
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.017	< 0.036	< 0.04	< 0.018	< 0.017	< 0.04	< 0.016	< 0.016	< 0.010 [< 0.011]	< 0.010	< 0.04	< 0.016	< 0.017	< 0.010
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.012	< 0.029	< 0.032	< 0.011	< 0.011	< 0.032	< 0.01	< 0.01	< 0.016 [< 0.017]	< 0.016	< 0.032	< 0.01	< 0.011	< 0.016
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.019	< 0.028	< 0.031	< 0.013	< 0.013	< 0.032	< 0.013	< 0.013 J	< 0.015 [< 0.016]	< 0.015	< 0.032	< 0.013	< 0.013	< 0.015
Benzyl butyl phthalate	85-68-7	µg/L	< 0.25	< 0.25	< 0.28	< 0.27	< 0.31	< 0.28	< 0.25	< 0.29	< 0.29 [< 0.32]	< 0.23	< 0.28	< 0.25	< 0.3	< 0.22
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.25	< 0.25	< 0.28	< 0.27	< 0.33	< 0.28	< 0.25	< 0.31	< 0.31 [< 0.34]	< 0.43	< 0.28	< 0.25	< 0.32	< 0.42
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.31	< 0.31	< 0.34	< 0.33	< 0.33	< 0.35	< 0.31	< 0.31	< 0.31 [< 0.34]	< 0.44	< 0.35	< 0.31	< 0.32	< 0.44
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.39	< 0.39	< 0.43	< 0.42	< 0.48	< 0.44	< 0.39	< 0.46	< 0.45 [< 0.50]	< 0.41	< 0.44	< 0.39	< 0.47	< 0.41
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.33	< 0.33	< 0.36	< 0.35	< 0.62	< 0.37	< 0.33	< 0.59	< 0.59 [< 0.65]	< 0.57	< 0.37	< 0.33	< 0.6	< 0.56
Caprolactam	105-60-2	µg/L	< 0.2	< 0.2	< 0.22	< 0.21	< 0.73	< 0.22	< 0.2	< 0.7 J	< 0.69 [< 0.77]	< 0.42	< 0.22	< 0.2	< 0.71	< 0.41
Carbazole	86-74-8	µg/L	< 0.17	< 0.17	< 0.18	< 0.18	< 0.38	< 0.19	< 0.17	< 0.36	< 0.36 [< 0.40]	< 0.17	< 0.19	< 0.17	< 0.37	< 0.17
Chrysene	218-01-9	µg/L	< 0.018	< 0.022	< 0.024	< 0.025	< 0.025	< 0.025	< 0.023	< 0.023	< 0.012 [< 0.013]	< 0.012	< 0.025	< 0.023	< 0.024	< 0.012
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.02	< 0.023	< 0.025	< 0.024	< 0.024	< 0.025	< 0.023	< 0.023	< 0.017 [< 0.018]	< 0.017	< 0.025	< 0.023	< 0.023	< 0.017
Dibenzofuran	132-64-9	µg/L	< 0.3	< 0.3	< 0.34	< 0.33	< 0.28	< 0.34	< 0.3	< 0.27	< 0.27 [< 0.29]	< 0.23	< 0.34	< 0.3	< 0.27	< 0.23
Diethyl phthalate	84-66-2	µg/L	< 0.17	< 0.17	< 0.18	< 0.18	< 0.35	< 0.19	< 0.17	< 0.33	< 0.33 [< 0.36]	< 0.24	< 0.19	< 0.17	< 0.34	< 0.24
Dimethyl phthalate	131-11-3	µg/L	< 0.23	< 0.23	< 0.25	< 0.24	< 0.3	< 0.25	< 0.23	< 0.29	< 0.28 [< 0.31]	< 0.27	< 0.25	< 0.23	< 0.29	< 0.26
di-n-butyl phthalate	84-74-2	µg/L	< 0.19	< 0.19	< 0.21	< 0.21	< 0.59	< 0.21	< 0.19	< 0.56	< 0.56 [< 0.62]	< 2.7 BJ	< 0.21	< 0.19	< 0.57	< 2.0 BJ
di-n-octylphthalate	117-84-0	µg/L	< 0.4	< 0.4	< 0.44	< 0.42	< 0.33	< 0.44	< 0.4	< 0.31	< 0.31 [< 0.34]	< 0.26	< 0.44	< 0.4	< 0.32	< 0.25
Fluoranthene	206-44-0	µg/L	< 0.0096	< 0.024	< 0.027	< 0.01	< 0.01	< 0.027	< 0.0096	< 0.0097	< 0.013 [< 0.015]	< 0.014	< 0.027	< 0.0096	< 0.0099	< 0.013
Fluorene	86-73-7	µg/L	< 0.02	< 0.027	< 0.03	< 0.016	< 0.016	0.463	0.576	0.402	0.663 [0.591]	0.494	< 0.03	< 0.015	< 0.015	< 0.017
Hexachlorobenzene	118-74-1	µg/L	< 0.0099	< 0.0099	< 0.011	< 0.0086	< 0.0085	< 0.011	< 0.008	< 0.0081	< 0.017 [< 0.018]	< 0.017	< 0.011	< 0.008	< 0.0082	< 0.017
Hexachlorobutadiene	87-68-3	µg/L	< 0.37	< 0.37	< 0.14	< 0.14	< 0.54	< 0.14	< 0.13	< 0.52	< 0.51 [< 0.57]	< 0.40	< 0.14	< 0.13	< 0.53	< 0.39
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.67	< 0.67	< 0.27	< 0.26	< 7.6	< 0.27	< 0.24	< 7.2	< 7.1 [< 7.9]	< 0.49	< 0.27	< 0.24	< 7.3	< 0.49
Hexachloroethane	67-72-1	µg/L	< 0.26	< 0.26	< 0.23	< 0.22	< 0.59	< 0.23	< 0.21	< 0.56	< 0.55 [< 0.61]	< 0.29	< 0.23	< 0.21	< 0.57	< 0.29
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.014	< 0.029	< 0.032	< 0.011	< 0.011	< 0.033	< 0.011	< 0.011	< 0.014 [< 0.016]	< 0.015	< 0.033	< 0.011	< 0.011	< 0.015
Isophorone	78-59-1	µg/L	< 0.25	< 0.25	< 0.28	< 0.27	< 0.29	< 0.28	< 0.25	< 0.28	< 0.27 [< 0.30]	< 0.35	< 0.28	< 0.25	< 0.28	< 0.34
Naphthalene	91-20-3	µg/L	< 0.014	< 0.019	1.18	< 0.017	< 0.017	2.27	7.4	3.71	4.59 [4.41]	2.70	< 0.021	< 0.016	< 0.017	< 0.036
Nitrobenzene	98-95-3	µg/L	< 0.25	< 0.25	< 0.28	< 0.27	< 0.45	< 0.28	< 0.25	< 0.42	< 0.42 [< 0.47]	< 0.53	< 0.28	< 0.25	< 0.43	< 0.52
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.44	< 0.44	< 0.49	< 0.47	< 0.32	< 0.49	< 0.44	< 0.31	< 0.30 [< 0.34]	< 0.38 J	< 0.49	< 0.44	< 0.31	< 0.38 J
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.22	< 0.22	< 0.24	< 0.23	< 0.32	< 0.24	< 0.22	< 0.31	< 0.31 [< 0.34]	< 0.21	< 0.24	< 0.22	< 0.31	< 0.21
Pentachlorophenol	87-86-5	µg/L	< 0.22	< 0.22	< 0.076	< 0.31	< 0.11 J	< 0.076	< 0.29	< 0.1	< 0.10 [< 0.11]	< 0.10	< 0.076	< 0.29	< 0.1 J	< 0.10
Phenanthrene	85-01-8	µg/L	< 0.017	< 0.036	< 0.04	< 0.017	< 0.017	0.645	0.689	0.545	1.04 [0.924]	0.716	< 0.041	< 0.016	< 0.016	< 0.021
Phenol	108-95-2	µg/L	< 0.58	< 0.58	< 0.64	< 0.62	< 1.4	< 0.65	< 0.58	< 1.3	< 1.3 [< 1.4]	< 0.56	< 0.65	< 0.58	< 1.3	< 0.55
Pyrene	129-00-0	µg/L	< 0.012	< 0.022	< 0.025	< 0.0087	< 0.0086	< 0.025	< 0.0081	< 0.0082	< 0.015 [< 0.017]	< 0.015	< 0.025	< 0.0081	< 0.0084	< 0.015
Metals - Total																
Aluminum, total	7429-90-5	µg/L	376 J	1280	180 B	834	5780	87.3 J	NA	218 J	68.6 J [< 200 B]	213	721	25300	581	404
Antimony, total	7440-36-0	µg/L	< 4	< 2.9	< 2.2	< 1.3	< 6	< 2.2	NA	< 1.4	< 1.8 [< 1.8]	< 2.6	< 2.2	< 1.3	< 1.4	< 2.6
Arsenic, total	7440-38-2	µg/L	< 2.4	< 2.4	< 1.4	< 0.92	< 0.97	20.5	NA	21.5	25.5 [24.5]	23.0	< 1.4	9.8	< 0.97	< 2.6
Barium, total	7440-39-3	µg/L	28.7 B	25.1 B	14.5 B	17.2 B	38.1 B	54.6 J	NA	53.3 B	69.6 B [70.0 B]	66.4 B	50.2 B	154 B	58.7 B	72.3 B
Beryllium, total	7440-41-7	µg/L	< 1	< 0.4	< 0.24	< 0.24	< 0.44	< 1	NA	< 1	< 0.17 [< 0.17]	< 0.40	< 0.24	< 1	< 1	< 0.40
Cadmium, total	7440-43-9	µg/L	< 0.4	< 0.4	< 0.35	< 0.17	< 3	< 3	NA	< 3	< 3.0 B [< 3.0 B]	< 0.70	< 0.35	< 3	< 3	< 0.70
Calcium, total	7440-70-2	µg/L	10400	7970	5970 J	6710	6750	38400	NA	33700	38800 [37900]	35500	118000	124000	143000	134000
Chromium, total	7440-47-3	µg/L	< 10	1.9 B	< 0.59	< 10	6 J	< 0.59	NA	< 0.91	< 10 B [1.8 J]	1.1 B	2.1 B	36.6	< 0.91	1.3 B
Cobalt, total	7440-48-4	µg/L	< 0.4	< 1.6	< 0.65	< 0.3	2.5 J	3.1 B	NA	< 50	3.3 J [3.4 J]	3.8 B	1.2 B	17.4 B	< 50	1.7 B
Copper, total	7440-50-8	µg/L	4.8 BJ	3.5 B	< 2.5	1.1 B	12.5 J	< 2.5	NA	< 1.3	< 1.0 [< 1.0]	< 1.2	5 B	52.4	< 10	2.7 B
Iron, total	7439-89-6	µg/L	403	1200	176	807	5880	53600	NA	45800	56500 [54700]	51900	1260	40300	1020	802
Lead, total	7439-92-1	µg/L	< 3	< 1.7	< 1.9	< 0.94	5 J	< 1.9	NA	< 1.7	< 2.4 [< 2.4]	1.4 B	< 1.9	24.4	< 1.7	1.7 B
Magnesium, total	7439-95-4	µg/L	2670 B	2920 B	1880 B	2090 B	3590 B	5150	NA	4510 B	5030 [4920 B]	4940 B	25500	34300	31300	30400
Manganese, total	7439-96-5	µg/L	9.9 BJ	62.5	13.7 B	20.5 J	201	9510	NA	7470	7910 [8110]	7190	3190	3680	3960	3920
Mercury, total	7439-97-6	µg/L	< 0.049	< 0.082	< 0.082	< 0.088	< 0.075	< 0.082	< 0.088	< 0.075	< 0.089 [< 0.089]	< 0.064	< 0.082	0.16 B	< 0.075	< 0.064
Nickel, total	7440-02-0	µg/L	< 10	< 10	< 0.51	1.1 J	5.5 J	2.6 B	NA	< 0.94	< 1.6 [< 1.6]	3.0 B	3.3 B	45.2	1.6 J	3.0 B
Potassium, total	7440-09-7	µg/L	1020 B	1160 B	814 B	757 B	1730 B	1570 B	NA	1580 B	1680 B [1660 B]	1740 B	3150 B	6940 B	3740 B	4480 B
Selenium, total	7782-49-2	µg/L	< 3.7	< 3.7	< 1.9	< 1.5	< 2.4	3 B	NA	8.2 B	9.6 B [6.9 B]	7.7 B	2.1 B	< 1.5	8.5 B	< 3.6
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	10700	NA [NA]	3070 J	NA	NA	NA	24600
Silver, total	7440-22-4	µg/L	< 1	< 1	< 0.53	< 0.72	1.1 B	< 0.53	< 0.72	< 0.85	7.0 B [7.0 B]	1.8 B	< 0.53	1.3 B	6.6 B	< 1.2
Sodium, total	7440-23-5	µg/L	2450 B	2790 B	< 10000 J	2010 B	2440 B	3260 J	NA	2890 B	3130 B [3090 B]	3120 B	19400	19300	19800	26000
Thallium, total	7440-28-0	µg/L	< 1.5	< 1.5	< 1.8	< 0.17	< 1.7	< 1.8	< 2	< 1.7	< 1.3 [< 1.3]	< 1.8	< 1.8	< 0.17	< 1.7	< 1.8
Vanadium, total	7440-62-2	µg/L	< 50	< 50	< 0.56	< 50	10.3 B	< 50	NA	< 0.77	< 0.72 [< 0.72]	4.2 B	1.6 B	43.6 B	3 J	2.9 B
Zinc, total	7440-66-6	µg/L	35.8	19.9 J	13 J	14.3 J	34.5	< 1.4	NA	4.5 B	< 4.4 [6.7 B]	15.4 J	< 20	101	< 20	9.0 J
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	OB-28 OB-28 (110613) 11/6/2013	OB-30A OB-30A(051012) 5/10/2012	OB-30B OB-30B(051112) 5/11/2012	OB-30B OB-30B (110713) 11/7/2013	OB-30B OB-30B(090414) 9/4/2014	OB-30C OB-30C (5/9/2012) 5/9/2012	OB-30C OB-30C (110713) 11/7/2013	OB-30C OB-30C(090414) 9/4/2014	OB-10 OB-10-081415 8/14/2015	OB-11R OB-11R-080615 8/6/2015	OB-14A OB-14A-081315 8/13/2015	OB-14B OB-14B-081315 8/13/2015	OB-15B OB-15B-082415 8/24/2015	OB-16 OB-16-081315 8/13/2015
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.25	< 0.24	< 0.24	< 0.25	< 0.32	< 0.24	< 0.25	< 0.32	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.20	< 0.2	< 0.2	< 0.20	< 0.39	< 0.2	< 0.20	< 0.39	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.21	< 0.23	< 0.23	< 0.21	< 0.28	< 0.23	< 0.21	< 0.28	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,1-Dichloroethane	75-34-3	µg/L	< 0.26	< 0.19	< 0.19	< 0.26	< 0.35	< 0.19	< 0.26	< 0.35	< 1 [< 1]	0.32	< 1	< 1	< 1	< 1
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.28	< 0.28	< 0.34	< 0.50	< 0.28	< 0.34	< 0.50	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.22	< 0.15	< 0.15	< 0.22	< 0.22	< 0.15	< 0.22	< 0.22	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3	< 1.3*	< 1.3*	< 1.3	< 1.2	< 1.3*	< 1.3	< 1.2	< 0.02 [< 0.02]	< 10	< 10	< 10	< 10	< 10
1,2-Dibromoethane	106-93-4	µg/L	< 0.16	< 0.21*	< 0.21*	< 0.16	< 0.23	< 0.21*	< 0.16	< 0.23	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.20	< 0.18	< 0.18	< 0.20	< 0.16	< 0.18	< 0.20	< 0.16	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	107-06-2	µg/L	< 0.22	< 0.18	< 0.18	< 0.22	< 0.30	< 0.18	< 0.22	< 0.30	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,2-Dichloropropane	78-87-5	µg/L	< 0.28	< 0.22	< 0.22	< 0.28	< 0.43	< 0.22	< 0.28	< 0.43	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.31	< 0.29	< 0.29	< 0.31	< 0.26	< 0.29	< 0.31	< 0.26	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.30	< 0.26	< 0.26	< 0.30	< 0.24	< 0.26	< 0.30	< 0.24	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
2-Butanone (MEK)	78-93-3	µg/L	< 3.2	< 2.9	< 2.9	< 3.2	< 2.5	< 2.9	< 3.2	< 2.5	< 50 [< 50]	< 50	< 50	< 50	< 50	< 50
2-Hexanone	591-78-6	µg/L	< 1.7	< 3	< 3	< 1.7	< 1.7	< 3	< 1.7	< 1.7	< 10 [< 10]	< 10	< 10	< 10	< 10	< 10
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.5	< 1.2	< 1.2	< 1.5	< 1.1	< 1.2	< 1.5	< 1.1	< 10 [< 10]	< 10	< 10	< 10	< 10	< 10
Acetone	67-64-1	µg/L	< 3.3	< 5	< 5	< 3.3	< 2.6	< 5	< 3.3	< 2.6	< 25 [< 25]	< 25	< 25	< 25	< 25	< 25
Benzene	71-43-2	µg/L	< 0.28	< 0.22	< 0.22	< 0.28	< 0.21	< 0.22	< 0.28	< 0.21	< 1 [< 1]	2.9	< 1	< 1	< 1	< 1
Bromodichloromethane	75-27-4	µg/L	< 0.21	< 0.23	< 0.23	< 0.21	< 0.28	< 0.23	< 0.21	< 0.28	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Bromoform	75-25-2	µg/L	< 0.30	< 0.24	< 0.24	< 0.30	< 0.31	< 0.24	< 0.30	< 0.31	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Bromomethane	74-83-9	µg/L	< 0.56	< 0.31	< 0.31	< 0.56	< 0.39	< 0.31	< 0.56	< 0.39	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Carbon disulfide	75-15-0	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.50	< 0.18	< 0.18	< 0.50	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Carbon tetrachloride	56-23-5	µg/L	< 0.23	< 0.19	< 0.19	< 0.23	< 0.24	< 0.19	< 0.23	< 0.24	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Chlorobenzene	108-90-7	µg/L	< 0.35	< 0.22	< 0.22	< 0.35	< 0.27	< 0.22	< 0.35	< 0.27	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Chloroethane	75-00-3	µg/L	< 0.39	< 0.37	< 0.37	< 0.39	< 0.56	< 0.37	< 0.39	< 0.56	< 1 [< 1]	23	< 1	< 1	< 1	< 1
Chloroform	67-66-3	µg/L	< 0.25	< 0.21	< 0.21	< 0.25	< 0.20	< 0.21	< 0.25	< 0.20	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Chloromethane	74-87-3	µg/L	< 0.36	< 0.22	< 0.22	< 0.36	< 0.33	< 0.22	< 0.36	< 0.33	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.24	< 0.22	< 0.22	< 0.24	< 0.33	< 0.22	< 0.24	< 0.33	< 1 [< 1]	0.37	< 1	< 1	< 1	< 1
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15	< 0.22	< 0.22	< 0.15	< 0.28	< 0.22	< 0.15	< 0.28	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Cyclohexane	110-82-7	µg/L	< 0.18	< 0.29	< 0.29	< 0.18	< 0.37	< 0.29	< 0.18	< 0.37	< 5 [< 5]	1.9	< 5	< 5	< 5	< 5
Dibromochloromethane	124-48-1	µg/L	< 0.19	< 0.2	< 0.2	< 0.19	< 0.25	< 0.2	< 0.19	< 0.25	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Dichlorodifluoromethane	75-71-8	µg/L	< 0.63	< 0.31	< 0.31	< 0.63	< 0.73	< 0.31	< 0.63	< 0.73	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Ethylbenzene	100-41-4	µg/L	< 0.21	< 0.21	< 0.21	< 0.21	< 0.40	< 0.21	< 0.21	< 0.40	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Freon 113	76-13-1	µg/L	< 0.77	< 0.49	< 0.49	< 0.77	< 0.45	< 0.49	< 0.77	< 0.45	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Isopropylbenzene	98-82-8	µg/L	< 0.22	< 0.19	< 0.19	< 0.22	< 0.26	< 0.19	< 0.22	< 0.26	< 1 [< 1]	0.36	< 1	< 1	< 1	< 1
Methyl acetate	79-20-9	µg/L	< 1.5	< 2.9	< 2.9	< 1.5	< 3.1	< 2.9	< 1.5	< 3.1	< 10 [< 10]	< 10	< 10	< 10	< 10	< 10
Methyl tert butyl ether	1634-04-4	µg/L	< 0.29	< 0.18	< 0.18	< 0.29	0.29 J	0.47 J	0.32 J	< 0.26	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Methylcyclohexane	108-87-2	µg/L	< 0.15	< 0.18	< 0.18	< 0.15	< 0.22	< 0.18	< 0.15	< 0.22	< 5 [< 5]	0.5	< 5	< 5	< 5	< 5
Methylene chloride	75-09-2	µg/L	< 0.86	< 0.2	< 0.2	< 0.86	< 0.81	< 0.2	< 0.86	< 0.81	< 5 [< 5]	0.23	< 5	< 5	< 5	< 5
o-Xylene	95-47-6	µg/L	< 0.30	NA	NA	< 0.30	NA	NA	< 0.30	NA	NA [NA]	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	NA	< 0.23	< 0.23	NA	< 0.26	< 0.23	NA	< 0.26	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Tertiary Butyl Alcohol	75-65-0	µg/L	< 0.25	NA	NA	< 0.25	NA	NA	< 0.25	NA	NA [NA]	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.44	< 0.32	< 0.32	< 0.44	< 0.35	< 0.32	< 0.44	< 0.35	< 6 [< 6]	< 6	< 6	< 6	< 6	< 6
Toluene	108-88-3	µg/L	< 0.38	< 0.15	< 0.15	< 0.38	< 0.22	< 0.15	< 0.38	< 0.22	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.21	< 0.31	< 0.31	< 0.21	< 0.51	< 0.31	< 0.21	< 0.51	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.50	< 0.19	< 0.19	< 0.50	< 0.32	< 0.19	< 0.50	< 0.32	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Trichloroethene	79-01-6	µg/L	< 0.33	< 0.21	< 0.21	< 0.33	< 0.25	< 0.21	< 0.33	< 0.25	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Trichlorofluoromethane	75-69-4	µg/L	< 0.41	< 0.35	< 0.35	< 0.41	< 0.28	< 0.35	< 0.41	< 0.28	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Vinyl Chloride	75-01-4	µg/L	NA	< 0.27	< 0.27	NA	< 0.17	< 0.27	NA	< 0.17	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.19	< 0.17	< 0.17	< 0.19	< 0.20	< 0.17	< 0.19	< 0.20	< 3 [< 3]	< 3	< 3	< 3	< 3	< 3
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.33	< 0.3	< 0.33	< 0.30	< 0.29	< 0.3	< 0.34	< 0.27	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	< 10 [< 10]	4.3	< 10	< 10	< 10	< 10
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.7	< 1.6	< 1.7	< 1.6	< 1.8	< 1.6	< 1.7	< 1.7	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.4	< 1.3	< 1.4	< 1.3	< 1.7	< 1.3	< 1.4	< 1.5	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2,4-Dichlorophenol	120-83-2	µg/L	< 1.3	< 1.2	< 1.3	< 1.2	< 1.7	< 1.2	< 1.3	< 1.6	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7	< 1.5	< 1.7	< 1.5	< 2.0	< 1.5	< 1.7	< 1.8	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2,4-Dinitrophenol	51-28-5	µg/L	< 18	< 17	< 18	< 17	< 7.0	< 17	< 18	< 6.5	< 25 [< 25]	< 25	< 25	< 25	< 22	< 25
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.47	< 0.43	< 0.47	< 0.43	< 0.35	< 0.43	< 0.47	< 0.32	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.51	< 0.46	< 0.51	< 0.46	< 0.27	< 0.46	< 0.51	< 0.26	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2-Chloronaphthalene	91-58-7	µg/L	< 0.33	< 0.3	< 0.33	< 0.30	< 0.37	< 0.3	< 0.33	< 0.34	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2-Chlorophenol	95-57-8	µg/L	< 1.1	< 0.97	< 1.1	< 0.97	< 1.3	< 0.97	< 1.1	< 1.3	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2-Methylnaphthalene	91-57-6	µg/L	< 0.42	< 0.38	< 0.42	< 0.38	< 0.31	< 0.38	< 0.43	< 0.29	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
2-Methylphenol	95-48-7	µg/L	< 1.1	< 1	< 1.1	< 1.0	< 1.4	< 1	< 1.2	< 1.3	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
2-Nitroaniline	88-74-4	µg/L	< 1.2	< 1.1	< 1.2	< 1.1	< 0.34	< 1.1	< 1.2	< 0.32	< 25 [< 25]	< 25	< 25	< 25	< 22	< 25
2-Nitrophenol	88-75-5	µg/L	< 1.6	< 1.5	< 1.6	< 1.5	< 2.0	< 1.5	< 1.7	< 1.9	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
3&4-Methylphenol	12-03-3	µg/L	< 1.0	< 0.93	< 1	< 0.93	< 1.2	< 0.93	< 1.0	< 1.1	NA [NA]	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.40	< 0.36	< 0.4	< 0.36	< 0.60	< 0.36	< 0.40	< 0.56	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
3-Nitroaniline	99-09-2	µg/L	< 1.4	< 1.3	< 1.4	< 1.3	< 0.28	< 1.3	< 1.4	< 0.26	< 25 [< 25]	< 25	< 25	< 25	< 22	< 25
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 1.1	< 0.99	< 1.1	< 0.99	< 1.4	< 0.99	< 1.1	< 1.3	< 25 [< 25]	< 25	< 25	< 25	< 22	< 25
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.39	< 0.36	< 0.39	< 0.36	< 0.27	< 0.36	< 0.40	< 0.25	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 2.0	< 1.8	< 2	< 1.8	< 1.4	< 1.8	< 2.0	< 1.3	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Semi-Volatile Organic Compounds																

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	OB-28 OB-28 (110613) 11/6/2013	OB-30A OB-30A(051012) 5/10/2012	OB-30B OB-30B(051112) 5/11/2012	OB-30B OB-30B (110713) 11/7/2013	OB-30B OB-30B(090414) 9/4/2014	OB-30C OB-30C (5/9/2012) 5/9/2012	OB-30C OB-30C (110713) 11/7/2013	OB-30C OB-30C(090414) 9/4/2014	OB-10 OB-10-081415 8/14/2015	OB-11R OB-11R-080615 8/6/2015	OB-14A OB-14A-081315 8/13/2015	OB-14B OB-14B-081315 8/13/2015	OB-15B OB-15B-082415 8/24/2015	OB-16 OB-16-081315 8/13/2015
4-Chloroaniline	106-47-8	µg/L	< 0.58 J	< 0.53	< 0.58	< 0.53 J	< 0.32	< 0.53	< 0.59 J	< 0.30	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.34	< 0.31	< 0.34	< 0.31	< 0.41	< 0.31	< 0.35	< 0.38	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
4-Nitroaniline	100-01-6	µg/L	< 1.8	< 1.7	< 1.8	< 1.7	< 0.32	< 1.7	< 1.8	< 0.30	< 25 [< 25]	< 25	< 25	< 25	< 22	< 25
4-Nitrophenol	100-02-7	µg/L	< 5.7	< 5.2	< 5.7	< 5.2	< 0.98	< 5.2	< 5.8	< 0.91	< 25 [< 25]	< 25	< 25	< 25	< 22	< 25
Acenaphthene	83-32-9	µg/L	< 0.022	< 0.014	< 0.015	< 0.020	< 0.022	< 0.014	< 0.023	< 0.020	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Acenaphthylene	208-96-8	µg/L	< 0.026	< 0.016	< 0.018	< 0.024	< 0.025	< 0.016	< 0.026	< 0.024	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Acetophenone	98-86-2	µg/L	< 0.31	< 0.29	< 0.31	< 0.29	< 0.39	< 0.29	< 0.32	< 0.36	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Anthracene	120-12-7	µg/L	< 0.022	< 0.01	< 0.011	< 0.020	< 0.022	< 0.01	< 0.023	< 0.020	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Atrazine	1912-24-9	µg/L	< 0.54	< 0.49	< 0.54	< 0.49	< 0.45	< 0.49	< 0.54	< 0.42	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Benzaldehyde	100-52-7	µg/L	< 3.6	< 3.3	< 3.6	< 3.3	< 0.72 J	< 3.3	< 3.6	< 0.67 J	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Benzo(a)anthracene	56-55-3	µg/L	< 0.013	< 0.015	< 0.017	< 0.012	< 0.012	< 0.015	< 0.013	< 0.012	< 0.05 [< 0.05]	< 0.05	< 0.05	< 0.05	< 0.046	< 0.05
Benzo(a)pyrene	50-32-8	µg/L	< 0.014	< 0.0049	< 0.0054	< 0.012	< 0.013	< 0.0049	< 0.014	< 0.012	< 0.05 [< 0.05]	< 0.05	< 0.05	< 0.05	< 0.046	< 0.05
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.011	< 0.016	< 0.018	< 0.010	< 0.011	< 0.016	< 0.011	< 0.010	< 0.05 [< 0.05]	< 0.05	< 0.05	< 0.05	< 0.046	< 0.05
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.017	< 0.01	< 0.011	< 0.016	< 0.017	< 0.01	< 0.017	< 0.016	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.016	< 0.013	< 0.014	< 0.015	< 0.016	< 0.013	< 0.016	< 0.015	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Benzyl butyl phthalate	85-68-7	µg/L	< 0.32	< 0.29	< 0.32	< 0.29	< 0.24	< 0.29	< 0.32	< 0.22	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.34	< 0.31	< 0.34	< 0.31	< 0.45	< 0.31	< 0.34	< 0.42	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.34	< 0.31	< 0.34	< 0.31	< 0.47	< 0.31	< 0.34	< 0.43	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	< 0.50	< 0.45	< 0.5	< 0.45	< 0.44	< 0.45	< 0.50	< 0.41	NA [NA]	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.64	< 0.59	< 0.64	< 0.59	< 0.60	< 0.59	< 0.65	< 0.55	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Caprolactam	105-60-2	µg/L	< 0.76	< 0.69	< 0.76	< 0.69	< 0.44	< 0.69	< 0.77	< 0.41	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Carbazole	86-74-8	µg/L	< 0.40	< 0.36	< 0.4	< 0.36	< 0.18	< 0.36	< 0.40	< 0.17	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Chrysene	218-01-9	µg/L	< 0.013	< 0.023	< 0.025	< 0.012	< 0.013	< 0.023	< 0.013	< 0.012	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.018	< 0.023	< 0.025	< 0.017	< 0.018	< 0.023	< 0.018	< 0.017	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Dibenzofuran	132-64-9	µg/L	< 0.29	< 0.27	< 0.29	< 0.27	< 0.25	< 0.27	< 0.29	< 0.23	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Diethyl phthalate	84-66-2	µg/L	< 0.36	< 0.33	< 0.36	< 0.33	< 0.25	< 0.33	< 0.36	< 0.23	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Dimethyl phthalate	131-11-3	µg/L	< 0.31	< 0.28	< 0.31	< 0.28	< 0.28	< 0.28	< 0.31	< 0.26	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
di-n-butyl phthalate	84-74-2	µg/L	< 0.61	< 0.56	< 0.61	< 0.56	1.6 J	< 0.56	< 0.62	1.2 J	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
di-n-octylphthalate	117-84-0	µg/L	< 0.34	< 0.31	< 0.34	< 0.31	< 0.27	< 0.31	< 0.34	< 0.25	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Fluoranthene	206-44-0	µg/L	< 0.015	< 0.0096	< 0.011	< 0.013	< 0.014	< 0.0096	< 0.015	< 0.013	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Fluorene	86-73-7	µg/L	< 0.019	< 0.015	< 0.016	< 0.017	< 0.018	< 0.015	< 0.019	< 0.017	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Hexachlorobenzene	118-74-1	µg/L	< 0.018	< 0.008	< 0.0088	< 0.017	< 0.018	< 0.008	< 0.018	< 0.017	< 0.02 [< 0.02]	< 0.02	< 0.02	< 0.02	< 0.019	< 0.02
Hexachlorobutadiene	87-68-3	µg/L	< 0.56	< 0.51	< 0.56	< 0.51	R	< 0.51	< 0.57	R	< 0.4 [< 0.4]	< 0.4	< 0.4	< 0.4	< 0.37	< 0.4
Hexachlorocyclopentadiene	77-47-4	µg/L	< 7.8	< 7.1	< 7.8	< 7.1	< 0.52	< 7.1	< 7.9	< 0.48	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Hexachloroethane	67-72-1	µg/L	< 0.60	< 0.55	< 0.6	< 0.55	R	< 0.55	< 0.61	R	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.016	< 0.011	< 0.012	< 0.014	< 0.015	< 0.011	< 0.016	< 0.014	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Isophorone	78-59-1	µg/L	< 0.30	< 0.27	< 0.3	< 0.27	< 0.36	< 0.27	< 0.30	< 0.34	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Naphthalene	91-20-3	µg/L	< 0.039	< 0.016	< 0.018	< 0.036	< 0.038	< 0.016	< 0.039	< 0.036	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Nitrobenzene	98-95-3	µg/L	< 0.46	< 0.42	< 0.46	< 0.42	< 0.56	< 0.42	< 0.47	< 0.52	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.33	< 0.3	< 0.33	< 0.30	< 0.41	< 0.3	< 0.34	< 0.38	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.34	< 0.31	< 0.34	< 0.31	< 0.22	< 0.31	< 0.34	< 0.21	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Pentachlorophenol	87-86-5	µg/L	< 0.11	< 0.1	< 0.11	< 0.10	< 0.11	< 0.1 J	< 0.11	< 0.10	< 0.3 [< 0.3]	< 0.3	< 0.3	< 0.3	< 0.28	< 0.3
Phenanthrene	85-01-8	µg/L	< 0.023	< 0.016	< 0.017	< 0.021	< 0.022	< 0.016	< 0.023	< 0.021	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Phenol	108-95-2	µg/L	< 1.4	< 1.3	< 1.4	< 1.3	< 0.59	< 1.3	< 1.4	< 0.55	< 10 [< 10]	< 10	< 10	< 10	< 8.6	< 10
Pyrene	129-00-0	µg/L	< 0.016	< 0.0081	< 0.0089	< 0.015	< 0.016	< 0.0081	< 0.017	< 0.015	< 2 [< 2]	< 2	< 2	< 2	< 1.7	< 2
Metals - Total																
Aluminum, total	7429-90-5	µg/L	866	357	54.4 J	< 200 B	429	928	1090	890	< 20 [< 20]	72	25	< 20	890	< 20
Antimony, total	7440-36-0	µg/L	< 1.8	< 1.4	1.5 B	< 1.8	< 2.6	< 1.4	< 1.8	< 2.6	< 2 [< 2]	< 2	0.61	< 2	< 2	< 2
Arsenic, total	7440-38-2	µg/L	< 1.5	< 0.97	< 0.97	< 1.5	< 2.6	< 0.97	< 1.5	< 2.6	1.3 [1.3]	25	9.2	2.5	1.4	12
Barium, total	7440-39-3	µg/L	59.4 B	29.2 B	33.6 B	24.5 B	20.7 B	15.2 B	17.2 B	13.8 B	6.8 [6.9]	98	460	41	41	100
Beryllium, total	7440-41-7	µg/L	< 0.17	< 0.44	< 0.44	< 0.17	< 0.40	< 0.44	< 0.17	< 0.40	< 2 [< 2]	< 2	< 2	< 2	< 2	< 2
Cadmium, total	7440-43-9	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.70	< 0.24	< 0.24	< 0.70	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1
Calcium, total	7440-70-2	µg/L	124000	24100	25700	28500	21800	39000	34000	27300	13400 [13900]	60200	146000	125000	23000	170000
Chromium, total	7440-47-3	µg/L	2.5 B	< 0.91	< 0.91	< 0.92	< 10 B	< 10	2.1 B	< 10 B	< 2 [< 2]	0.56	0.77	0.55	2.2	< 2
Cobalt, total	7440-48-4	µg/L	1.4 B	1 B	1.7 B	1.0 B	1.6 J	< 50	< 0.48	< 0.83	< 2 [< 2]	2.2	1.2	< 2	0.82	1.9
Copper, total	7440-50-8	µg/L	1.9 B	2.8 B	1.8 B	< 1.0	< 10 B	< 10	< 1.0	2.2 J	< 2 [< 2]	< 2	< 2	< 2	1.9	< 2
Iron, total	7439-89-6	µg/L	1340	703	140	159 J	479	1350	1550	1200	250 [290]	70400	59300	930	1600	20100
Lead, total	7439-92-1	µg/L	< 4.2 B	< 1.7	< 1.7	< 2.4	< 1.3	< 1.7	< 2.4	< 1.3	< 2 [< 2]	< 2	0.86	< 2	0.63	< 2
Magnesium, total	7439-95-4	µg/L	27300	5200	5570	6390	5050	14100	15200	14900	3800 [4000]	7400	10900	28800	5800	18200
Manganese, total	7439-96-5	µg/L	3370	1180	1140	1890 J	1250	122	99.0 J	74.8	29 [33]	11900	1500	1600	4000	4900
Mercury, total	7439-97-6	µg/L	< 0.089	< 0.075	< 0.075	< 0.089	< 0.064	< 0.075	< 0.089	< 0.064	< 0.2 [< 0.2]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Nickel, total	7440-02-0	µg/L	3.0 B	2.6 B	< 10	< 1.6	1.5 B	4 J	1.9 B	1.2 B	< 2 [1.3]	0.86	2.6	1.9	15	1.5
Potassium, total	7440-09-7	µg/L	3650 B	2720 J	2790 J	2420 B	2150 B	2280 B	8830 B	10300	NA [NA]	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 2.4	< 2.4	< 2.4	2.5 B	3.6 B	< 2.4	< 2.4	4.3 B	0.8 [< 2]	< 2	< 2	< 2	< 2	< 2
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	21900	NA	NA	13400	NA [NA]	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.5	< 0.85	< 0.85	< 1.5	< 1.2	< 0.85	< 1.5	< 1.2	< 2 [< 2]	< 2	< 2	< 2	< 2	< 2
Sodium, total	7440-23-5	µg/L	18500	32500	34100	25700	21300	5780 B	9610 B	11300	3100 [3300]	3700	18400	18400	4000	34200
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.7	< 1.7	< 1.3	< 1.8	< 1.7	< 1.3	< 1.8	0.24 [< 2]	< 2	< 2	< 2	1.1	< 2
Vanadium, total	7440-62-2	µg/L	4.8 B	1.3 B	1.1 B	2.3 B	1.6 J	3.4 J	5.3 B	5.0 B	1 [1.1]	1.7	4	2.4	5.4	2.5
Zinc, total	7440-66-6	µg/L	< 20 B	< 20	< 20	< 4.4	< 7.6	9 J	< 20 B	< 7.6	< 25 [< 25]	< 25	< 25	< 25	< 25	11
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-17 OB-17-081315 8/13/2015	OB-18 OB-18-081315 8/13/2015	OB-19 OB-19-080515 8/5/2015	OB-20A OB-20A-080515 8/5/2015	OB-20B OB-20B-080515 8/5/2015	OB-24 OB-24-081315 8/13/2015	OB-25 OB-25-081215 8/12/2015	OB-27 OB-27-080615 8/6/2015	OB-28 OB-28-081315 8/13/2015	OB-29 OB-29-081215 8/12/2015	OB-30B OB-30B-080615 8/6/2015	OB-30C OB-30C-080615 8/6/2015	OB-10 OB-10-081616 8/16/2016	OB-11R OB-11R-081716 8/17/2016	OB-14A OB-14A-081616 8/16/2016
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.19	< 0.19	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	0.78	< 1	< 1	< 1	0.26	< 1	< 1	0.38	< 1	< 1	< 1	< 1	< 0.24	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 10	< 0.02	< 0.02	< 10	< 10	< 10	< 0.02	< 10	< 10	< 0.02	< 10	< 10	< 0.007	< 0.007	< 0.007
1,2-Dibromoethane	106-93-4	µg/L	< 1	< 1	< 1	< 1	< 0.03	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.006	< 0.006	< 0.006
1,2-Dichlorobenzene	95-50-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 2.2	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 1.1	< 1.1	< 1.1
Benzene	71-43-2	µg/L	< 1	< 1	< 1	< 1	0.27	< 1	< 1	3	< 1	< 1	< 1	< 1	< 0.09	3.2	< 0.09
Bromodichloromethane	75-27-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.18	< 0.18 J	< 0.18
Bromomethane	74-83-9	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.24	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 1	< 1	0.39	< 1	1.8	< 1	< 1	83	< 1	< 1	< 1	< 1	< 0.37	24	< 0.37
Chloroform	67-66-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 1	< 1	< 1	0.37	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.39	< 1	< 1	< 1	< 1	< 0.26	0.43 J	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 5	< 5	< 5	0.19	0.87	< 5	< 5	1.6	< 5	< 5	< 5	< 5	< 0.26	2.8	< 0.26
Dibromochloromethane	124-48-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.3	< 0.3	< 0.3
Freon 113	76-13-1	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.34	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2.3	< 1	< 1	< 1	< 1	< 0.32	0.83 J	< 0.32
Methyl acetate	79-20-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	0.28	< 0.13	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 5	< 5	< 5	< 5	0.54	< 5	< 5	0.98	< 5	< 5	< 5	< 5	< 0.22	0.74 J	< 0.22
Methylene chloride	75-09-2	µg/L	< 5	< 5	< 5	0.35	< 5	< 5	< 5	0.33	< 5	0.28	< 5	< 5	< 0.21	< 0.21	< 0.21
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.25	< 0.25	< 0.25
Trans-1,2-dichloroethene	156-60-5	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.15	< 0.15	< 0.15
Vinyl Chloride	75-01-4	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 0.28	< 0.28	< 0.28
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.64	< 0.66	< 0.66
1,4-Dioxane	123-91-1	µg/L	17	< 10	< 10	< 10	0.95	< 10	< 10	2.2	< 10	< 10	< 10	< 10	0.172	5.97	< 0.0833
2,4,5-Trichlorophenol	95-95-4	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.5	< 0.51	< 0.51
2,4,6-Trichlorophenol	88-06-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.54	< 0.55	< 0.55
2,4-Dichlorophenol	120-83-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.64	< 0.66	< 0.66
2,4-Dimethylphenol	105-67-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.93	< 0.95	< 0.95
2,4-Dinitrophenol	51-28-5	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 2.4	< 2.5	< 2.5
2,4-Dinitrotoluene	121-14-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 1.1	< 1.1	< 1.1
2,6-Dinitrotoluene	606-20-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.9	< 0.92	< 0.92
2-Chloronaphthalene	91-58-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.62	< 0.64	< 0.64
2-Chlorophenol	95-57-8	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.76	< 0.77	< 0.77
2-Methylnaphthalene	91-57-6	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.9	< 0.92	< 0.92
2-Methylphenol	95-48-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 1.3 J	< 1.3	< 1.3 J
2-Nitroaniline	88-74-4	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 0.66	< 0.68	< 0.68
2-Nitrophenol	88-75-5	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.6	< 0.62	< 0.61
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 1.1	< 1.1	< 1.1
3-Nitroaniline	99-09-2	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 0.84	< 0.86	< 0.85
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 2.1	< 2.1	< 2.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1.1	< 1.1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.78	< 0.79	< 0.79
Semi-Volatile Organic Compounds																	

Location ID Sample ID Sample Date	CAS	Units	OB-17 OB-17-081315 8/13/2015	OB-18 OB-18-081315 8/13/2015	OB-19 OB-19-080515 8/5/2015	OB-20A OB-20A-080515 8/5/2015	OB-20B OB-20B-080515 8/5/2015	OB-24 OB-24-081315 8/13/2015	OB-25 OB-25-081215 8/12/2015	OB-27 OB-27-080615 8/6/2015	OB-28 OB-28-081315 8/13/2015	OB-29 OB-29-081215 8/12/2015	OB-30B OB-30B-080615 8/6/2015	OB-30C OB-30C-080615 8/6/2015	OB-10 OB-10-081616 8/16/2016	OB-11R OB-11R-081716 8/17/2016	OB-14A OB-14A-081616 8/16/2016
4-Chloroaniline	106-47-8	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.74	< 0.76	< 0.76
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.98	< 1	< 1
4-Nitroaniline	100-01-6	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 0.49	< 0.5	< 0.5
4-Nitrophenol	100-02-7	µg/L	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 25	< 4.7	< 4.9	< 4.8
Acenaphthene	83-32-9	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.9	< 0.92	< 0.92
Acenaphthylene	208-96-8	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.66	< 0.68	< 0.68
Acetophenone	98-86-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 1.1	< 1.1	< 1.1
Anthracene	120-12-7	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.58	< 0.6	< 0.59
Atrazine	1912-24-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.79	< 0.81	< 0.8
Benzaldehyde	100-52-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.88	< 0.9	< 0.9
Benzo(a)anthracene	56-55-3	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.013	< 0.05	< 0.05	< 0.05	< 0.05	< 0.038	< 0.039	< 0.039
Benzo(a)pyrene	50-32-8	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.013	< 0.05	< 0.05	< 0.05	< 0.05	< 0.027	< 0.027	< 0.027
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.013	< 0.05	< 0.05	< 0.05	< 0.05	< 0.012	< 0.013	< 0.013
Benzo(g,h,i)perylene	191-24-2	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.77	< 0.78	< 0.78
Benzo(k)fluoranthene	207-08-9	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.18	< 0.19	< 0.19
Benzyl butyl phthalate	85-68-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.61	< 0.63	< 0.63
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.7	< 0.72	< 0.72
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.0092	< 0.0094	< 0.0094
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.73	< 0.75	< 0.75
Caprolactam	105-60-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 1.1	< 1.1	< 1.1
Carbazole	86-74-8	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.87	< 0.89	< 0.89
Chrysene	218-01-9	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.68	< 0.7	< 0.7
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.022	< 0.023	< 0.023
Dibenzofuran	132-64-9	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.87	< 0.89	< 0.89
Diethyl phthalate	84-66-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1
Dimethyl phthalate	131-11-3	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 1	< 1	< 1
di-n-butyl phthalate	84-74-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.84	< 0.86	< 0.85
di-n-octylphthalate	117-84-0	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.7	< 0.72	< 0.72
Fluoranthene	206-44-0	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.73	< 0.75	< 0.75
Fluorene	86-73-7	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.82	< 0.84	< 0.83
Hexachlorobenzene	118-74-1	µg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.0052	< 0.02	< 0.02	< 0.02	< 0.02	< 0.0092	< 0.0094	< 0.0094
Hexachlorobutadiene	87-68-3	µg/L	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.1	< 0.4	< 0.4	< 0.4	< 0.4	< 0.78	< 0.79	< 0.79
Hexachlorocyclopentadiene	77-47-4	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.62	< 0.64	< 0.64
Hexachloroethane	67-72-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.092	< 0.094	< 0.094
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.028	< 0.028	< 0.028
Isophorone	78-59-1	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.68	< 0.7	< 0.7
Naphthalene	91-20-3	µg/L	< 2	< 2	< 2	< 2	1	< 2	< 2	5.9	< 2	< 2	< 2	< 2	< 0.82	< 0.84	< 0.83
Nitrobenzene	98-95-3	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.5	< 0.51	< 0.51
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.85	< 0.87	< 0.86
N-Nitrosodiphenylamine	86-30-6	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.76	< 0.77	< 0.77
Pentachlorophenol	87-86-5	µg/L	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.079	< 0.081	< 0.08
Phenanthrene	85-01-8	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.66	< 0.68	< 0.68
Phenol	108-95-2	µg/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 0.42	< 0.43	< 0.43
Pyrene	129-00-0	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.85	< 0.87	< 0.86
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	51	270	71	84	66	60	12800	64	1400	1700	82	1800	< 13.5	34.5 J	27.7 J
Antimony, total	7440-36-0	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	0.83	< 2	< 2	< 2	< 2	< 2	< 0.76	< 0.76	< 0.76
Arsenic, total	7440-38-2	µg/L	5	1.4	1.6	7.1	1.5	1.8	4.1	26	1.5	1.5	0.89	2.3	< 0.71	23.8	1 J
Barium, total	7440-39-3	µg/L	16	10	86	140	84	48	76	70	84	13	29	25	6.9	101	532
Beryllium, total	7440-41-7	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 0.29	< 0.29	< 0.29
Cadmium, total	7440-43-9	µg/L	< 1	< 1	< 1	< 1	< 1	< 1	1.8	< 1	< 1	< 1	< 1	< 1	< 0.72	< 0.72	< 0.72
Calcium, total	7440-70-2	µg/L	110000	54700	13100	28200	62600	99200	43400	38100	141000	13900	24500	38200	14000	61800	141000
Chromium, total	7440-47-3	µg/L	0.73	1.2	0.95	1.1	0.69	0.92	6.3	< 2	2.4	1.8	< 2	2.9	< 1.5	< 1.5	< 1.5
Cobalt, total	7440-48-4	µg/L	1	< 2	< 2	0.99	30	< 2	5.3	4.1	2.8	0.75	2.2	1.4	< 1.5	2.4 J	< 1.5
Copper, total	7440-50-8	µg/L	1.1	< 2	7.5	< 2	0.65	1.1	31	< 2	6	3.1	1.2	3.7	< 1.6	< 1.6	< 1.6
Iron, total	7439-89-6	µg/L	6100	360	16500	31700	42500	170	8100	52000	2700	1200	130	3000	187	81100	41800
Lead, total	7439-92-1	µg/L	0.36	< 2	0.44	0.44	0.28	0.24	11	< 2	1	0.54	< 2	1.3	< 0.44	< 0.44	0.56 J
Magnesium, total	7439-95-4	µg/L	31000	10800	2500	2900	11600	23800	9800	5000	31600	4100	5500	16700	4250	8430	13800
Manganese, total	7439-96-5	µg/L	530	13	290	760	10200	1300	340	8000	4400	36	1600	160	26.2	12700	1590
Mercury, total	7439-97-6	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.14	< 0.14	< 0.14
Nickel, total	7440-02-0	µg/L	1.4	1.4	2	1.1	5.8	1.5	10	2.4	2.7	2.2	2.3	3.8	< 1.6	< 1.6	< 1.6
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	1.7	0.77	< 2	< 2	< 2	2.4	< 0.79	< 0.79	< 0.79
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 1.5	< 1.5	< 1.5
Sodium, total	7440-23-5	µg/L	14800	6200	3300	3300	4800	16200	69900	3100	24400	3200	23800	8700	3860	4000	22700
Thallium, total	7440-28-0	µg/L	0.66	< 2	< 2	< 2	< 2	0.44	0.21	< 2	< 2	< 2	< 2	< 2	< 0.31	< 0.31	< 0.31
Vanadium, total	7440-62-2	µg/L	2.8	2.6	4.1	2.6	3.9	3.5	11	1.6	5.5	2.8	1.5	8.4	< 1.4	< 1.4	1.5 J
Zinc, total	7440-66-6	µg/L	< 25	< 25	< 25	17	< 25	< 25	52	< 25	< 25	< 25	< 25	< 25	< 6.5	< 6.5	7.3 J
Other																	
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-14B OB-14B-081616 8/16/2016	OB-15B OB-15B-081716 8/17/2016	OB-16 OB-16-081616 8/16/2016	OB-17 OB-17-081616 8/16/2016	OB-18 OB-18-081616 8/16/2016	OB-19 OB-19-081716 8/17/2016	OB-20A OB-20A-081816 8/18/2016	OB-20B OB-20B-081816 8/18/2016	OB-24 OB-24-081616 8/16/2016	OB-25 OB-25-081816 8/18/2016	OB-27 OB-27-081716 8/17/2016	OB-28 OB-28-081616 8/16/2016	OB-29 OB-29-081616 8/16/2016	OB-30B OB-30B-081716 8/17/2016	OB-30C OB-30C-081716 8/17/2016
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 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	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]	< 0.19	< 0.19 J	< 0.19 J	< 0.19	< 0.19 J	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08 [< 0.08]	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	< 0.24	< 0.24	< 0.24	0.7 J	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34 [< 0.34]	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 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	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007 [< 0.007]	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007
1,2-Dibromoethane	106-93-4	µg/L	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006 [< 0.006]	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006	< 0.006
1,2-Dichlorobenzene	95-50-1	µg/L	< 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	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 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	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 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	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 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	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 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	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2 [< 2.2]	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72 [< 0.72]	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63 [< 0.63]	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 [< 1.1]	< 1.1	< 1.1	7.8	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
Benzene	71-43-2	µg/L	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09 [< 0.09]	0.23 J	< 0.09	0.15 J	< 0.09	< 0.09	2.3	< 0.09	< 0.09	< 0.09	< 0.09
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15 [< 0.15]	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 0.18	< 0.18 J	< 0.18	< 0.18	< 0.18 [< 0.18]	< 0.18 UB	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 J	< 0.18	< 0.18	< 0.18 J	< 0.18 J
Bromomethane	74-83-9	µg/L	< 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	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	< 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	< 0.22	< 0.22	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 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	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 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	< 0.24	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37	< 0.37	< 0.37	< 0.37 [< 0.37]	1.5	< 0.37	3.9	< 0.37	< 0.37	61	< 0.37	< 0.37	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 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	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 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	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 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	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16 [< 0.16]	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26 [< 0.26]	< 0.26	< 0.26	1	< 0.26	< 0.26	1.7	< 0.26	< 0.26	< 0.26	< 0.26
Dibromochloromethane	124-48-1	µg/L	< 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	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 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	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 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	< 0.3	< 0.3	< 0.3
Freon 113	76-13-1	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34 [< 0.34]	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32 [< 0.32]	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	2.9	< 0.32	< 0.32	< 0.32	< 0.32
Methyl acetate	79-20-9	µg/L	< 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	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	0.27 J	< 0.13	< 0.13	< 0.13	< 0.13 [< 0.13]	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	0.21 J
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22 [< 0.22]	< 0.22	< 0.22	0.66 J	< 0.22	< 0.22	1.3	< 0.22	< 0.22	< 0.22	< 0.22
Methylene chloride	75-09-2	µg/L	< 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	< 0.21	< 0.21	< 0.21
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 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	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12 [< 0.12]	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 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	< 0.25	< 0.25	< 0.25
Trans-1,2-dichloroethene	156-60-5	µg/L	< 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	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 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	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 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	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15 [< 0.15]	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06 [< 0.06]	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 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	< 0.28	< 0.28	< 0.28
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	< 0.66	< 0.66	< 0.66	< 0.66	< 0.67 [< 0.66]	< 0.66	< 0.64	< 0.66	< 0.66	< 0.66	< 0.66	< 0.67	< 0.66	< 0.66	< 0.66
1,4-Dioxane	123-91-1	µg/L	0.28	< 0.0781	< 0.0781	17.5	< 0.0798 [< 0.0798]	0.878	0.147 J	1.26	< 0.075	0.178	6.47	< 0.0833	0.156	0.266	0.11 J
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.51	< 0.51	< 0.51	< 0.51	< 0.52 [< 0.51]	< 0.51	< 0.5	< 0.51	< 0.51	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51	< 0.51
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.55	< 0.55	< 0.55	< 0.55	< 0.56 [< 0.55]	< 0.55	< 0.54	< 0.55	< 0.55	< 0.55	< 0.55	< 0.56	< 0.55	< 0.55	< 0.55
2,4-Dichlorophenol	120-83-2	µg/L	< 0.66	< 0.66	< 0.66	< 0.66	< 0.67 [< 0.66]	< 0.66	< 0.64	< 0.66	< 0.66	< 0.66	< 0.66	< 0.67	< 0.66	< 0.66	< 0.66
2,4-Dimethylphenol	105-67-9	µg/L	< 0.95	< 0.95	< 0.95	< 0.95	< 0.97 [< 0.95]	< 0.95	< 0.93	< 0.95	< 0.95	< 0.95	< 0.95	< 0.97	< 0.95	< 0.95	< 0.95
2,4-Dinitrophenol	51-28-5	µg/L	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5 [< 2.5]	< 2.5	< 2.4	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
2,4-Dinitrotoluene	121-14-2	µg/L	< 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	< 1.1	< 1.1	< 1.1
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94 [< 0.92]	< 0.92	< 0.9	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94	< 0.92	< 0.92	< 0.92
2-Chloronaphthalene	91-58-7	µg/L	< 0.64	< 0.64	< 0.64	< 0.64	< 0.65 [< 0.64]	< 0.64	< 0.62	< 0.64	< 0.64	< 0.64	< 0.64	< 0.65	< 0.64	< 0.64	< 0.64
2-Chlorophenol	95-57-8	µg/L	< 0.77	< 0.77	< 0.77	< 0.77	< 0.79 [< 0.77]	< 0.77	< 0.76	< 0.77	< 0.77	< 0.77	< 0.77	< 0.79	< 0.77	< 0.77	< 0.77
2-Methylnaphthalene	91-57-6	µg/L	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94 [< 0.92]	< 0.92	< 0.9	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94	< 0.92	< 0.92	< 0.92
2-Methylphenol	95-48-7	µg/L	< 1.3 J	< 1.3	< 1.3 J	< 1.3 J	< 1.4 J [< 1.3 J]	< 1.3	< 1.3 J	< 1.3 J	< 1.3 J	< 1.3 J	< 1.3	< 1.4 J	< 1.3 J	< 1.3	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69 [< 0.68]	< 0.68	< 0.66	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68
2-Nitrophenol	88-75-5	µg/L	< 0.61	< 0.62	< 0.61	< 0.61	< 0.63 [< 0.61]	< 0.61	< 0.6	< 0.62	< 0.61	< 0.61	< 0.61	< 0.63	< 0.61	< 0.61	< 0.61
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 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	< 1.1	< 1.1	< 1.1
3-Nitroaniline	99-09-2	µg/L	< 0.85	< 0.86	< 0.85	< 0.85	< 0.87 [< 0.85]	< 0.85	< 0.84	< 0.86	< 0.85	< 0.85	< 0.85	< 0.87	< 0.85	< 0.85	< 0.85
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1 [< 2.1]	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 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	< 1.1	< 1.1	< 1.1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.79	< 0.79	< 0.79	< 0.79	< 0.81 [< 0.79]	< 0.79	< 0.78	< 0.79	< 0.79	< 0.79	< 0.79	< 0.81	< 0.79	< 0.79	< 0.79
Semi-Volatile Organic Compounds																	

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	OB-14B OB-14B-081616 8/16/2016	OB-15B OB-15B-081716 8/17/2016	OB-16 OB-16-081616 8/16/2016	OB-17 OB-17-081616 8/16/2016	OB-18 OB-18-081616 8/16/2016	OB-19 OB-19-081716 8/17/2016	OB-20A OB-20A-081816 8/18/2016	OB-20B OB-20B-081816 8/18/2016	OB-24 OB-24-081616 8/16/2016	OB-25 OB-25-081816 8/18/2016	OB-27 OB-27-081716 8/17/2016	OB-28 OB-28-081616 8/16/2016	OB-29 OB-29-081616 8/16/2016	OB-30B OB-30B-081716 8/17/2016	OB-30C OB-30C-081716 8/17/2016
4-Chloroaniline	106-47-8	µg/L	< 0.76	< 0.76	< 0.76	< 0.76	< 0.78 [< 0.76]	< 0.76	< 0.74	< 0.76	< 0.76	< 0.76	< 0.76	< 0.78	< 0.76	< 0.76	< 0.76
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1	< 0.98	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
4-Nitroaniline	100-01-6	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	< 0.51 [< 0.5]	< 0.5	< 0.49	< 0.5	< 0.5	< 0.5	< 0.5	< 0.51	< 0.5	< 0.5	< 0.5
4-Nitrophenol	100-02-7	µg/L	< 4.8	< 4.9	< 4.8	< 4.8	< 4.9 [< 4.8]	< 4.8	< 4.7	< 4.9	< 4.8	< 4.8	< 4.8	< 4.9	< 4.8	< 4.8	< 4.8
Acenaphthene	83-32-9	µg/L	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94 [< 0.92]	< 0.92	< 0.9	< 0.92	< 0.92	< 0.92	< 0.92	< 0.94	< 0.92	< 0.92	< 0.92
Acenaphthylene	208-96-8	µg/L	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69 [< 0.68]	< 0.68	< 0.66	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68
Acetophenone	98-86-2	µg/L	< 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	< 1.1	< 1.1	< 1.1
Anthracene	120-12-7	µg/L	< 0.59	< 0.6	< 0.59	< 0.59	< 0.61 [< 0.59]	< 0.59	< 0.58	< 0.6	< 0.59	< 0.59	< 0.59	< 0.61	< 0.59	< 0.59	< 0.59
Atrazine	1912-24-9	µg/L	< 0.8	< 0.81	< 0.8	< 0.8	< 0.82 [< 0.8]	< 0.8	< 0.79	< 0.81	< 0.8	< 0.8	< 0.8	< 0.82	< 0.8	< 0.8	< 0.8
Benzaldehyde	100-52-7	µg/L	< 0.9	< 0.9	< 0.9	< 0.9	< 0.91 [< 0.9]	< 0.9	< 0.88	< 0.9	< 0.9	< 0.9	< 0.9	< 0.91	< 0.9	< 0.9	< 0.9
Benzo(a)anthracene	56-55-3	µg/L	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039 [< 0.039]	< 0.039	< 0.038	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039	< 0.039
Benzo(a)pyrene	50-32-8	µg/L	< 0.027	< 0.027	< 0.027	< 0.027	< 0.028 [< 0.027]	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.028	< 0.027	< 0.027	< 0.027
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013 [< 0.013]	< 0.013	< 0.012	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.78	< 0.78	< 0.78	< 0.78	< 0.8 [< 0.78]	< 0.78	< 0.77	< 0.78	< 0.78	< 0.78	< 0.78	< 0.8	< 0.78	< 0.78	< 0.78
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19 [< 0.19]	< 0.19	< 0.18	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Benzyl butyl phthalate	85-68-7	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.64 [< 0.63]	< 0.63	< 0.61	< 0.63	< 0.63	< 0.63	< 0.63	< 0.64	< 0.63	< 0.63	< 0.63
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.73 [< 0.72]	< 0.72	< 0.7	< 0.72	< 0.72	< 0.72	< 0.72	< 0.73	< 0.72	< 0.72	< 0.72
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.0094	< 0.0094	< 0.0094	< 0.0094	< 0.0096 [< 0.0094]	< 0.0094	< 0.0092	< 0.0094	< 0.0094	< 0.0094	< 0.0094	< 0.0096	< 0.0094	< 0.0094	< 0.0094
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.75	< 0.75	< 0.75	< 0.75	< 0.77 [< 0.75]	1.4 J	< 0.73	< 0.75	< 0.75	1.8 J	< 0.75	< 0.77	< 0.75	< 0.75	< 0.75
Caprolactam	105-60-2	µg/L	< 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	< 1.1	< 1.1	< 1.1
Carbazole	86-74-8	µg/L	< 0.89	< 0.89	< 0.89	< 0.89	< 0.9 [< 0.89]	< 0.89	< 0.87	< 0.89	< 0.89	< 0.89	< 0.89	< 0.9	< 0.89	< 0.89	< 0.89
Chrysene	218-01-9	µg/L	< 0.7	< 0.7	< 0.7	< 0.7	< 0.71 [< 0.7]	< 0.7	< 0.68	< 0.7	< 0.7	< 0.7	< 0.7	< 0.71	< 0.7	< 0.7	< 0.7
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023 [< 0.023]	< 0.023	< 0.022	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023	< 0.023
Dibenzofuran	132-64-9	µg/L	< 0.89	< 0.89	< 0.89	< 0.89	< 0.9 [< 0.89]	< 0.89	< 0.87	< 0.89	< 0.89	< 0.89	< 0.89	< 0.9	< 0.89	< 0.89	< 0.89
Diethyl phthalate	84-66-2	µg/L	< 1	< 1	< 1	< 1	< 1.1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1.1	< 1	< 1	< 1
Dimethyl phthalate	131-11-3	µg/L	< 1	< 1	< 1	< 1	< 1 [< 1]	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
di-n-butyl phthalate	84-74-2	µg/L	< 0.85	< 0.86	< 0.85	< 0.85	< 0.87 [< 0.85]	1.2 J	< 0.84	< 0.86	< 0.85	1.5 J	< 0.85	< 0.87	< 0.85	< 0.85	< 0.85
di-n-octylphthalate	117-84-0	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.73 [< 0.72]	< 0.72	< 0.7	< 0.72	< 0.72	< 0.72	< 0.72	< 0.73	< 0.72	< 0.72	< 0.72
Fluoranthene	206-44-0	µg/L	< 0.75	< 0.75	< 0.75	< 0.75	< 0.77 [< 0.75]	< 0.75	< 0.73	< 0.75	< 0.75	< 0.75	< 0.75	< 0.77	< 0.75	< 0.75	< 0.75
Fluorene	86-73-7	µg/L	< 0.83	< 0.84	< 0.83	< 0.83	< 0.85 [< 0.83]	< 0.83	< 0.82	< 0.84	< 0.83	< 0.83	< 0.83	< 0.85	< 0.83	< 0.83	< 0.83
Hexachlorobenzene	118-74-1	µg/L	< 0.0094	< 0.0094	< 0.0094	< 0.0094	< 0.0096 [< 0.0094]	< 0.0094	< 0.0092	< 0.0094	< 0.0094	0.011 J	< 0.0094	< 0.0096	< 0.0094	< 0.0094	< 0.0094
Hexachlorobutadiene	87-68-3	µg/L	< 0.79	< 0.79	< 0.79	< 0.79	< 0.81 [< 0.79]	< 0.79	< 0.78	< 0.79	< 0.79	< 0.79	< 0.79	< 0.81	< 0.79	< 0.79	< 0.79
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.64	< 0.64	< 0.64	< 0.64	< 0.65 [< 0.64]	< 0.64	< 0.62	< 0.64	< 0.64	< 0.64	< 0.64	< 0.65	< 0.64	< 0.64	< 0.64
Hexachloroethane	67-72-1	µg/L	< 0.094	< 0.094	< 0.094	< 0.094	< 0.096 [< 0.094]	< 0.094	< 0.092	< 0.094	< 0.094	< 0.094	< 0.094	< 0.096	< 0.094	< 0.094	< 0.094
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.028	< 0.028	< 0.028	< 0.028	< 0.029 [< 0.028]	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	< 0.029	< 0.028	< 0.028	< 0.028
Isophorone	78-59-1	µg/L	< 0.7	< 0.7	< 0.7	< 0.7	< 0.71 [< 0.7]	< 0.7	< 0.68	< 0.7	< 0.7	< 0.7	< 0.7	< 0.71	< 0.7	< 0.7	< 0.7
Naphthalene	91-20-3	µg/L	< 0.83	< 0.84	< 0.83	< 0.83	< 0.85 [< 0.83]	< 0.83	< 0.82	2.5 J	< 0.83	< 0.83	3.9 J	< 0.85	< 0.83	< 0.83	< 0.83
Nitrobenzene	98-95-3	µg/L	< 0.51	< 0.51	< 0.51	< 0.51	< 0.52 [< 0.51]	< 0.51	< 0.5	< 0.51	< 0.51	< 0.51	< 0.51	< 0.52	< 0.51	< 0.51	< 0.51
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.86	< 0.87	< 0.86	< 0.86	< 0.88 [< 0.86]	< 0.86	< 0.85	< 0.87	< 0.86	< 0.86	< 0.86	< 0.88	< 0.86	< 0.86	< 0.86
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.77	< 0.77	< 0.77	< 0.77	< 0.79 [< 0.77]	< 0.77	< 0.76	< 0.77	< 0.77	< 0.77	< 0.77	< 0.79	< 0.77	< 0.77	< 0.77
Pentachlorophenol	87-86-5	µg/L	< 0.08	< 0.081	< 0.08	< 0.08	< 0.082 [< 0.08]	< 0.08	0.11 J	0.11 J	< 0.08	< 0.08	< 0.08	< 0.082	< 0.08	< 0.08	< 0.08
Phenanthrene	85-01-8	µg/L	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69 [< 0.68]	< 0.68	< 0.66	< 0.68	< 0.68	< 0.68	< 0.68	< 0.69	< 0.68	< 0.68	< 0.68
Phenol	108-95-2	µg/L	< 0.43	< 0.43	< 0.43	< 0.43	< 0.44 [< 0.43]	< 0.43	< 0.42	< 0.43	< 0.43	< 0.43	< 0.43	< 0.44	< 0.43	< 0.43	< 0.43
Pyrene	129-00-0	µg/L	< 0.86	< 0.87	< 0.86	< 0.86	< 0.88 [< 0.86]	< 0.86	< 0.85	< 0.87	< 0.86	< 0.86	< 0.86	< 0.88	< 0.86	< 0.86	< 0.86
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	17.7 J	244	< 13.5	< 13.5	25.4 J [24.6 J]	42.6	65.4	35.8 J	40.9	804	53.3	1190	1180	39.8 J	238
Antimony, total	7440-36-0	µg/L	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76 [< 0.76]	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76	< 0.76
Arsenic, total	7440-38-2	µg/L	0.79 J	< 0.71	7.9	< 0.71	< 0.71 [< 0.71]	0.9 J	2.3	1.6 J	< 0.71	0.97 J	22.5	< 0.71	< 0.71	< 0.71	0.82 J
Barium, total	7440-39-3	µg/L	43.8	28	115	11.4	6.8 [6.7]	99.8	138	81.3	35.6	45.6	63.7	84.7	13.5	39.7	17.3
Beryllium, total	7440-41-7	µg/L	< 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	< 0.29	< 0.29	< 0.29
Cadmium, total	7440-43-9	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72 [< 0.72]	< 0.72	< 0.72	< 0.72	< 0.72	0.82 J	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
Calcium, total	7440-70-2	µg/L	101000	21300	143000	92000	39500 [39400]	15700	23600	57200	95700	42900	33200	140000	14100	26900	40100
Chromium, total	7440-47-3	µg/L	< 1.5	1.5 J	< 1.5	< 1.5	< 1.5 [< 1.5]	< 1.5	< 1.5	< 1.5	< 1.5	1.6 J	< 1.5	1.9 J	2.1 J	< 1.5	< 1.5
Cobalt, total	7440-48-4	µg/L	< 1.5	< 1.5	1.8 J	< 1.5	< 1.5 [< 1.5]	< 1.5	< 1.5	30.7	< 1.5	2 J	4	2.3 J	< 1.5	2 J	< 1.5
Copper, total	7440-50-8	µg/L	< 1.6	1.9 J	< 1.6	< 1.6	< 1.6 [< 1.6]	< 1.6	< 1.6	< 1.6	< 1.6	20	< 1.6	5	3.9 J	2.4 J	< 1.6
Iron, total	7439-89-6	µg/L	593	640	18000	1340	< 49.1 [< 49.1]	21200	25900	44800	86.2 J	1260	52100	2160	1530	63.2 J	397
Lead, total	7439-92-1	µg/L	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44 [< 0.44]	0.47 J	0.59 J	< 0.44	< 0.44	6.8	1.1 J	0.79 J	< 0.44	< 0.44	0.52 J
Magnesium, total	7439-95-4	µg/L	31400	5970	20400	32200	8860 [8740]	3190	2810	11900	26200	9930	4730	32700	4570	6540	19300
Manganese, total	7439-96-5	µg/L	1770	1200	3690	327	< 3 [< 3]	329	554	9820	486	178	7410	4140	36.6	1180	103
Mercury, total	7439-97-6	µg/L	< 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	< 0.14	< 0.14	< 0.14
Nickel, total	7440-02-0	µg/L	< 1.6	11.4	< 1.6	< 1.6	< 1.6 [< 1.6]	< 1.6	< 1.6	5.8	< 1.6	3.5 J	2.1 J	3.5 J	2.4 J	2.7 J	< 1.6
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79 [< 0.79]	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	< 0.79	1.8 J
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 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	< 1.5	< 1.5	< 1.5
Sodium, total	7440-23-5	µg/L	21800	4040	42200	16200	6010 [5990]	3670	3500	4920	17800	71300	3140	26800	3890	31600	9550
Thallium, total	7440-28-0	µg/L	< 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	< 0.31	< 0.31	< 0.31
Vanadium, total	7440-62-2	µg/L	< 1.4	1.8 J	< 1.4	< 1.4	< 1.4 [< 1.4]	2.6 J	< 1.4	< 1.4	< 1.4	2.7 J	< 1.4	2.5 J	2.3 J	< 1.4	5.1
Zinc, total	7440-66-6	µg/L	< 6.5	< 6.5	< 6.5	< 6.5	< 6.5 [< 6.5]	7.1 J	45.8	< 6.5	< 6.5	28.6	< 6.5	< 6.5	7.9 J	< 6.5	< 6.5
Other																	
Cyanide, total	57-12-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	OB-31 OB-31-081716 8/17/2016	OB-32 OB-32-081716 8/17/2016	OB-33 OB-33-081716 8/17/2016	OB-10 OB-10(090914) 9/9/2014	OB-10 OB-10(102109) & DUP 10/21/2009	OB-29 OB-29 (111413) 11/14/2013	OB-29 OB-29(051112) 5/11/2012	OB-29 OB-29(090914) 9/9/2014	RW-10 RW-10(180-200) & DUP 10/30/2009	RW-10 RW-10(46-66) 10/30/2009	RW-10 RW-10(115-135) 10/30/2009	RW-9 RW-9(134-154) 11/2/2009	RW-9 RW-9(80-100) 11/2/2009	RW-8 RW-8(158-178) 11/4/2009
Volatile Organic Compounds																
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.28	< 0.28	< 0.28	< 0.32	< 0.24 [< 0.25 J]	< 0.2	< 0.26	< 0.26	< 0.25 [NA]	< 0.24	< 0.32	< 0.25 J	< 0.26	< 0.26
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.39	< 0.2 [< 0.2 J]	< 0.12	NA	< 0.24	< 0.2 [NA]	< 0.2	< 0.39	< 0.2 J	NA	< 0.24
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.28	< 0.23 [< 0.21 J]	< 0.13	NA	< 0.23	< 0.21 [NA]	< 0.23	< 0.28	< 0.21 J	NA	< 0.23
1,1-Dichloroethane	75-34-3	µg/L	< 0.24	< 0.24	< 0.24	< 0.35	< 0.19 [< 0.26 J]	< 0.16	NA	NA	NA [< 0.29]	< 0.19	< 0.35	< 0.26 J	< 0.29	< 0.29
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.5	< 0.28 [< 0.34 J]	< 0.24	< 0.4	< 0.4	< 0.34 [NA]	< 0.28	< 0.5	< 0.34 J	< 0.5	< 0.4
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.27	< 0.27	< 0.27	< 0.22	< 0.15 [< 0.22 J]	< 0.16	< 0.56	< 0.56	< 0.22 [NA]	< 0.15	< 0.22	< 0.22 J	< 0.56	< 0.56
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.007	< 0.007	< 0.007	< 1.2	< 1.3 [< 1.3 J]	< 1.2	NA	< 1.1	< 1.3 [NA]	< 1.3	< 1.2	< 1.3 J	NA	< 1.1
1,2-Dibromoethane	106-93-4	µg/L	< 0.006	< 0.006	< 0.006	< 0.23	< 0.21 [< 0.16 J]	< 0.39	NA	< 0.39	< 0.16 [NA]	< 0.21	< 0.23	< 0.16 J	< 0.39	< 0.39
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.16	< 0.18 [< 0.2 J]	< 0.15	NA	NA	< 0.2 [< 0.26]	< 0.18	< 0.16	< 0.2 J	< 0.26	< 0.26
1,2-Dichloroethane	107-06-2	µg/L	< 0.25	< 0.25	< 0.25	< 0.3	< 0.18 [< 0.22 J]	< 0.31	NA	< 0.33	< 0.22 [NA]	< 0.18	< 0.3	< 0.22 J	NA	< 0.33
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.43	< 0.22 [< 0.28 J]	< 0.23	< 0.27	< 0.27	< 0.28 [< 0.27]	< 0.22	< 0.43	< 0.28 J	< 0.27	< 0.27
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.33	< 0.33	< 0.33	< 0.26	< 0.29 [< 0.31 J]	< 0.19	< 0.25	NA	< 0.31 [< 0.25]	< 0.29	< 0.26	< 0.31 J	< 0.25	< 0.25
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.33	< 0.33	< 0.33	< 0.24	< 0.26 [< 0.3 J]	< 0.22	< 0.28	< 0.28	< 0.3 [< 0.28]	< 0.26	< 0.24	< 0.3 J	< 0.28	< 0.28
2-Butanone (MEK)	78-93-3	µg/L	< 2.2	< 2.2	< 2.2	< 2.5	< 2.9 [< 3.2 J]	< 1.7	< 1.6	< 1.6	NA [NA]	< 2.9	< 2.5	< 3.2 J	< 1.6	< 1.6
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 1.7	< 3 [< 1.7 J]	< 1.9	NA	< 1.4	< 1.7 [NA]	< 3	< 1.7	< 1.7 J	< 1.4	< 1.4
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 1.1	< 1.2 [< 1.5 J]	< 0.74	NA	NA	NA [< 0.86]	< 1.2	< 1.1	< 1.5 J	NA	< 0.86
Acetone	67-64-1	µg/L	< 1.1	< 1.1	< 1.1	< 2.6	< 7.6 [< 3.3 J]	< 4.4	NA	NA	44.5 [NA]	26.1	< 2.6	< 3.3 J	< 2.9	< 2.9
Benzene	71-43-2	µg/L	0.14 J	< 0.09	< 0.09	< 0.21	< 0.22 [< 0.28 J]	< 0.26	< 0.23	< 0.23	< 0.28 [NA]	< 0.22	< 0.21	< 0.28 J	< 0.23	< 0.23
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.28	< 0.23 [< 0.21 J]	< 0.18	NA	< 0.22	< 0.21 [NA]	< 0.23	< 0.28	< 0.21 J	NA	< 0.22
Bromoform	75-25-2	µg/L	< 0.18 J	< 0.18 J	< 0.18 J	< 0.31	< 0.24 [< 0.3 J]	< 0.42	< 0.23	< 0.23	< 0.3 [< 0.23]	< 0.24	< 0.31	< 0.3 J	< 0.23	< 0.23
Bromomethane	74-83-9	µg/L	< 0.18	< 0.18	< 0.18	< 0.39	< 0.31 [< 0.56 J]	< 0.24	NA	< 0.3	< 0.56 [NA]	< 0.31	< 0.39	< 0.56 J	NA	< 0.3
Carbon disulfide	75-15-0	µg/L	< 0.22	< 0.22	< 0.22	< 0.5	< 0.18 [< 0.18 J]	< 0.13	< 0.74	< 0.74	3.6 [NA]	0.67 J	< 0.5	< 0.18 J	< 0.74	< 0.74
Carbon tetrachloride	56-23-5	µg/L	< 0.33	< 0.33	< 0.33	< 0.24	< 0.19 [< 0.23 J]	< 0.35	< 0.26	NA	NA [< 0.26]	< 0.19	< 0.24	< 0.23 J	< 0.26	< 0.26
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.27	< 0.22 [< 0.35 J]	< 0.15	NA	< 0.39	< 0.35 [< 0.39]	< 0.22	< 0.27	< 0.35 J	< 0.39	< 0.39
Chloroethane	75-00-3	µg/L	4.9	< 0.37	< 0.37	< 0.56	< 0.37 [< 0.39 J]	< 0.25	< 0.37	< 0.37	NA [NA]	< 0.37	< 0.56	< 0.39 J	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.2	< 0.21 [< 0.25 J]	< 0.14	< 0.23	< 0.23	NA [NA]	< 0.21	< 0.2	< 0.25 J	< 0.23	< 0.23
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.33	< 0.22 [< 0.36 J]	< 0.34	NA	NA	NA [< 0.29]	< 0.22	< 0.33	< 0.36 J	< 0.29	< 0.29
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.26	< 0.26	< 0.26	< 0.33	< 0.22 [< 0.24 J]	< 0.24	NA	< 0.22	< 0.24 [NA]	< 0.22	< 0.33	< 0.24 J	< 0.22	< 0.22
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.28	< 0.22 [< 0.15 J]	< 0.16	< 0.25	< 0.25	< 0.15 [NA]	< 0.22	< 0.28	< 0.15 J	< 0.25	< 0.25
Cyclohexane	110-82-7	µg/L	0.41 J	0.39 J	< 0.26	< 0.37	< 0.29 [< 0.18 J]	< 0.43	NA	< 1.9	< 0.18 [NA]	< 0.29	< 0.37	< 0.18 J	NA	< 1.9
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.25	< 0.2 [< 0.19 J]	< 0.16	NA	< 0.22	< 0.19 [NA]	< 0.2	< 0.25	< 0.19 J	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14	< 0.14	< 0.14	< 0.73	< 0.31 [< 0.63 J]	< 0.39	< 0.92	< 0.92	< 0.63 [NA]	< 0.31	< 0.73	< 0.63 J	< 0.92	< 0.92
Ethylbenzene	100-41-4	µg/L	< 0.3	< 0.3	< 0.3	< 0.4	< 0.21 [< 0.21 J]	< 0.31	< 0.27	< 0.27	< 0.21 [NA]	< 0.21	< 0.4	< 0.21 J	< 0.4	< 0.27
Freon 113	76-13-1	µg/L	< 0.34	< 0.34	< 0.34	< 0.45	< 0.49 [< 0.77 J]	< 0.66	NA	NA	NA [< 0.38]	< 0.49	< 0.45	< 0.77 J	< 0.38	< 0.38
Isopropylbenzene	98-82-8	µg/L	< 0.32	< 0.32	< 0.32	< 0.26	< 0.19 [< 0.22 J]	< 0.31	NA	< 0.57	< 0.22 [NA]	< 0.19	< 0.26	< 0.22 J	< 0.57	< 0.57
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58	< 0.58	< 3.1	< 2.9 [< 1.5 J]	< 1.3	< 1.5	< 1.5	< 1.5 [< 1.5]	< 2.9	< 3.1	< 1.5 J	< 1.5	< 1.5
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13	< 0.13	< 0.26	< 0.18 [< 0.29 J]	< 0.2	< 0.23	< 0.23	< 0.29 [NA]	< 0.18	< 0.26	< 0.29 J	< 0.23	< 0.23
Methylcyclohexane	108-87-2	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.18 [< 0.15 J]	< 0.16	NA	< 0.35	< 0.15 [< 0.35]	< 0.18	< 0.22	< 0.15 J	< 0.35	< 0.35
Methylene chloride	75-09-2	µg/L	< 0.21	< 0.21	< 0.21	< 0.81	< 0.2 [< 0.86 J]	< 0.2	< 0.3	< 0.3	< 0.86 [NA]	< 0.2	< 0.81	< 0.86 J	< 0.3	< 0.3
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA [NA]	NA	NA	< 0.25	NA [NA]	NA	NA	< 0.45	< 0.25	< 0.25
Styrene	100-42-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.26	< 0.23 [< 0.3 J]	< 0.48	< 0.58	< 0.58	< 0.3 [< 0.58]	< 0.23	< 0.26	< 0.3 J	< 0.58	< 0.58
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.35	< 0.32 [< 0.25 J]	< 0.24	NA	NA	< 0.25 [< 0.27]	< 0.32	< 0.35	< 0.25 J	NA	< 0.27
Toluene	108-88-3	µg/L	< 0.25	< 0.25	< 0.25	< 0.22	< 0.15 [< 0.44 J]	< 0.27	< 0.3	< 0.3	< 0.44 [NA]	< 0.15	< 0.22	< 0.44 J	< 0.3	< 0.3
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.51	< 0.31 [< 0.38 J]	< 0.3	< 0.25	NA	NA [< 0.25]	< 0.31	< 0.51	< 0.38 J	< 0.25	< 0.25
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.19	< 0.32	< 0.19 [< 0.21 J]	< 0.22	NA	NA	< 0.21 [NA]	< 0.19	< 0.32	< 0.21 J	< 0.21	< 0.21
Trichloroethene	79-01-6	µg/L	< 0.22	< 0.22	< 0.22	< 0.25	< 0.21 [< 0.5 J]	< 0.22	< 0.24	NA	< 0.5 [< 0.24]	< 0.21	< 0.25	< 0.5 J	< 0.24	< 0.24
Trichlorofluoromethane	75-69-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.28	< 0.35 [< 0.33 J]	< 0.23	< 0.54	NA	NA [< 0.54]	< 0.35	< 0.28	< 0.33 J	NA	< 0.54
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06	< 0.06	< 0.17	< 0.27 [< 0.41 J]	< 0.22	< 0.44	< 0.44	< 0.41 [NA]	< 0.27	< 0.17	< 0.41 J	< 0.44	< 0.44
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.28	< 0.28	< 0.28	< 0.2	< 0.17 [< 0.19 J]	< 0.28	NA	NA	NA [< 0.25]	< 0.17	< 0.2	< 0.19 J	NA	< 0.25
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.63	< 0.64	< 0.67	NA	< 0.3 [< 0.31]	NA	< 0.45	< 0.43	< 0.34 [< 0.42]	< 0.49	< 0.34	NA	NA	< 0.48
1,4-Dioxane	123-91-1	µg/L	1.9	0.422	< 0.0765	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.49	< 0.5	< 0.52	< 1.8 J	< 1.6 [< 1.6]	< 1.5	< 1.4	< 1.4	< 1.7 [< 1.3]	NA	< 1.7	< 2	< 1.4	< 1.5
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.53	< 0.54	< 0.56	< 1.7 J	< 1.3 [< 1.3]	NA	NA	< 1.2	< 1.4 [< 1.2]	< 1.4	< 1.4	< 1.6	< 1.3	< 1.4
2,4-Dichlorophenol	120-83-2	µg/L	< 0.63	< 0.64	< 0.67	NA	< 1.2 [< 1.2]	< 1.4	< 1.3	< 1.2	< 1.3 [< 1.2]	NA	NA	NA	< 1.3	< 1.4
2,4-Dimethylphenol	105-67-9	µg/L	< 0.91	< 0.93	< 0.97	< 2 J	< 1.5 [< 1.5]	< 1.8	< 1.8	< 1.7	< 1.7 [< 1.7]	NA	< 1.7	NA	< 1.8	< 1.8
2,4-Dinitrophenol	51-28-5	µg/L	< 2.4	< 2.4	< 2.5	NA	< 17 [< 17]	< 0.82	< 0.78	< 0.75	< 18 [< 0.74]	NA	NA	< 4.2 J	< 0.79	< 0.82
2,4-Dinitrotoluene	121-14-2	µg/L	< 1	< 1.1	< 1.1	< 0.35 J	< 0.43 [< 0.43]	< 0.24 J	< 0.23 J	< 0.22	< 0.47 [< 0.22]	< 0.26	< 0.47	< 0.45	< 0.24	NA
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.88	< 0.9	< 0.94	< 0.27 J	< 0.46 [< 0.47]	< 0.36	< 0.35	< 0.35	< 0.51 [< 0.33]	< 0.38	< 0.51	NA	NA	< 0.36
2-Chloronaphthalene	91-58-7	µg/L	< 0.61	< 0.62	< 0.65	< 0.37 J	< 0.3 [< 0.3]	< 0.46	< 0.44	< 0.42	< 0.33 [< 0.42]	NA	< 0.33	NA	< 0.45	< 0.46
2-Chlorophenol	95-57-8	µg/L	< 0.74	< 0.76	< 0.79	NA	< 0.97 [< 0.98]	< 1.2	< 1.1	< 1.1	< 1.1 [< 1.1]	NA	NA	< 1.5	< 1.2	NA
2-Methylnaphthalene	91-57-6	µg/L	< 0.88	< 0.9	< 0.94	< 0.31 J	< 0.38 [< 0.39]	< 0.73	< 0.7	< 0.67	< 0.43 [< 0.66]	< 0.77	< 0.43	NA	< 0.71	< 0.73
2-Methylphenol	95-48-7	µg/L	< 1.3	< 1.3	< 1.4	< 1.4 J	< 1 [< 1.1]	< 1.2	< 1.2	< 1.1	< 1.2 [< 1.1]	NA	< 1.2	NA	NA	< 1.2
2-Nitroaniline	88-74-4	µg/L	< 0.65	< 0.66	< 0.69	NA	< 1.1 [< 1.1]	< 0.26	< 0.25	< 0.24	< 1.2 [< 0.24]	NA	NA	< 0.45	< 0.25	NA
2-Nitrophenol	88-75-5	µg/L	< 0.59	< 0.6	< 0.63	< 2 J	< 1.5 [< 1.5]	NA	< 1.3	< 1.3	< 1.7 [< 1.2]	< 1.5	< 1.7	< 1.9	< 1.3	< 1.4
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1	< 1.1	< 1.1	< 0.6 J	< 0.36 [< 0.36]	< 0.33	< 0.31	< 0.3	< 0.4 [< 0.3]	< 0.35	< 0.4	< 4.6	< 0.32	< 0.33
3-Nitroaniline	99-09-2	µg/L	< 0.82	< 0.84	< 0.87	NA	< 1.3 [< 1.3 J]	NA	< 0.31	< 0.29	< 1.4 [< 0.29]	< 0.34	< 1.4	NA	NA	< 0.32
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2	< 2.1	< 2.1	NA	< 0.99 [< 1]	NA	< 0.55	< 0.52	< 1.1 [< 0.51]	< 0.6	< 1.1	NA	NA	< 0.57
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1	< 1	< 1.1	< 0.27 J	< 0.36 [< 0.36]	< 0.39	< 0.37	< 0.36	< 0.4 [< 0.35]	NA	NA	NA	NA	< 0.39
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.76	< 0.78	< 0.81	NA	< 1.8 [< 1.8]	NA	< 1.1	< 1.1	< 2 [< 1.1]	< 1.2	< 2	NA	NA	< 1.2
Semi-Volatile Organic Compounds																

Location ID Sample ID Sample Date	CAS	Units	OB-31 OB-31-081716 8/17/2016	OB-32 OB-32-081716 8/17/2016	OB-33 OB-33-081716 8/17/2016	OB-10 OB-10(090914) 9/9/2014	OB-10 OB-10(102109) & DUP 10/21/2009	OB-29 OB-29 (111413) 11/14/2013	OB-29 OB-29(051112) 5/11/2012	OB-29 OB-29(090914) 9/9/2014	RW-10 RW-10(180-200) & DUP 10/30/2009	RW-10 RW-10(46-66) 10/30/2009	RW-10 RW-10(115-135) 10/30/2009	RW-9 RW-9(134-154) 11/2/2009	RW-9 RW-9(80-100) 11/2/2009	RW-8 RW-8(158-178) 11/4/2009
4-Chloroaniline	106-47-8	µg/L	< 0.73	< 0.74	< 0.78	< 0.32 J	< 0.53 [< 0.53 J]	< 0.28	< 0.27	< 0.26	< 0.59 J [< 0.25]	NA	< 0.59	NA	NA	< 0.28
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.96	< 0.98	< 1	< 0.41 J	< 0.31 [< 0.32]	NA	< 0.38	< 0.36	< 0.35 [< 0.35]	< 0.41	< 0.35	NA	NA	< 0.41
4-Nitroaniline	100-01-6	µg/L	< 0.48	< 0.49	< 0.51	NA	< 1.7 [< 1.7]	< 0.2	< 0.19	< 0.18	< 1.8 [< 0.18]	NA	NA	NA	< 0.19	< 0.2
4-Nitrophenol	100-02-7	µg/L	< 4.7	< 4.7	< 4.9	< 0.98 J	< 5.2 [< 5.3]	< 0.92	< 0.88	< 0.88	< 5.8 [< 0.83]	NA	< 5.8	< 2.3 J	< 0.89	< 0.92
Acenaphthene	83-32-9	µg/L	< 0.88	< 0.9	< 0.94	< 0.32 J	NA [< 0.021]	NA	< 0.015	< 0.03	NA [< 0.029]	< 0.034	NA	< 0.016	NA	< 0.033
Acenaphthylene	208-96-8	µg/L	< 0.65	< 0.66	< 0.69	< 0.22 J	< 0.016 [< 0.024]	< 0.018	< 0.017	< 0.04	NA [< 0.039]	< 0.046	NA	< 0.007	NA	< 0.045
Acetophenone	98-86-2	µg/L	< 1	< 1.1	< 1.1	< 0.39 J	< 0.29 [< 0.29]	< 0.44	< 0.42	< 0.42	0.66 J [< 0.4]	NA	< 0.32	< 0.47	< 0.43	< 0.44
Anthracene	120-12-7	µg/L	< 0.57	< 0.58	< 0.61	< 0.022 J	NA [< 0.021]	< 0.011	< 0.011	< 0.026	NA [NA]	< 0.03	NA	< 0.021	NA	< 0.029
Atrazine	1912-24-9	µg/L	< 0.77	< 0.79	< 0.82	< 0.45 J	< 0.49 [< 0.49]	< 0.43	< 0.42	< 0.42	< 0.54 [< 0.39]	NA	< 0.54	< 0.62	< 0.42	< 0.43
Benzaldehyde	100-52-7	µg/L	< 0.86	< 0.88	< 0.91	< 0.72 J	< 3.3 [< 3.3]	< 0.45	< 0.43	< 0.41	< 3.6 [< 0.4]	< 0.47	< 3.6	NA	< 0.43	< 0.45
Benzo(a)anthracene	56-55-3	µg/L	< 0.037	< 0.038	< 0.039	< 0.012 J	NA [< 0.012]	NA	< 0.016	< 0.024	NA [< 0.024]	< 0.028	NA	< 0.034	NA	< 0.027
Benzo(a)pyrene	50-32-8	µg/L	< 0.026	< 0.027	< 0.028	< 0.26 J	NA [< 0.012]	< 0.0054	< 0.0052	< 0.031	NA [NA]	< 0.036	NA	< 0.036	NA	< 0.035
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.012	< 0.012	< 0.013	< 0.011 J	NA [< 0.01]	< 0.018	< 0.017	< 0.037	NA [NA]	< 0.042 J	NA	< 0.017	NA	< 0.041
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.75	< 0.77	< 0.8	< 0.33 J	NA [< 0.016]	NA	< 0.011	< 0.029	NA [< 0.029]	< 0.034	NA	< 0.012	NA	< 0.033
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.18	< 0.18	< 0.19	< 0.24 J	< 0.013 [< 0.015]	< 0.014	< 0.013	< 0.029	NA [NA]	< 0.033 J	NA	< 0.019	NA	< 0.032
Benzyl butyl phthalate	85-68-7	µg/L	< 0.6	< 0.61	< 0.64	< 0.24 J	< 0.29 [< 0.29]	< 0.28	< 0.27	< 0.27	< 0.32 [< 0.25]	NA	< 0.32	< 0.42	< 0.27	< 0.28
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.69	< 0.7	< 0.73	< 0.45 J	< 0.31 [< 0.31]	< 0.28	< 0.26	< 0.25	< 0.34 [< 0.25]	NA	< 0.34	NA	NA	< 0.28
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.009	< 0.0092	< 0.0096	< 0.47 J	< 0.31 [< 0.31]	NA	< 0.33	< 0.33	< 0.34 [< 0.31]	< 0.36	< 0.34	NA	< 0.33	< 0.34
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.72	< 0.73	0.84 J	NA	< 0.59 [< 0.59]	NA	< 0.35	< 0.33	< 0.65 [3.6]	< 0.38	< 0.65	4.6 J	NA	< 0.36
Caprolactam	105-60-2	µg/L	< 1.1	< 1.1	< 1.1	< 0.44 J	< 0.69 [< 0.7]	< 0.22	< 0.21	< 0.21	< 0.77 [< 0.2]	NA	< 0.77	< 0.63	< 0.21	< 0.22
Carbazole	86-74-8	µg/L	< 0.85	< 0.87	< 0.9	NA	< 0.36 [< 0.36]	< 0.18	< 0.18	< 0.17	< 0.4 [< 0.17]	NA	< 0.17 J	< 0.45	< 0.18	NA
Chrysene	218-01-9	µg/L	< 0.67	< 0.68	< 0.71	< 0.18 J	< 0.023 [< 0.012]	NA	NA	< 0.022	NA [< 0.022]	< 0.026	< 0.16 J	< 0.018	NA	< 0.025
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.022	< 0.022	< 0.023	NA	NA [< 0.017]	< 0.025	< 0.024	< 0.023	NA [NA]	< 0.026 J	< 0.28 J	< 0.02	NA	< 0.026
Dibenzofuran	132-64-9	µg/L	< 0.85	< 0.87	< 0.9	< 0.25 J	< 0.27 [< 0.27]	< 0.34	< 0.32	< 0.32	< 0.29 [< 0.3]	NA	< 0.29	< 0.49	< 0.33	< 0.34
Diethyl phthalate	84-66-2	µg/L	< 1	< 1	< 1.1	< 0.25 J	< 0.33 [< 0.33]	< 0.18	< 0.18	< 0.17	< 0.36 [< 0.17]	< 0.19	< 0.36	< 0.36	< 0.18	NA
Dimethyl phthalate	131-11-3	µg/L	< 0.98	< 1	< 1	NA	< 0.28 [< 0.29]	< 0.25	< 0.24	< 0.23	< 0.31 [< 0.23]	NA	NA	NA	< 0.24	NA
di-n-butyl phthalate	84-74-2	µg/L	< 0.82	< 0.84	< 0.87	< 4.4 BJ	< 0.56 [< 0.56]	NA	NA	< 0.19	< 0.62 [< 0.19]	< 0.22	< 0.62	< 0.5	< 0.21	< 0.21
di-n-octylphthalate	117-84-0	µg/L	< 0.69	< 0.7	< 0.73	NA	< 0.31 [< 0.31]	NA	< 0.42	< 0.4	< 0.34 [< 0.4]	< 0.46	< 0.34	< 0.5 J	NA	< 0.45
Fluoranthene	206-44-0	µg/L	< 0.72	< 0.73	< 0.77	< 0.17 J	NA [< 0.013]	< 0.011	< 0.01	< 0.025	NA [NA]	< 0.028	NA	< 0.0096	NA	< 0.028
Fluorene	86-73-7	µg/L	< 0.8	< 0.82	< 0.85	< 0.29 J	NA [< 0.017]	NA	< 0.016	< 0.027	NA [< 0.027]	< 0.031	NA	< 0.02	NA	< 0.031
Hexachlorobenzene	118-74-1	µg/L	< 0.009	< 0.0092	< 0.0096	< 0.018 J	< 0.008 [< 0.017]	< 0.0089	< 0.0085	< 0.01	NA [< 0.0099]	< 0.012	< 0.46 J	< 0.0099	NA	< 0.011
Hexachlorobutadiene	87-68-3	µg/L	< 0.76	< 0.78	< 0.81	< 0.42 J	< 0.51 [< 0.52]	< 0.14	< 0.14	< 0.4	< 0.57 [< 0.37]	NA	< 0.57	< 0.38	< 0.4	< 0.41
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.61	< 0.62	< 0.65	< 0.52 J	< 7.1 [< 7.2]	< 0.27	< 0.26	< 0.71	< 7.9 [< 0.67]	NA	< 7.9	< 4.5 J	< 0.72	< 0.75
Hexachloroethane	67-72-1	µg/L	< 0.09	< 0.092	< 0.096	< 0.31 J	< 0.55 [< 0.56]	< 0.23	< 0.22	< 0.28	< 0.61 [< 0.26]	NA	< 0.61	< 0.3	< 0.28	< 0.29
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.027	< 0.028	< 0.029	NA	NA [< 0.015]	< 0.012	< 0.011	< 0.03	NA [NA]	< 0.034	NA	< 0.014	NA	< 0.034
Isophorone	78-59-1	µg/L	< 0.67	< 0.68	< 0.71	< 0.36 J	< 0.27 [< 0.28]	< 0.28	< 0.26	< 0.26	< 0.3 [< 0.25]	< 0.29	< 0.3	NA	NA	< 0.28
Naphthalene	91-20-3	µg/L	< 0.8	< 0.82	< 0.85	< 0.28 J	NA [< 0.036]	NA	< 0.017	< 0.019	NA [< 0.019]	< 0.022	NA	< 0.014	NA	< 0.021
Nitrobenzene	98-95-3	µg/L	< 0.49	< 0.5	< 0.52	< 0.56 J	< 0.42 [< 0.42]	< 0.28	< 0.27	< 0.26	< 0.47 [< 0.25]	NA	< 0.47	NA	NA	< 0.28
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.83	< 0.85	< 0.88	< 0.41 J	< 0.3 [< 0.31]	< 0.49	< 0.47	< 0.47	< 0.34 [< 0.44]	NA	< 0.34	NA	NA	NA
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.74	< 0.76	< 0.79	< 0.22 J	< 0.31 [< 0.31]	NA	< 0.23	< 0.22	< 0.34 [< 0.22]	< 0.25	< 0.34	< 0.61	< 0.23	< 0.24
Pentachlorophenol	87-86-5	µg/L	0.1 J	< 0.079	< 0.082	NA	NA [< 0.1]	< 0.32	< 0.3	< 0.069	NA [NA]	< 0.08 J	< 0.1	< 0.22 J	NA	< 0.26
Phenanthrene	85-01-8	µg/L	< 0.65	< 0.66	< 0.69	< 0.022 J	< 0.016 [< 0.021]	NA	< 0.017	< 0.037	NA [< 0.036]	0.304	< 0.19 J	< 0.017	NA	< 0.041
Phenol	108-95-2	µg/L	< 0.41	< 0.42	< 0.44	< 0.59 J	< 1.3 [< 1.3]	NA	< 0.61	< 0.59	3 [< 0.58]	< 0.67	< 1.4	< 1.4	NA	103
Pyrene	129-00-0	µg/L	< 0.83	< 0.85	< 0.88	< 0.016 J	< 0.0081 [< 0.015]	< 0.009	< 0.0086	< 0.023	NA [< 0.022]	< 0.026	< 0.015	< 0.012	NA	< 0.025
Metals - Total																
Aluminum, total	7429-90-5	µg/L	154	52.6	317	< 11	NA [< 200 B]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
Antimony, total	7440-36-0	µg/L	< 0.76	< 0.76	< 0.76	NA	< 1.4 [< 1.8]	NA	NA	NA	NA [NA]	NA	NA	< 1.8	< 2.9	NA
Arsenic, total	7440-38-2	µg/L	12.8	15.2	< 0.71	NA	NA [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	< 2.4
Barium, total	7440-39-3	µg/L	42.3	56.4	24.6	6.9 B	NA [7.5 B]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	8 J
Beryllium, total	7440-41-7	µg/L	< 0.29	< 0.29	< 0.29	NA	< 0.44 [NA]	NA	NA	NA	NA [NA]	NA	NA	< 0.17	NA	< 0.4
Cadmium, total	7440-43-9	µg/L	< 0.72	< 0.72	< 0.72	< 0.7	< 0.24 [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	< 0.4
Calcium, total	7440-70-2	µg/L	23800	37500	12600	NA	NA [15100]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	34600
Chromium, total	7440-47-3	µg/L	< 1.5	< 1.5	< 1.5	NA	< 0.91 [< 0.92]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	0.9 B
Cobalt, total	7440-48-4	µg/L	< 1.5	< 1.5	2.4 J	< 0.83	NA [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	< 1.6
Copper, total	7440-50-8	µg/L	1.9 J	< 1.6	< 1.6	< 10 B	< 1.3 [4.7 B]	NA	< 2.5	NA	NA [NA]	NA	NA	NA	< 1.6	< 1.6
Iron, total	7439-89-6	µg/L	43300	65800	446	NA	515 [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	87.5 J	427 J
Lead, total	7439-92-1	µg/L	0.66 J	< 0.44	< 0.44	NA	< 1.7 [< 2.4]	NA	NA	< 1.9	NA [NA]	NA	NA	NA	NA	NA
Magnesium, total	7439-95-4	µg/L	4190	5460	5880	NA	NA [4590 B]	NA	4170 B	NA	NA [NA]	NA	NA	NA	NA	12600
Manganese, total	7439-96-5	µg/L	6150	9370	40.7	NA	50.5 [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
Mercury, total	7439-97-6	µg/L	< 0.14	< 0.14	< 0.14	NA	< 0.089 [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
Nickel, total	7440-02-0	µg/L	< 1.6	< 1.6	< 1.6	NA	NA [< 1.6]	NA	< 0.51	NA	NA [NA]	NA	NA	NA	< 10	< 10
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 0.79	< 0.79	< 0.79	< 3.6	< 2.4 [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.5	< 1.5	< 1.5	NA	NA [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	< 1	< 1
Sodium, total	7440-23-5	µg/L	3250	3910	5690	NA	3730 B [NA]	NA	NA	NA	NA [NA]	NA	NA	128000	3560 B	5460 J
Thallium, total	7440-28-0	µg/L	< 0.31	< 0.31	< 0.31	NA	< 1.7 [< 1.3]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	< 1.5
Vanadium, total	7440-62-2	µg/L	< 1.4	< 1.4	2 J	NA	< 0.77 [< 0.72]	NA	NA	NA	NA [NA]	NA	NA	NA	< 0.9	< 0.9
Zinc, total	7440-66-6	µg/L	< 6.5	< 6.5	< 6.5	< 7.6	NA [5.5 B]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	1180
Other																
Cyanide, total	57-12-5	µg/L	NA	NA	NA	< 10 J	NA [NA]	NA	NA	NA	NA [NA]	NA	NA	NA	NA	NA
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

ARCADIS Design & Consultancy for natural and built assets

**Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey**

Location ID Sample ID Sample Date	CAS	Units	RW-8 RW-8(199-219) 11/4/2009	RW-8 RW-8(42-62) 11/4/2009	RW-9 RW-9(201-221) 11/3/2009	OB-10 OB-10-081817 8/18/2017	OB-11R OB-11R-081717 8/17/2017	OB-14A OB-14A-082417 8/24/2017	OB-14B OB-14B-082417 8/24/2017	OB-15B OB-15B-081617 8/16/2017	OB-16 OB-16-082417 8/24/2017	OB-17 OB-17-082417 8/24/2017	OB-18 OB-18-082417 8/24/2017	OB-19 OB-19-082517 8/25/2017	OB-20A OB-20A-082917 8/29/2017	OB-20B OB-20B-082917 8/29/2017	OB-24 OB-24-081717 8/17/2017
Volatile Organic Compounds																	
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.32	< 0.26	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.2	< 0.2	< 0.24	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	NA	< 0.23	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	< 0.19	< 0.35	< 0.29	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	0.69 J	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.28	< 0.5	< 0.4	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.15	< 0.22	< 0.56	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 1.3	NA	< 1.1	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
1,2-Dibromoethane	106-93-4	µg/L	< 0.21	< 0.23	< 0.39	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.16	< 0.26	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 0.18	< 0.18	< 0.33	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 0.22	< 0.43	< 0.27	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.29	< 0.26	< 0.25	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.26	< 0.24	< 0.28	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	< 2.9	< 2.5	< 1.6	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 3	< 1.7	< 1.4	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.2	< 1.2	< 0.86	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	< 7.6	< 7.6	< 2.9	2.8 B	< 1.1	8.2	< 1.1	2.2 B	5.1	3.7 J	2.7 B	2.5 B	< 1.1	1.7 J	< 1.1
Benzene	71-43-2	µg/L	< 0.22	NA	< 0.23	< 0.09	2.5	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	0.13 J	< 0.09
Bromodichloromethane	75-27-4	µg/L	< 0.23	< 0.23	< 0.22	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 0.24	< 0.31	< 0.23	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 J	< 0.18 J	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Bromomethane	74-83-9	µg/L	< 0.31	NA	< 0.3	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	0.44 J	NA	< 0.74	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 0.19	< 0.24	< 0.26	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 0.22	< 0.27	< 0.39	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 0.37	< 0.56	< 0.37	< 0.37	17	< 0.37	< 0.37	< 0.37	< 0.37 F	< 0.37	< 0.37	< 0.37	< 0.37	1.6	< 0.37
Chloroform	67-66-3	µg/L	< 0.21	< 0.2	< 0.23	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 0.22	< 0.33	< 0.29	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.33	< 0.22	< 0.26	0.58 J	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.22	< 0.28	< 0.25	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.29	< 0.29	< 1.9	< 0.26	2.1	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	0.42 J	0.92 J	< 0.26
Dibromochloromethane	124-48-1	µg/L	< 0.2	< 0.25	< 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
Dichlorodifluoromethane	75-71-8	µg/L	< 0.31	< 0.73	< 0.92	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 0.21	< 0.4	< 0.27	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Freon 113	76-13-1	µg/L	< 0.49	< 0.45	< 0.38	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34 F	< 0.34	< 0.34
Isopropylbenzene	98-82-8	µg/L	< 0.19	< 0.19	< 0.57	< 0.32	0.84 J	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	0.36 J	< 0.32
Methyl acetate	79-20-9	µg/L	< 2.9	< 3.1	< 1.5	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	< 0.18	NA	< 0.23	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 0.18	< 0.22	< 0.35	< 0.22	0.55 J	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	0.22 J	0.82 J	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.2	NA	< 0.3	0.54 J	0.54 J	0.79 J	< 0.21	1.3 B	0.73 J	0.69 J	0.51 J	0.53 J	< 0.21	< 0.21	2.1
o-Xylene	95-47-6	µg/L	NA	NA	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.23	< 0.26	< 0.58	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.32	< 0.32	< 0.27	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 0.15	< 0.22	< 0.3	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.31	< 0.51	< 0.25	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.21	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.21	< 0.25	< 0.24	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.35	< 0.28	< 0.54	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Vinyl Chloride	75-01-4	µg/L	< 0.27	NA	< 0.44	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.17	< 0.17	< 0.25	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Semi-Volatile Organic Compounds																	
1,1'-Biphenyl	92-52-4	µg/L	NA	< 0.44	< 0.46	< 0.67	< 0.67	< 0.68	< 0.66	< 0.66	< 0.66	< 0.66	< 0.64	< 0.63	< 0.66	< 0.64	< 0.63
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	0.155	6.11	< 0.0781	0.284	< 0.0765	< 0.0735	20.7	< 0.0798	0.184	0.206	1.05	< 0.0742
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.4	< 1.4	< 1.5	< 0.52	< 0.52	< 0.53	< 0.51	< 0.51	< 0.51	< 0.51	< 0.5	< 0.49	< 0.51	< 0.5	< 0.49
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.3	< 1.3	NA	< 0.56	< 0.56	< 0.58	< 0.55	< 0.55	< 0.55	< 0.55	< 0.54	< 0.53	< 0.55	< 0.54	< 0.53
2,4-Dichlorophenol	120-83-2	µg/L	NA	< 1.3	< 1.3	< 0.67	< 0.67	< 0.68	< 0.66	< 0.66	< 0.66	< 0.66	< 0.64	< 0.63	< 0.66	< 0.64	< 0.63
2,4-Dimethylphenol	105-67-9	µg/L	< 1.8	< 1.7	< 1.8	< 0.97	< 0.97	< 0.99	< 0.95	< 0.95	< 0.95	< 0.95	< 0.93	< 0.91	< 0.95	< 0.93	< 0.91
2,4-Dinitrophenol	51-28-5	µg/L	NA	< 0.78	< 0.81	< 2.5	< 2.5	< 2.6	< 2.5	< 2.5	< 2.5	< 2.5	< 2.4	< 2.4	< 2.5	< 2.4	< 2.4
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.24	NA	NA	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1	< 1.1	< 1.1	< 1
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.35	< 0.34	< 0.36	< 0.94	< 0.94	< 0.96	< 0.92 F	< 0.92	< 0.92	< 0.92	< 0.9	< 0.88	< 0.92	< 0.9	< 0.88
2-Chloronaphthalene	91-58-7	µg/L	< 0.45	< 0.43	< 0.46	< 0.65	< 0.65	< 0.66	< 0.64	< 0.64	< 0.64	< 0.64	< 0.62	< 0.61	< 0.64	< 0.62	< 0.61
2-Chlorophenol	95-57-8	µg/L	NA	< 1.1	< 1.2	< 0.79	< 0.79	< 0.8	< 0.77	< 0.77	< 0.77	< 0.77	< 0.76	< 0.74	< 0.77	< 0.76	< 0.74
2-Methylnaphthalene	91-57-6	µg/L	< 0.72	< 0.69	< 0.72	< 0.94	< 0.94	< 0.96	< 0.92	< 0.92	< 0.92	< 0.92	< 0.9	< 0.88	< 0.92	< 0.9	< 0.88
2-Methylphenol	95-48-7	µg/L	< 1.2	< 1.2	< 1.2	< 1.4 J	< 1.4 J	< 1.4	< 1.3 J	< 1.3 J	< 1.3 J	< 1.3 J	< 1.3 J	< 1.3	< 1.3	< 1.3	< 1.3 J
2-Nitroaniline	88-74-4	µg/L	NA	NA	< 0.26	< 0.69	< 0.69	< 0.71	< 0.68	< 0.68	< 0.68	< 0.68	< 0.66	< 0.65	< 0.68	< 0.66	< 0.65
2-Nitrophenol	88-75-5	µg/L	< 1.3	< 1.3	NA	< 0.63	< 0.63	< 0.64	< 0.61	< 0.61	< 0.61	< 0.61	< 0.6	< 0.59	< 0.61	< 0.6	< 0.59
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.32	NA	NA	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1	< 1.1	< 1.1	< 1
3-Nitroaniline	99-09-2	µg/L	< 0.31	< 0.3	< 0.32	< 0.87	< 0.87	< 0.89	< 0.85	< 0.85	< 0.85	< 0.85	< 0.84	< 0.82	< 0.85	< 0.84	< 0.82
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.56	< 0.54	< 0.56	< 2.1	< 2.1	< 2.2	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2	< 2.1	< 2.1	< 2
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.38	NA	< 0.38	< 1.1	< 1.1	< 1.1	< 1.1 F	< 1.1	< 1.1	< 1.1	< 1	< 1	< 1.1	< 1	< 1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 1.1	< 1.1	< 1.2	< 0.81	< 0.81	< 0.83	< 0.79	< 0.79	< 0.79	< 0.79	< 0.78	< 0.76	< 0.79	< 0.78	< 0.76
Semi-Volatile Organic Compounds																	

Location ID Sample ID Sample Date	CAS	Units	RW-8 RW-8(199-219) 11/4/2009	RW-8 RW-8(42-62) 11/4/2009	RW-9 RW-9(201-221) 11/3/2009	OB-10 OB-10-081817 8/18/2017	OB-11R OB-11R-081717 8/17/2017	OB-14A OB-14A-082417 8/24/2017	OB-14B OB-14B-082417 8/24/2017	OB-15B OB-15B-081617 8/16/2017	OB-16 OB-16-082417 8/24/2017	OB-17 OB-17-082417 8/24/2017	OB-18 OB-18-082417 8/24/2017	OB-19 OB-19-082517 8/25/2017	OB-20A OB-20A-082917 8/29/2017	OB-20B OB-20B-082917 8/29/2017	OB-24 OB-24-081717 8/17/2017
4-Chloroaniline	106-47-8	µg/L	< 0.28	< 0.26	< 0.28	< 0.78	< 0.78	< 0.79	< 0.76	< 0.76	< 0.76	< 0.76	< 0.74	< 0.73	< 0.76	< 0.74	< 0.73
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	NA	< 0.37	< 0.39	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 0.98	< 0.96	< 1	< 0.98	< 0.96
4-Nitroaniline	100-01-6	µg/L	NA	NA	< 0.2	< 0.51	< 0.51	< 0.52	< 0.5	< 0.5	< 0.5	< 0.5	< 0.49	< 0.48	< 0.5	< 0.49	< 0.48
4-Nitrophenol	100-02-7	µg/L	< 0.9	< 0.87	< 0.91	< 4.9	< 4.9	< 5.1	< 4.8	< 4.8	< 4.8	< 4.8	< 4.7	< 4.7	< 4.8	< 4.7	< 4.7
Acenaphthene	83-32-9	µg/L	< 0.015	< 0.032	< 0.032	< 0.94	< 0.94	< 0.96	< 0.92	< 0.92	< 0.92	< 0.92	< 0.9	< 0.88	< 0.92	< 0.9	< 0.88
Acenaphthylene	208-96-8	µg/L	NA	< 0.044	< 0.044	< 0.69	< 0.69	< 0.71	< 0.68	< 0.68	< 0.68	< 0.68	< 0.66	< 0.65	< 0.68	< 0.66	< 0.65
Acetophenone	98-86-2	µg/L	< 0.43	< 0.42	< 0.44	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1	< 1.1	< 1.1	< 1
Anthracene	120-12-7	µg/L	< 0.011	< 0.028	< 0.028	< 0.61	< 0.61	< 0.62	< 0.59	< 0.59	< 0.59	< 0.59	< 0.58	< 0.57	< 0.59	< 0.58	< 0.57
Atrazine	1912-24-9	µg/L	< 0.43	< 0.41	< 0.43	< 0.82	< 0.82	< 0.84	< 0.8 F	< 0.8	< 0.8	< 0.8	< 0.79	< 0.77	< 0.8	< 0.79	< 0.77
Benzaldehyde	100-52-7	µg/L	< 0.44	< 0.42	< 0.44	< 0.91	< 0.91	< 0.93	< 0.9	< 0.9	< 0.9	< 0.9	< 0.88	< 0.86	< 0.9	< 0.88	< 0.86
Benzo(a)anthracene	56-55-3	µg/L	NA	< 0.026	< 0.026	< 0.039	< 0.039	< 0.04	< 0.039	< 0.039	< 0.039	< 0.039	< 0.038	< 0.037	< 0.039	< 0.038	< 0.037
Benzo(a)pyrene	50-32-8	µg/L	< 0.0053	< 0.034	< 0.034	< 0.028	< 0.028	< 0.028	< 0.027	< 0.027	< 0.027	< 0.027	< 0.027	< 0.026	< 0.027	< 0.027	< 0.026
Benzo(b)fluoranthene	205-99-2	µg/L	NA	< 0.04	< 0.04	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013	< 0.012	< 0.012
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.011	< 0.032	< 0.032	< 0.8	< 0.8	< 0.82	< 0.78 F	< 0.78	< 0.78	< 0.78	< 0.77	< 0.75	< 0.78 F	< 0.77	< 0.75
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.014	< 0.031	< 0.031	< 0.19	< 0.19	< 0.2	< 0.19 F	< 0.19	< 0.19	< 0.19	< 0.18	< 0.18	< 0.19	< 0.18	< 0.18
Benzyl butyl phthalate	85-68-7	µg/L	< 0.27	< 0.26	< 0.28	< 0.64	< 0.64	< 0.65	< 0.63 F	< 0.63	< 0.63	< 0.63	< 0.61	< 0.6	< 0.63 F	< 0.61	< 0.6
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.27	< 0.26	< 0.27	< 0.73	< 0.73	< 0.75	< 0.72	< 0.72	< 0.72	< 0.72	< 0.7	< 0.69	< 0.72	< 0.7	< 0.69
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.34	NA	NA	< 0.0096	< 0.0096	< 0.0098	< 0.0094	< 0.0094	< 0.0094	< 0.0094	< 0.0092	< 0.009	< 0.0094	< 0.0092	< 0.009
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.36	< 0.34	2.7	< 0.77	< 0.77	< 0.78	< 0.75 F	< 0.75	< 0.75	< 0.75	< 0.73	< 0.72	< 0.75 F	< 0.73	< 0.72
Caprolactam	105-60-2	µg/L	< 0.21	< 0.2	< 0.21	< 1.1 J	< 1.1 J	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1 J
Carbazole	86-74-8	µg/L	NA	NA	< 0.18	< 0.9	< 0.9	< 0.92	< 0.89	< 0.89	< 0.89	< 0.89	< 0.87	< 0.85	< 0.89	< 0.87	< 0.85
Chrysene	218-01-9	µg/L	NA	< 0.024	< 0.024	< 0.71	< 0.71	< 0.73	< 0.7 F	< 0.7	< 0.7	< 0.7	< 0.68	< 0.67	< 0.7	< 0.68	< 0.67
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.024	< 0.025	< 0.025	< 0.023	< 0.023	< 0.024	< 0.023	< 0.023	< 0.023	< 0.023	< 0.022	< 0.022	< 0.023	< 0.022	< 0.022
Dibenzofuran	132-64-9	µg/L	< 0.33	< 0.32	< 0.33	< 0.9	< 0.9	< 0.92	< 0.89	< 0.89	< 0.89	< 0.89	< 0.87	< 0.85	< 0.89	< 0.87	< 0.85
Diethyl phthalate	84-66-2	µg/L	< 0.18	NA	NA	< 1.1	< 1.1	< 1.1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Dimethyl phthalate	131-11-3	µg/L	NA	NA	< 0.25	< 1	< 1	< 1.1	< 1	< 1	< 1	< 1	< 1	< 0.98	< 1	< 1	< 0.98
di-n-butyl phthalate	84-74-2	µg/L	< 0.21	NA	NA	< 0.87	< 0.87	< 0.89	< 0.85 F	< 0.85	< 0.85	< 0.85	< 0.84	< 0.82	< 0.85	< 0.84	< 0.82
di-n-octylphthalate	117-84-0	µg/L	< 0.43	< 0.41	< 0.43	< 0.73	< 0.73	< 0.75	< 0.72 F	< 0.72	< 0.72	< 0.72	< 0.7	< 0.69	< 0.72 F	< 0.7	< 0.69
Fluoranthene	206-44-0	µg/L	NA	< 0.027	< 0.027	< 0.77	< 0.77	< 0.78	< 0.75	< 0.75	< 0.75	< 0.75	< 0.73	< 0.72	< 0.75	< 0.73	< 0.72
Fluorene	86-73-7	µg/L	< 0.016	< 0.03	< 0.03	< 0.85	< 0.85	< 0.87	< 0.83	< 0.83	< 0.83	< 0.83	< 0.82	< 0.8	< 0.83	< 0.82	< 0.8
Hexachlorobenzene	118-74-1	µg/L	NA	< 0.011	< 0.011	< 0.0096	< 0.0096	< 0.0098	0.026	< 0.0094	< 0.0094	< 0.0094	< 0.0092	< 0.009	< 0.0094 J	< 0.0092	< 0.009
Hexachlorobutadiene	87-68-3	µg/L	< 0.14	< 0.13	< 0.41	< 0.81	< 0.81	< 0.83	< 0.79	< 0.79	< 0.79	< 0.79	< 0.78	< 0.76	< 0.79 J	< 0.78	< 0.76
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.27	< 0.25	< 0.74	< 0.65	< 0.65	< 0.66	< 0.64	< 0.64	< 0.64	< 0.64	< 0.62	< 0.61	< 0.64	< 0.62	< 0.61
Hexachloroethane	67-72-1	µg/L	< 0.23	< 0.22	< 0.29	< 0.096	< 0.096	< 0.098	< 0.094	< 0.094	< 0.094	< 0.094	< 0.092	< 0.09	< 0.094	< 0.092	< 0.09
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.012	< 0.032	< 0.032	< 0.029	< 0.029	< 0.029	< 0.028	< 0.028	< 0.028	< 0.028	< 0.028	< 0.027	< 0.028	< 0.028	< 0.027
Isophorone	78-59-1	µg/L	< 0.27	NA	< 0.27	< 0.71	< 0.71	< 0.73	< 0.7	< 0.7	< 0.7	< 0.7	< 0.68	< 0.67	< 0.7	< 0.68	< 0.67
Naphthalene	91-20-3	µg/L	< 0.018	< 0.021	< 0.021	< 0.85	< 0.85	1.3 J	< 0.83	< 0.83	< 0.83	< 0.83	< 0.82	< 0.8	< 0.83	1.9 J	< 0.8
Nitrobenzene	98-95-3	µg/L	< 0.28	< 0.26	< 0.28	< 0.52	< 0.52	< 0.53	< 0.51	< 0.51	< 0.51	< 0.51	< 0.5	< 0.49	< 0.51	< 0.5	< 0.49
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.48	NA	< 0.48	< 0.88	< 0.88	< 0.9	< 0.86	< 0.86	< 0.86	< 0.86	< 0.85	< 0.83	< 0.86	< 0.85	< 0.83
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.23	NA	NA	< 0.79	< 0.79	< 0.8	< 0.77 F	< 0.77	< 0.77	< 0.77	< 0.76	< 0.74	< 0.77	< 0.76	< 0.74
Pentachlorophenol	87-86-5	µg/L	< 0.31	< 0.072	< 0.25	< 0.082	< 0.082	< 0.084	< 0.08	< 0.08 J	< 0.08	< 0.08	< 0.079	< 0.077	< 0.08	< 0.079	< 0.077
Phenanthrene	85-01-8	µg/L	NA	< 0.04	< 0.04	< 0.69	< 0.69	< 0.71	< 0.68	< 0.68	< 0.68	< 0.68	< 0.66	< 0.65	< 0.68	< 0.66	< 0.65
Phenol	108-95-2	µg/L	< 0.63	< 0.61	< 0.63	< 0.44	< 0.44	< 0.45	< 0.43	< 0.43	< 0.43	< 0.43	< 0.42	< 0.41	< 0.43	< 0.42	< 0.41
Pyrene	129-00-0	µg/L	NA	< 0.025	< 0.025	< 0.88	< 0.88	< 0.9	< 0.86 F	< 0.86	< 0.86	< 0.86	< 0.85	< 0.83	< 0.86	< 0.85	< 0.83
Metals - Total																	
Aluminum, total	7429-90-5	µg/L	NA	NA	< 26	< 18.2	60.9	< 18.2	< 18.2	28.2 J	< 18.2	< 18.2	179	119	143 B	94.2	160
Antimony, total	7440-36-0	µg/L	< 1.3	< 1.3	< 4	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62
Arsenic, total	7440-38-2	µg/L	2.1 B	NA	NA	< 0.64	27.3	3.5	0.92 J	1.1 J	9.3	< 0.64	< 0.64	1.6 J	5	1.3 J	< 0.64
Barium, total	7440-39-3	µg/L	NA	NA	7.4 B	7.1	101	445	36.3	10.9	104	11.2	9.2	66.8	138	77	40.3
Beryllium, total	7440-41-7	µg/L	< 0.13	NA	< 0.4	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.17	NA	< 0.4	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71
Calcium, total	7440-70-2	µg/L	NA	NA	NA	14000	62900	128000	90900	21200	140000	93700	53800	12700	27000	52700	95700
Chromium, total	7440-47-3	µg/L	< 0.9	NA	< 10 J	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	1.6 J	< 1.3	< 1.3	< 1.3	< 1.3
Cobalt, total	7440-48-4	µg/L	< 0.3	NA	< 50	< 1.3	2.4 J	< 1.3	< 1.3	< 1.3	1.8 J	< 1.3	< 1.3	< 1.3	< 1.3	24.9	< 1.3
Copper, total	7440-50-8	µg/L	NA	NA	< 1.6	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	1.8 J	< 1.4	< 1.4	3.3 J	3.8 B	7.8	1.4 J
Iron, total	7439-89-6	µg/L	57.3 B	NA	NA	316	84500	36700	358	188	18200	1140	242	16300	36600	38700	447
Lead, total	7439-92-1	µg/L	< 0.94	NA	6.4	< 0.38	0.4 J	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	1.3	0.69 J	0.45 J	< 0.38
Magnesium, total	7439-95-4	µg/L	NA	NA	NA	4320	8340	10900	27500	5540	18200	30300	9230	2460	3210	9420	25300
Manganese, total	7439-96-5	µg/L	37	NA	NA	41.7	11500	922	1350	1490	3990	317	6.3 J	295	779	8610	617
Mercury, total	7439-97-6	µg/L	NA	< 0.088	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
Nickel, total	7440-02-0	µg/L	NA	NA	< 10	< 1.4	< 1.4	< 1.4	< 1.4	3.4 J	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	4.9	< 1.4
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 1.5	NA	< 3.7	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 0.72	NA	1 B	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Sodium, total	7440-23-5	µg/L	48200	58800	NA	3780	4120	18100	16600	3880	35400	14300	5180	2860	3350	4080	17500
Thallium, total	7440-28-0	µg/L	< 0.17	NA	< 1.5	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Vanadium, total	7440-62-2	µg/L	< 0.43	NA	< 50	< 1.9	< 1.9	< 1.9	< 1.9	1.9 J	< 1.9	< 1.9	< 1.9	4.5	< 1.9	< 1.9	< 1.9
Zinc, total	7440-66-6	µg/L	NA	< 1.7	958	< 7	< 7	9.9 J	< 7	< 7	< 7	< 7	14.1 J	22.7	50.3 B	< 7	< 7
Other																	
Cyanide, total	57-12-5	µg/L	NA	NA	NA	< 2	< 2	4.3 B	5 B	2.1 J	5.5 B	4.3 B	4.1 B	4.5 B	7 B	5.1 B	< 2
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	< 1.5	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	OB-25 OB-25-081817 8/18/2017	OB-27 OB-27-082217 8/22/2017	OB-28 OB-28-082417 8/24/2017	OB-29 OB-29-081817 8/18/2017	OB-30B OB-30B-082517 8/25/2017	OB-30C OB-30C-082517 8/25/2017	OB-31 OB-31-082517 8/25/2017	OB-32 OB-32-081717 8/17/2017	OB-33 OB-33-081717 8/17/2017
Volatile Organic Compounds											
1,1,1,2-Tetrachloroethane	630-20-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	< 0.24	5.7	< 0.24	< 0.24	< 0.24	< 0.24	0.34 J	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane (DBCP)	96-12-8	µg/L	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
1,2-Dibromoethane	106-93-4	µg/L	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
Acetone	67-64-1	µg/L	2.3 B	< 1.1	3.1 B	3.5 B	3 B	< 1.1	< 1.1	< 1.1	< 1.1
Benzene	71-43-2	µg/L	< 0.09	2.1	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Bromodichloromethane	75-27-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18 J	< 0.18	< 0.18
Bromomethane	74-83-9	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Chloroethane	75-00-3	µg/L	< 0.37	79	< 0.37	< 0.37	< 0.37	< 0.37	15	< 0.37	< 0.37
Chloroform	67-66-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	< 0.26	1.8	< 0.26	< 0.26	< 0.26	< 0.26	0.36 J	0.31 J	< 0.26
Dibromochloromethane	124-48-1	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Dichlorodifluoromethane	75-71-8	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Isopropylbenzene	98-82-8	µg/L	< 0.32	2.9	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32	< 0.32
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Methyl tert butyl ether	1634-04-4	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	0.23 J	< 0.13	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	< 0.22	1.6	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Methylene chloride	75-09-2	µg/L	< 0.21	< 0.21	0.45 J	0.7 J	< 0.21	< 0.21	0.98 J	0.78 J	0.68 J
o-Xylene	95-47-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	100-42-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Tertiary Butyl Alcohol	75-65-0	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	127-18-4	µg/L	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	< 0.25	0.72 J	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25
Trans-1,2-dichloroethene	156-60-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Vinyl Chloride	75-01-4	µg/L	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylene, -m,p	179601-23-1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes	1330-20-7	µg/L	< 0.28	1.1 J	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
Semi-Volatile Organic Compounds											
1,1'-Biphenyl	92-52-4	µg/L	< 0.68	< 0.63	< 0.66	< 0.67	< 0.64	< 0.64	< 0.66	< 0.75	< 0.64
1,4-Dioxane	123-91-1	µg/L	0.309	15.5	< 0.0798	0.17	< 0.0781	< 0.0781	2.1	0.56	< 0.0742
2,4,5-Trichlorophenol	95-95-4	µg/L	< 0.53	< 0.49	< 0.51	< 0.52	< 0.5	< 0.5	< 0.51	< 0.58	< 0.5
2,4,6-Trichlorophenol	88-06-2	µg/L	< 0.58	< 0.53	< 0.55	< 0.56	< 0.54	< 0.54	< 0.55	< 0.63	< 0.54
2,4-Dichlorophenol	120-83-2	µg/L	< 0.68	< 0.63	< 0.66	< 0.67	< 0.64	< 0.64	< 0.66	< 0.75	< 0.64
2,4-Dimethylphenol	105-67-9	µg/L	< 0.99	< 0.91	< 0.95	< 0.97	< 0.93	< 0.93	< 0.95	< 1.1	< 0.93
2,4-Dinitrophenol	51-28-5	µg/L	< 2.6	< 2.4	< 2.5	< 2.5	< 2.4	< 2.4	< 2.5	< 2.8	< 2.4
2,4-Dinitrotoluene	121-14-2	µg/L	< 1.1	< 1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2	< 1.1
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.96	< 0.88	< 0.92	< 0.94	< 0.9	< 0.9	< 0.92	< 1	< 0.9
2-Chloronaphthalene	91-58-7	µg/L	< 0.66	< 0.61	< 0.64	< 0.65	< 0.62	< 0.62	< 0.64	< 0.73	< 0.62
2-Chlorophenol	95-57-8	µg/L	< 0.8	< 0.74	< 0.77	< 0.79	< 0.76	< 0.76	< 0.77	< 0.88	< 0.76
2-Methylnaphthalene	91-57-6	µg/L	< 0.96	0.89 J	< 0.92	< 0.94	< 0.9	< 0.9	< 0.92	< 1	< 0.9
2-Methylphenol	95-48-7	µg/L	< 1.4 J	< 1.3	< 1.3 J	< 1.4 J	< 1.3	< 1.3	< 1.3 J	< 1.5 J	< 1.3 J
2-Nitroaniline	88-74-4	µg/L	< 0.71	< 0.65	< 0.68	< 0.69	< 0.66	< 0.66	< 0.68	< 0.77	< 0.66
2-Nitrophenol	88-75-5	µg/L	< 0.64	< 0.59	< 0.61	< 0.63	< 0.6	< 0.6	< 0.61	< 0.7	< 0.6
3&4-Methylphenol	12-03-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 1.1	< 1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2	< 1.1
3-Nitroaniline	99-09-2	µg/L	< 0.89	< 0.82	< 0.85	< 0.87	< 0.84	< 0.84	< 0.85	< 0.98	< 0.84
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.2	< 2	< 2.1	< 2.1	< 2.1	< 2.1	< 2.1	< 2.4	< 2.1
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 1.1	< 1	< 1.1	< 1.1	< 1	< 1	< 1.1	< 1.2	< 1
4-Chloro-3-Methylphenol	59-50-7	µg/L	< 0.83	< 0.76	< 0.79	< 0.81	< 0.78	< 0.78	< 0.79	< 0.9	< 0.78
Semi-Volatile Organic Compounds											

Location ID Sample ID Sample Date	CAS	Units	OB-25 OB-25-081817 8/18/2017	OB-27 OB-27-082217 8/22/2017	OB-28 OB-28-082417 8/24/2017	OB-29 OB-29-081817 8/18/2017	OB-30B OB-30B-082517 8/25/2017	OB-30C OB-30C-082517 8/25/2017	OB-31 OB-31-082517 8/25/2017	OB-32 OB-32-081717 8/17/2017	OB-33 OB-33-081717 8/17/2017
4-Chloroaniline	106-47-8	µg/L	< 0.79	< 0.73	< 0.76	< 0.78	< 0.74	< 0.74	< 0.76	< 0.87	< 0.74
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 1	< 0.96	< 1	< 1	< 0.98	< 0.98	< 1	< 1.1	< 0.98
4-Nitroaniline	100-01-6	µg/L	< 0.52	< 0.48	< 0.5	< 0.51	< 0.49	< 0.49	< 0.5	< 0.57	< 0.49
4-Nitrophenol	100-02-7	µg/L	< 5.1	< 4.7	< 4.8	< 4.9	< 4.7	< 4.7	< 4.8	< 5.5	< 4.7
Acenaphthene	83-32-9	µg/L	< 0.96	< 0.88	< 0.92	< 0.94	< 0.9	< 0.9	< 0.92	< 1	< 0.9
Acenaphthylene	208-96-8	µg/L	< 0.71	< 0.65	< 0.68	< 0.69	< 0.66	< 0.66	< 0.68	< 0.77	< 0.66
Acetophenone	98-86-2	µg/L	< 1.1	< 1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.2	< 1.1
Anthracene	120-12-7	µg/L	< 0.62	< 0.57	< 0.59	< 0.61	< 0.58	< 0.58	< 0.59	< 0.68	< 0.58
Atrazine	1912-24-9	µg/L	< 0.84	< 0.77	< 0.8	< 0.82	< 0.79	< 0.79	< 0.8	< 0.92	< 0.79
Benzaldehyde	100-52-7	µg/L	< 0.93	< 0.86	< 0.9	< 0.91	< 0.88	< 0.88	< 0.9	< 1	< 0.88
Benzo(a)anthracene	56-55-3	µg/L	< 0.04	< 0.037	< 0.039	< 0.039	< 0.038	< 0.038	< 0.039	< 0.044	< 0.038
Benzo(a)pyrene	50-32-8	µg/L	< 0.028	< 0.026	< 0.027	< 0.028	< 0.027	< 0.027	< 0.027	< 0.031	< 0.027
Benzo(b)fluoranthene	205-99-2	µg/L	< 0.013	< 0.012	< 0.013	< 0.013	< 0.012	< 0.012	< 0.013	< 0.014	< 0.012
Benzo(g,h,i)perylene	191-24-2	µg/L	< 0.82	< 0.75	< 0.78	< 0.8	< 0.77	< 0.77	< 0.78	< 0.89	< 0.77
Benzo(k)fluoranthene	207-08-9	µg/L	< 0.2	< 0.18	< 0.19	< 0.19	< 0.18	< 0.18	< 0.19	< 0.21	< 0.18
Benzyl butyl phthalate	85-68-7	µg/L	< 0.65	< 0.6	< 0.63	< 0.64	< 0.61	< 0.61	< 0.63	< 0.71	< 0.61
bis(2-Chloroethoxy)methane	111-91-1	µg/L	< 0.75	< 0.69	< 0.72	< 0.73	< 0.7	< 0.7	< 0.72	< 0.82	< 0.7
bis(2-Chloroethyl)ether	111-44-4	µg/L	< 0.0098	< 0.009	< 0.0094	< 0.0096	< 0.0092	0.06	< 0.0094	< 0.011	< 0.0092
bis(2-Chloroisopropyl)ether	39638-32-9	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	117-81-7	µg/L	< 0.78	< 0.72	< 0.75	< 0.77	< 0.73	< 0.73	< 0.75	< 0.86	< 0.73
Caprolactam	105-60-2	µg/L	< 1.1 J	< 1.1	< 1.1	< 1.1 J	< 1.1	< 1.1	< 1.1	< 1.3 J	< 1.1 J
Carbazole	86-74-8	µg/L	< 0.92	< 0.85	< 0.89	< 0.9	< 0.87	< 0.87	< 0.89	< 1	< 0.87
Chrysene	218-01-9	µg/L	< 0.73	< 0.67	< 0.7	< 0.71	< 0.68	< 0.68	< 0.7	< 0.8	< 0.68
Dibenzo(a,h)anthracene	53-70-3	µg/L	< 0.024	< 0.022	< 0.023	< 0.023	< 0.022	< 0.022	< 0.023	< 0.026	< 0.022
Dibenzofuran	132-64-9	µg/L	< 0.92	< 0.85	< 0.89	< 0.9	< 0.87	< 0.87	< 0.89	< 1	< 0.87
Diethyl phthalate	84-66-2	µg/L	< 1.1	< 1	< 1	< 1.1	< 1	< 1	< 1	< 1.2	< 1
Dimethyl phthalate	131-11-3	µg/L	< 1.1	< 0.98	< 1	< 1	< 1	< 1	< 1	< 1.2	< 1
di-n-butyl phthalate	84-74-2	µg/L	< 0.89	< 0.82	< 0.85	< 0.87	< 0.84	1.1 J	< 0.85	< 0.98	< 0.84
di-n-octylphthalate	117-84-0	µg/L	< 0.75	< 0.69	< 0.72	< 0.73	< 0.7	< 0.7	< 0.72	< 0.82	< 0.7
Fluoranthene	206-44-0	µg/L	< 0.78	< 0.72	< 0.75	< 0.77	< 0.73	< 0.73	< 0.75	< 0.86	< 0.73
Fluorene	86-73-7	µg/L	< 0.87	< 0.8	< 0.83	< 0.85	< 0.82	< 0.82	< 0.83	< 0.95	< 0.82
Hexachlorobenzene	118-74-1	µg/L	< 0.0098	< 0.009	< 0.0094	< 0.0096	< 0.0092	< 0.0092	< 0.0094	< 0.011	< 0.0092
Hexachlorobutadiene	87-68-3	µg/L	< 0.83	< 0.76	< 0.79	< 0.81	< 0.78	< 0.78	< 0.79	< 0.9	< 0.78
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.66	< 0.61	< 0.64	< 0.65	< 0.62	< 0.62	< 0.64	< 0.73	< 0.62
Hexachloroethane	67-72-1	µg/L	< 0.098	< 0.09	< 0.094	< 0.096	< 0.092	< 0.092	< 0.094	< 0.11	< 0.092
Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	< 0.029	< 0.027	< 0.028	< 0.029	< 0.028	< 0.028	< 0.028	< 0.032	< 0.028
Isophorone	78-59-1	µg/L	< 0.73	< 0.67	< 0.7	< 0.71	< 0.68	< 0.68	< 0.7	< 0.8	< 0.68
Naphthalene	91-20-3	µg/L	< 0.87	5.1 J	< 0.83	< 0.85	< 0.82	< 0.82	< 0.83	< 0.95	< 0.82
Nitrobenzene	98-95-3	µg/L	< 0.53	< 0.49	< 0.51	< 0.52	< 0.5	< 0.5	< 0.51	< 0.58	< 0.5
N-Nitroso-di-n-Propylamine	621-64-7	µg/L	< 0.9	< 0.83	< 0.86	< 0.88	< 0.85	< 0.85	< 0.86	< 0.99	< 0.85
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.8	< 0.74	< 0.77	< 0.79	< 0.76	< 0.76	< 0.77	< 0.88	< 0.76
Pentachlorophenol	87-86-5	µg/L	< 0.084	< 0.077	< 0.08	< 0.082	< 0.079	< 0.079	< 0.08	< 0.092	< 0.079
Phenanthrene	85-01-8	µg/L	< 0.71	0.82 J	< 0.68	< 0.69	< 0.66	< 0.66	< 0.68	< 0.77	< 0.66
Phenol	108-95-2	µg/L	< 0.45	< 0.41	< 0.43	< 0.44	< 0.42	< 0.42	< 0.43	< 0.49	< 0.42
Pyrene	129-00-0	µg/L	< 0.9	< 0.83	< 0.86	< 0.88	< 0.85	< 0.85	< 0.86	< 0.99	< 0.85
Metals - Total											
Aluminum, total	7429-90-5	µg/L	728	89.5	207	753	< 18.2	723	107	< 18.2	1220
Antimony, total	7440-36-0	µg/L	0.75 J	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62
Arsenic, total	7440-38-2	µg/L	0.7 J	23.1	< 0.64	< 0.64	< 0.64	0.8 J	14.2	17.7	< 0.64
Barium, total	7440-39-3	µg/L	42.3	60.4	78.5	11.1	27	21.3	40.5	58.1	33.4
Beryllium, total	7440-41-7	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71
Calcium, total	7440-70-2	µg/L	45700	32700	136000	14200	23400	43600	22900	38600	12400
Chromium, total	7440-47-3	µg/L	< 1.3	< 1.3	< 1.3	1.3 J	< 1.3	< 1.3	< 1.3	< 1.3	3.4 J
Cobalt, total	7440-48-4	µg/L	< 1.3	3.7 J	1.5 J	< 1.3	1.5 J	< 1.3	< 1.3	< 1.3	3.4 J
Copper, total	7440-50-8	µg/L	15.9	< 1.4	3 J	2.8 J	1.8 J	< 1.4	< 1.4	1.7 J	2.7 J
Iron, total	7439-89-6	µg/L	1250	47300	1490	1040	< 42.4	994	39600	67400	1660
Lead, total	7439-92-1	µg/L	1.3	< 0.38	< 0.38	< 0.38	< 0.38	0.46 J	< 0.38	< 0.38	< 0.38
Magnesium, total	7439-95-4	µg/L	10300	4200	28600	4570	5010	17100	3470	5360	5750
Manganese, total	7439-96-5	µg/L	42.1	7200	3740	25.3	1450	109	5240	8150	42.5
Mercury, total	7439-97-6	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Nickel, total	7440-02-0	µg/L	2.3 J	1.8 J	1.9 J	1.6 J	2.3 J	< 1.4	< 1.4	< 1.4	1.7 J
Potassium, total	7440-09-7	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, total	7782-49-2	µg/L	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	1.9 J	< 0.73	< 0.73	< 0.73
Silicon, total	7440-21-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver, total	7440-22-4	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Sodium, total	7440-23-5	µg/L	78300	2830	22800	3830	22700	6350	2680	4030	5290
Thallium, total	7440-28-0	µg/L	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Vanadium, total	7440-62-2	µg/L	2 J	< 1.9	< 1.9	< 1.9	< 1.9	5.3	< 1.9	< 1.9	4.5
Zinc, total	7440-66-6	µg/L	21.4	< 7	< 7	13.6 J	< 7	< 7	< 7	< 7	< 7
Other											
Cyanide, total	57-12-5	µg/L	< 2	< 2.4	4.7 B	< 2	4.5 B	3.9 B	5.2 B	< 2	< 2
Cyanide, free	E-14718	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA

APPENDIX A2

2008 - 2017 Peters Mine Pit Air Shaft Annual Mine Water Data

Location ID Sample ID Sample Date	CAS	Units	PM AIR SHAFT PMPAS-180(080507) 5/7/2008	PM AIR SHAFT PMPAS-230(080507) 5/7/2008	PM Air Shaft-180 PM AIRSHAFT-180 9/18/2008	PM Air Shaft-230 PM AIRSHAFT-230 9/18/2008	PM AIR SHAFT PM AIRSHAFT(180) 7/10/2009	PM AIR SHAFT PM AIRSHAFT(230) 7/10/2009	PM AIR SHAFT PMAIR SHAFT-180 10/29/2009	PM AIR SHAFT PMAIR SHAFT-230 10/29/2009	PM AIR SHAFT PM AIRSHAFT 180 6/4/2010	PM AIR SHAFT PM AIRSHAFT 230 6/4/2010	PM Air Shaft-180 PM AIRSHAFT-180(052411) 5/24/2011	PM Air Shaft-230 PM AIRSHAFT-230(052411) 5/24/2011	PM Air Shaft-180 PM AIR SHAFT-180(042312) 4/23/2012	PM Air Shaft-180 PMAIRSHAFT-180(042312) 4/23/2012
Volatile Organic Compounds																
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.24	< 0.24	< 0.24	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.24	< 0.24	< 0.24	NA
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.13	< 0.13	< 0.13	< 0.13	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.2	< 0.2	< 0.2	NA
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	µg/L	< 0.8	< 0.8	< 0.8	< 0.8	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.38	< 0.49	< 0.49	< 0.49	NA
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.17	< 0.17	< 0.17	< 0.17	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	NA
1,1-Dichloroethane	75-34-3	µg/L	< 0.16	< 0.16	< 0.24	< 0.24	2.1	2.1	< 0.29	< 0.29	< 0.29	< 0.29	0.23 J	< 0.19	< 0.19	NA
1,1-Dichloroethene	75-35-4	µg/L	< 0.29	< 0.29	< 0.29	< 0.29	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.28	< 0.28	< 0.28	NA
1,2,3-Trichlorobenzene	87-61-6	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	96-18-4	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	< 0.56	< 0.15	< 0.15	< 0.15	NA
1,2-Dibromo-3-Chloropropane	96-12-8	µg/L	< 2.4	< 2.4	< 1.3	< 1.3	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1	< 1.3	< 1.3	< 1.3	NA
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.18	0.38 J	0.28 J	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	0.44 J	< 0.18	0.75 J	< 0.18	NA
1,2-Dichloroethane	107-06-2	µg/L	< 0.35	< 0.35	< 0.35	< 0.35	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.18	< 0.18	< 0.18	NA
1,2-Dichloropropane	78-87-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.22	< 0.22	< 0.22	NA
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.26	1.5	1.3	0.96 J	< 0.25	< 0.25	< 0.25	0.76 J	< 0.25	1.8	< 0.29	3.4	< 0.29	NA
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.32	1.4	5.9	4.5	0.46 J	0.45 J	0.48 J	3.3	< 0.28	5.6	0.49 J	8.1	< 0.26	NA
2-Butanone (MEK)	78-93-3	µg/L	< 2.3	< 2.3	< 2.3	< 2.3	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 2.9	< 2.9	< 2.9	NA
2-Hexanone	591-78-6	µg/L	< 1.7	< 1.7	< 1.7	< 1.7	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 3	< 3	< 3	NA
4-Methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.9	< 1.9	< 1.3	< 1.3	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 0.86	< 1.2	< 1.2	< 1.2	NA
4-Methylphenol	106-44-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	µg/L	< 2.1	< 2.1	< 2.1	< 2.1	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 2.9	< 7.6	< 7.6	< 5	NA
Benzene	71-43-2	µg/L	< 0.26	31.8	26.4	29.1	7.4	7.6	0.6 J	31.2	< 0.23	31	2.5	33.2	< 0.22	NA
Benzene, (1-methylethyl)-	98-82-8	µg/L	0.94 J	14	12.2	8.2	3.7	4	0.67 J	5.7	< 0.57	10	1.4 J	14.6	< 0.19	NA
Benzene, chloro-	108-90-7	µg/L	< 0.14	8.1	6.4	6.9	0.58 J	0.61 J	0.49 J	6.8	< 0.39	13.1	1	23.8	< 0.22	NA
Bromoform	75-25-2	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.24	< 0.24	< 0.24	NA
Bromomethane	74-83-9	µg/L	< 0.32	< 0.32	< 0.32	< 0.32	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.31	< 0.31	< 0.31	NA
Carbon disulfide	75-15-0	µg/L	< 0.15	< 0.15	< 0.16	< 0.16	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.74	< 0.18	< 0.18	< 0.18	NA
Carbon tetrachloride	56-23-5	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26 J	< 0.26 J	< 0.19	< 0.19	< 0.19	NA
Chlorobenzene	108-90-7	µg/L	< 0.14	8.1	6.4	6.9	0.58 J	0.61 J	0.49 J	6.8	< 0.39	13.1	1	23.8	< 0.22	NA
Chlorobromomethane	74-97-5	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorodibromomethane	124-48-1	µg/L	< 0.12 J	< 0.12 J	< 0.16	< 0.16	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.2	< 0.2	< 0.2	NA
Chloroethane	75-00-3	µg/L	< 0.22	21.1	21.6	19	34.9	34.9	0.39 J	21.3	< 0.37	15.9	5.3	14	< 0.37	NA
Chloroform	67-66-3	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.21	< 0.21	< 0.21	NA
Chloromethane	74-87-3	µg/L	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.29	< 0.22	< 0.22	< 0.22	NA
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.19	< 0.19	< 0.25	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	NA
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.15	< 0.15	< 0.18	< 0.18	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.22	< 0.22	< 0.22	NA
Cyclohexane	110-82-7	µg/L	< 0.85	< 0.85	2.6 J	< 0.85	2.7 J	2.9 J	< 1.9	2 J	< 1.9	2.5 J	< 0.29	3.6 J	< 0.29	NA
Dichlorobromomethane	75-27-4	µg/L	< 0.14	< 0.14	< 0.14	< 0.14	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.23	< 0.23	< 0.23	NA
Dichlorodifluoromethane	75-71-8	µg/L	< 0.88	< 0.88	< 0.88	< 0.88	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	< 0.92	< 0.31	< 0.31	< 0.31	NA
Ethylbenzene	100-41-4	µg/L	< 0.27	< 0.27	< 0.27	< 0.27	1.2	1.3	< 0.27	< 0.27	< 0.27	< 0.27	0.52 J	< 0.21	< 0.21	NA
Ethylene Dibromide	106-93-4	µg/L	< 0.17	< 0.17	< 0.18	< 0.18	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.39	< 0.21	< 0.21	< 0.21	NA
Isopropylbenzene	98-82-8	µg/L	0.94 J	14	12.2	8.2	3.7	4	0.67 J	5.7	< 0.57	10	1.4 J	14.6	< 0.19	NA
Methyl acetate	79-20-9	µg/L	< 2.5	< 2.5	< 1.7	< 1.7	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 2.9	< 2.9	< 2.9	NA
Methyl tert-butyl ether	1634-04-4	µg/L	< 0.14	< 0.14	< 0.16	< 0.16	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.23	< 0.18	< 0.18	< 0.18	NA
Methylcyclohexane	108-87-2	µg/L	< 0.11	0.7 J	0.63 J	< 0.11	0.89 J	1 J	< 0.35	< 0.35	< 0.35	0.63 J	< 0.18	1.1 J	< 0.18	NA
Methylene Chloride	75-09-2	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.2	< 0.2	< 0.2	NA
Styrene	100-42-5	µg/L	< 0.11	< 0.11	< 0.17	< 0.17	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.23	< 0.23	< 0.23	NA
Tetrachloroethene	127-18-4	µg/L	< 0.29	< 0.29	< 0.29	< 0.29	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.32	< 0.32	< 0.32	NA
Toluene	108-88-3	µg/L	< 0.15	< 0.15	< 0.15	< 0.15	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.15	0.3 J	< 0.15	NA
trans-1,2-Dichloroethene	156-60-5	µg/L	< 0.16	< 0.16	< 0.16	< 0.16	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.25	< 0.31	< 0.31	< 0.31	NA
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.11	< 0.11	< 0.15	< 0.15	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.21	< 0.19	< 0.19	< 0.19	NA
Trichloroethene	79-01-6	µg/L	< 0.18	< 0.18	< 0.18	< 0.18	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.21	< 0.21	< 0.21	NA
Trichlorofluoromethane	75-69-4	µg/L	< 0.25	< 0.25	< 0.25	< 0.25	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.54	< 0.35	< 0.35	< 0.35	NA
Vinyl chloride	75-01-4	µg/L	< 0.21	< 0.21	< 0.21	< 0.21	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.44	< 0.27	< 0.27	< 0.27	NA
Xylenes, Total	1330-20-7	µg/L	< 0.39	5.8	2.6	3.7	24.8	27.5	< 0.25	0.94 J	< 0.25	4.1	1.2	3.7	< 0.17	NA
Semi-Volatile Organic Compounds																
1,1'-Biphenyl	92-52-4	µg/L	< 0.22	< 0.22	< 0.55	< 0.55	< 0.42	< 0.48	< 0.47	< 0.45	< 0.46	< 0.44	< 0.42	< 0.42	< 0.35	NA
1,2,4,5-Tetrachlorobenzene	95-94-3	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-Dioxane	123-91-1	µg/L	NA	NA	NA	NA	NA	NA	NA	12 JN	NA	NA	NA	NA	NA	NA
2,3,4,6-Tetrachlorophenol	58-90-2	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.1	< 1.1	< 2	< 2	< 1.3	< 1.5	< 1.5	< 1.4	< 1.5	< 1.4	< 1.3	< 1.3	< 1.8	NA
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1	< 1	< 1.6	< 1.6	< 1.2	< 1.4	< 1.4	< 1.3	< 1.3	< 1.3	< 1.2	< 1.2	< 1.5	NA
2,4-Dichlorophenol	120-83-2	µg/L	< 1.4	< 1.4	< 1.9	< 1.9	< 1.2	< 1.4	< 1.4	< 1.3	< 1.3	< 1.3	< 1.2	< 1.2	< 1.3	NA
2,4-Dimethylphenol	105-67-9	µg/L	< 1.7	< 1.7	< 2	< 2	< 1.7	< 1.9	< 1.8	< 1.8	< 1.8	< 1.7	< 1.7	< 1.7	< 1.8	NA
2,4-Dinitrophenol	51-28-5	µg/L	< 1.1	< 1.1	< 4.2	< 4.2	< 0.74	< 0.85	< 0.82	< 0.79	< 0.81	< 0.77	< 0.74	< 0.74	< 19	NA
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.54	< 0.54	< 0.45	< 0.45	< 0.22	< 0.25	< 0.24	< 0.24	< 0.24	< 0.23	< 0.22	< 0.22	< 0.49	NA
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.5	< 0.5	< 0.6	< 0.6	< 0.33	< 0.37	< 0.36	< 0.35	< 0.36	< 0.34	< 0.33	< 0.33	< 0.53	NA
2-Chloronaphthalene	91-58-7	µg/L	< 0.2	< 0.2	< 0.48	< 0.48	< 0.42	< 0.48	< 0.46	< 0.45	< 0.46	< 0.43	< 0.42	< 0.42	< 0.34	NA
2-Chlorophenol	95-57-8	µg/L	< 0.87	< 0.87	< 1.5	< 1.5	< 1.1	< 1.2	< 1.2	< 1.2	< 1.2	< 1.1	< 1.1	< 1.1	< 1.1	NA
2-Methylnaphthalene	91-57-6	µg/L	< 0.76	< 0.76	< 0.43	< 0.43	< 0.66	< 0.76	< 0.73	< 0.71	< 0.72	< 0.69	< 0.66	< 0.66	< 0.44	NA
2-Methylphenol	95-48-7	µg/L	< 1	< 1	< 1.4	< 1.4	< 1.1	< 1.3	< 1.2	< 1.2	< 1.2	< 1.2	< 1.1	< 1.1	< 1.2	NA
2-Nitroaniline	88-74-4	µg/L	< 0.5	< 0.5	< 0.45	< 0.45	< 0.24	< 0.27	< 0.26	< 0.25	< 0.26	< 0.24	< 0.24	< 0.24	< 1.3	NA
2-Nitrophenol	88-75-5	µg/L	< 1.5	< 1.5	< 1.9	< 1.9	< 1.2	< 1.4	< 1.4	< 1.3	< 1.4	< 1.3	< 1.2	< 1.2	< 1.7	NA
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.97	< 0.97	< 4.6	< 4.6	< 0.3	< 0.34	< 0.33	< 0.32	< 0.32	< 0.31	< 0.3	< 0.3	< 0.41	NA
3-Nitroaniline	99-09-2	µg/L	< 0.32	< 0.32	< 0.45	< 0.45	< 0.29	< 0.33	< 0.32	< 0.31	< 0.32	< 0.3	< 0.29	< 0.29	< 1.4	NA
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 2.2	< 2.2	< 1.2	< 1.2	< 0.51	< 0.59	< 0.57	< 0.55	< 0.56	< 0.53	< 0.51	< 0.51	< 1.1	NA
Semi-Volatile Organic Compounds																

ARCADIS Design & Consultancy for natural and built assets

Site-Related Groundwater Human Health Assessment Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Location ID Sample ID Sample Date	CAS	Units	PM AIR SHAFT PMPAS-180(080507) 5/7/2008	PM AIR SHAFT PMPAS-230(080507) 5/7/2008	PM Air Shaft-180 PM AIRSHAFT-180 9/18/2008	PM Air Shaft-230 PM AIRSHAFT-230 9/18/2008	PM AIR SHAFT PM AIRSHAFT(180) 7/10/2009	PM AIR SHAFT PM AIRSHAFT(230) 7/10/2009	PM AIR SHAFT PMAIR SHAFT-180 10/29/2009	PM AIR SHAFT PMAIR SHAFT-230 10/29/2009	PM AIR SHAFT PM AIRSHAFT 180 6/4/2010	PM AIR SHAFT PM AIRSHAFT 230 6/4/2010	PM Air Shaft-180 PM AIRSHAFT-180(052411) 5/24/2011	PM Air Shaft-230 PM AIRSHAFT-230(052411) 5/24/2011	PM Air Shaft-180 PM AIR SHAFT-180(042312) 4/23/2012	PM Air Shaft-180 PMAIRSHAFT-180(042312) 4/23/2012
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.37	< 0.37	< 0.41	< 0.41	< 0.35	< 0.4	< 0.39	< 0.38	< 0.38	< 0.36	< 0.35	< 0.35	< 0.41	NA
4-Chloro-3-methylphenol	59-50-7	µg/L	< 1.2	< 1.2	< 2.3	< 2.3	< 1.1	< 1.2	< 1.2	< 1.1	< 1.2	< 1.1	< 1.1	< 1.1	< 2.1	NA
4-Chloroaniline	106-47-8	µg/L	< 0.35	< 0.35	< 0.33	< 0.33	< 0.25	< 0.29	< 0.28	< 0.27	< 0.28	< 0.26	< 0.25	< 0.25	< 0.61	NA
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.29	< 0.29	< 0.45	< 0.45	< 0.35	< 0.41	< 0.39	< 0.38	< 0.39	< 0.37	< 0.35	< 0.35	< 0.36	NA
4-Nitroaniline	100-01-6	µg/L	< 0.59	< 0.59	< 0.45	< 0.45	< 0.18	< 0.2	< 0.2	< 0.19	< 0.2	< 0.19	< 0.18	< 0.18	< 1.9	NA
4-Nitrophenol	100-02-7	µg/L	< 1.6	< 1.6	< 2.3	< 2.3	< 0.83	< 0.95	< 0.92	< 0.89	< 0.91	< 0.86	< 0.83	< 0.83	< 6	NA
Acenaphthene	83-32-9	µg/L	< 0.016	< 0.016	< 0.016	< 0.016	< 0.016	< 0.018	< 0.032	< 0.031	< 0.032	0.217	< 0.014	0.356	< 0.016	NA
Acenaphthylene	208-96-8	µg/L	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.008	< 0.044	< 0.042	< 0.043	< 0.041	< 0.016	< 0.016	< 0.019	NA
Acetophenone	98-86-2	µg/L	< 0.36	< 0.36	< 0.47	< 0.47	< 0.4	< 0.46	< 0.44	< 0.43	< 0.44	< 0.42	< 0.4	< 0.4	< 0.33	NA
Anthracene	120-12-7	µg/L	< 0.021	< 0.021	< 0.021	< 0.021	< 0.021	< 0.024	< 0.028	< 0.028	< 0.028	< 0.027	< 0.01	< 0.01	< 0.011	NA
Atrazine	1912-24-9	µg/L	< 0.28	< 0.28	< 0.62	< 0.62	< 0.39	< 0.45	< 0.43	< 0.42	< 0.43	< 0.41	< 0.39	< 0.39	< 0.56	NA
Benzaldehyde	100-52-7	µg/L	< 0.76 J	< 0.76 J	< 1.6	< 1.6	< 0.4	< 0.46	< 0.45	< 0.43	< 0.44	< 0.42	< 0.4	< 0.4	< 3.7	NA
Benzenesulfonamide, N-cyclohexyl-4-methyl-	80-30-8	µg/L	NA	NA	NA	NA	7.7 JN	8.1 JN	NA	14 JN	NA	NA	NA	NA	NA	NA
Benzo[a]anthracene	56-55-3	µg/L	< 0.034 R	< 0.034 R	< 0.034	< 0.034	< 0.034	< 0.039	< 0.026	< 0.025	< 0.026	< 0.025	< 0.015	< 0.015	< 0.017	NA
Benzo[a]pyrene	50-32-8	µg/L	< 0.036	< 0.036	< 0.036	< 0.036	< 0.036	< 0.041	< 0.034	< 0.033	< 0.034	< 0.032	< 0.0049	< 0.0049	< 0.0056	NA
Benzo[b]fluoranthene	205-99-2	µg/L	< 0.017	< 0.017	< 0.017	< 0.017	< 0.017	< 0.02	< 0.04	< 0.038	< 0.039 J	< 0.037 J	< 0.016	< 0.016	< 0.019	NA
Benzo[g,h,i]perylene	191-24-2	µg/L	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.013	< 0.032	< 0.031	< 0.032	< 0.03	< 0.01	< 0.01	< 0.012	NA
Benzo[k]fluoranthene	207-08-9	µg/L	< 0.019	< 0.019	< 0.019	< 0.019	< 0.019	< 0.022	< 0.031	< 0.03	< 0.031	< 0.029	< 0.013	< 0.013	< 0.014	NA
Bis(2-chloroethoxy)methane	111-91-1	µg/L	< 0.32	< 0.32	< 0.52	< 0.52	< 0.25	< 0.29	< 0.28	< 0.27	< 0.27	< 0.26	< 0.25	< 0.25	< 0.35	NA
Bis(2-chloroethyl)ether	111-44-4	µg/L	< 0.67	< 0.67	< 0.49	< 0.49	< 0.31	< 0.36	< 0.34	< 0.33	< 0.34	< 0.32	< 0.31	< 0.31	< 0.35	NA
Bis(2-ethylhexyl) phthalate	117-81-7	µg/L	< 0.88	< 0.88	< 0.75	< 0.75	< 0.33	< 2.3	3.4	3.5	< 0.36	< 0.34	< 0.33	< 0.33	< 0.67	NA
Bisphenol-A	80-05-7	µg/L	NA	NA	NA	NA	5.8 JN	5 JN	NA	NA	NA	NA	NA	NA	NA	NA
Butyl benzyl phthalate	85-68-7	µg/L	< 0.64	< 0.64	< 0.42	< 0.42	< 0.25	< 0.29	< 0.28	< 0.27	< 0.28	< 0.26	< 0.25	< 0.25	< 0.33	NA
Caprolactam	105-60-2	µg/L	< 0.49	< 0.49	< 0.63	< 0.63	< 0.2	< 0.22	< 0.22	4.4	< 0.21	< 0.2	< 0.2	< 0.2	< 0.79	NA
Carbazole	86-74-8	µg/L	< 0.4	< 0.4	< 0.45	< 0.45	< 0.17	< 0.19	< 0.18	< 0.18	< 0.18	< 0.17	< 0.17	< 0.17	< 0.41	NA
Chrysene	218-01-9	µg/L	< 0.018	< 0.018	< 0.018	< 0.018	< 0.018	< 0.02	< 0.024	< 0.024	< 0.024	< 0.023	< 0.023	< 0.023	< 0.027	NA
Dibenz(a,h)anthracene	53-70-3	µg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.023	< 0.025	< 0.024	< 0.025	< 0.023	< 0.023	< 0.023	< 0.026	NA
Dibenzofuran	132-64-9	µg/L	< 0.23	< 0.23	< 0.49	< 0.49	< 0.3	< 0.35	< 0.34	< 0.33	< 0.33	< 0.32	< 0.3	< 0.3	< 0.3	NA
Diethyl phthalate	84-66-2	µg/L	< 0.34	< 0.34	< 0.36	< 0.36	< 0.17	< 0.19	< 0.18	< 0.18	< 0.18	< 0.17	< 0.17	< 0.17	< 0.38	NA
Dimethyl phthalate	131-11-3	µg/L	< 0.34	< 0.34	< 0.36	< 0.36	< 0.23	< 0.26	< 0.25	< 0.24	< 0.25	< 0.23	< 0.23	< 0.23	< 0.33	NA
Di-n-butyl phthalate	84-74-2	µg/L	< 0.4	< 0.4	< 0.5	< 0.5	< 0.19	< 0.22	< 0.21	< 0.21	< 0.21	< 0.2	< 0.19	< 0.19	< 0.64	NA
Di-n-octyl phthalate	117-84-0	µg/L	< 0.48	< 0.48	< 0.5	< 0.5	< 0.4	< 0.45	< 0.44	< 0.42	< 0.43	< 0.41	< 0.4	< 0.4	< 0.35	NA
Fluoranthene	206-44-0	µg/L	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.0096	< 0.011	< 0.027	< 0.026	< 0.027	< 0.025	< 0.0096	< 0.0096	< 0.011	NA
Fluorene	86-73-7	µg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.023	< 0.03	< 0.029	< 0.03	< 0.028	< 0.015	0.199	< 0.017	NA
Hexachlorobenzene	118-74-1	µg/L	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.0099	< 0.011	< 0.011	< 0.011	< 0.011	< 0.01	< 0.008	< 0.008	< 0.0092	NA
Hexachlorobutadiene	87-68-3	µg/L	< 0.13	< 0.13	< 0.38	< 0.38	< 0.37	< 0.43	< 0.41	< 0.4	< 0.14	< 0.13	< 0.13	< 0.13	< 0.59	NA
Hexachlorocyclopentadiene	77-47-4	µg/L	< 0.1	< 0.1	< 4.5	< 4.5	< 0.67	< 0.77	< 0.75	< 0.72	< 0.27	< 0.25	< 0.24	< 0.24	< 8.2	NA
Hexachloroethane	67-72-1	µg/L	< 0.16	< 0.16	< 0.3	< 0.3	< 0.26	< 0.3	< 0.29	< 0.28	< 0.23	< 0.22	< 0.21	< 0.21	< 0.63	NA
Indeno[1,2,3-cd]pyrene	193-39-5	µg/L	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.017	< 0.032	< 0.031	< 0.032	< 0.03	< 0.011	< 0.011	< 0.012	NA
Isophorone	78-59-1	µg/L	< 0.49	< 0.49	< 0.69	< 0.69	< 0.25	< 0.29	< 0.28	< 0.27	< 0.27	< 0.26	< 0.25	< 0.25	< 0.31	NA
Naphthalene	91-20-3	µg/L	0.293	6.4 JN	4.3	2.4	4.73	5.04	0.425	2.53	< 0.02	5.8 JN	0.804	7.1	< 0.019	NA
Nitrobenzene	98-95-3	µg/L	< 0.71	< 0.71	< 0.66	< 0.66	< 0.25	< 0.29	< 0.28	< 0.27	< 0.28	< 0.26	< 0.25	< 0.25	< 0.48	NA
N-Nitrosodi-n-propylamine	621-64-7	µg/L	< 0.38	< 0.38	< 0.39	< 0.39	< 0.44	< 0.5	< 0.49	< 0.47	< 0.48	< 0.46	< 0.44	< 0.44	< 0.35	NA
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.41	0.97 J	1.1 J	0.86 J	1.1 J	1.3 J	< 0.24	1.2 J	< 0.24	0.9 J	< 0.22	< 0.22	< 0.35	NA
Pentachlorophenol	87-86-5	µg/L	< 0.22 R	< 0.22 R	< 0.22	< 0.22	< 0.22	< 0.26	< 0.25	< 0.24	< 0.075 J	< 0.071 J	< 0.29	< 0.29	< 0.11	NA
Phenanthrene	85-01-8	µg/L	< 0.017	< 0.017	< 0.017	< 0.017	< 0.017	< 0.02	< 0.04	< 0.039	< 0.04	< 0.038	< 0.016	0.104	< 0.018	NA
Phenol	108-95-2	µg/L	< 0.68	< 0.68	< 1.4	< 1.4	< 0.58	< 0.66	< 0.64	< 0.62	< 0.63	< 0.6	< 0.58	< 0.58	< 1.5	NA
Pyrene	129-00-0	µg/L	< 0.012	< 0.012	< 0.012	< 0.012	< 0.012	< 0.014	< 0.025	< 0.024	< 0.024	< 0.023	< 0.0081	< 0.0081	< 0.0093	NA
Metals - Total																
Aluminum, total	7429-90-5	µg/L	< 24	< 24	76.2 B	91.5 B	< 200	< 200	28.4 BJ	52 BJ	25.8 B	< 7.8	66.1 J	71.6 J	25.9 B	NA
Antimony, total	7440-36-0	µg/L	< 1.8	< 1.8	< 1.8	< 1.8	< 4	< 4	< 2.9	< 2.9	< 2.2	< 2.2	< 1.3	< 1.3	< 1.4	NA
Arsenic, total	7440-38-2	µg/L	< 1.7	< 1.7	< 1.7	< 1.7	< 2.4	< 2.4	< 2.4	< 2.4	< 1.4	1.8 B	< 0.92	< 0.92	< 0.97	NA
Barium, total	7440-39-3	µg/L	18.7 B	586	592	624	416	414	31.1 B	643	14.5 B	615	148 B	512	9 B	NA
Beryllium, total	7440-41-7	µg/L	< 0.15	< 0.15	< 0.15 J	< 0.15	< 0.4	< 0.4	< 0.4	< 0.4	< 0.24	0.6 B	< 0.24	< 0.24	< 0.44	NA
Cadmium, total	7440-43-9	µg/L	< 0.28	< 0.28	2.2 BJ	2.6 BJ	< 3	< 3	< 0.4	1.8 B	< 0.35	< 0.35	< 0.17	< 0.17	< 0.24	NA
Calcium, total	7440-70-2	µg/L	4610 B	102000	98800	109000	37600	37200	6460	114000	5490	106000	20600	106000	5160	NA
Chromium, total	7440-47-3	µg/L	< 1.4 B	< 2.5 B	< 0.53	< 0.53	< 10	< 10	1 B	3.3 B	< 0.59	3.8 J	< 0.9	< 10	< 0.91	NA
Cobalt, total	7440-48-4	µg/L	< 0.51	3.3 B	2.6 B	2.8 B	< 0.4	< 0.4	< 1.6	< 1.6	< 0.65	< 0.65	< 50	< 50	< 0.59	NA
Copper, total	7440-50-8	µg/L	< 2.5	< 2.5	< 1.1	< 1.1	< 2	< 2	2.5 B	< 1.6	< 2.5	< 2.5	5.2 J	< 10	2.9 J	NA
Iron, total	7439-89-6	µg/L	339	148000	147000	169000	68900	68300	2250	162000	348	144000	22400	132000	176	NA
Lead, total	7439-92-1	µg/L	< 1.4	6.4	< 1.4	< 1.4	< 3	< 3	< 1.7	< 1.7	< 1.9	< 1.9	2.5 B	2.2 B	< 1.7	NA
Magnesium, total	7439-95-4	µg/L	1140 B	11500	10500	12000	3650 B	3610 B	1490 B	12500	1280 B	12100	2480 B	11900	1450 B	NA
Manganese, total	7439-96-5	µg/L	19.2	2490	2400	2810	672	671	76.9	2730	24.9	2590	362	2350	6.7 B	NA
Mercury, total	7439-97-6	µg/L	< 0.15	< 0.15	< 0.049	< 0.049	< 0.049	< 0.049	< 0.082	< 0.082	< 0.082	< 0.082	< 0.088	< 0.088	< 0.2	NA
Nickel, total	7440-02-0	µg/L	1.4 B	4.9 B	< 1.2	< 1.2	< 10	< 0.6	1.1 B	1.3 B	< 0.51	3.8 B	2 J	4.3 B	< 0.94	NA
Potassium, total	7440-09-7	µg/L	341 B	6680 B	5240 B	6300 B	1730 B	1720 B	567 J	7790 BJ	400 B	8120 B	1650 B	8470 B	363 B	NA
Selenium, total	7782-49-2	µg/L	< 1.6	< 2.9 B	5.7 B	5 B	< 3.7	< 3.7	< 3.7	< 3.7	< 1.9	2.2 B	< 1.5	< 1.5	< 2.4	NA
Silver, total	7440-22-4	µg/L	< 1	< 1	< 1	< 1	< 10	< 1	< 1	< 1	< 0.53	3 B	< 0.72	2.5 B	< 10	NA
Sodium, total	7440-23-5	µg/L	1800 B	25600	24500 J	30500 J	3370 B	3320 B	2340 J	31200 J	2070 J	32300	3910 B	33500	2380 B	NA
Thallium, total	7440-28-0	µg/L	< 1.3	< 1.3	< 1.3	< 1.3	< 1.5	< 1.5	< 1.5	< 1.5	< 1.8	< 1.8	< 0.17	< 2	< 1.7	NA
Vanadium, total	7440-62-2	µg/L	< 0.43	4.1 B	22 B	25.7 B	< 50	< 50	< 0.9	6 B	< 0.56	2.2 B	< 50	< 50	< 0.77	NA
Zinc, total	7440-66-6	µg/L	13.9 B	< 4	< 4	< 4	45.6	56.5	54.5	69.8	13.7 J	92.9	116	57.7	12.4 J	NA
Other																
Cyanide, total	57-12-5	µg/L	< 10	< 10	< 10 J	< 10 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Location ID Sample ID Sample Date	CAS	Units	PM Air Shaft-50 PM AIR SHAFT-50(042312) 4/23/2012	PM Air Shaft-230 PM AIR SHAFT-230(042412) & DUP 4/24/2012	PM Air Shaft-180 PM AIRSHAFT-180(071112) & DUP 7/11/2012	PM Air Shaft-230 PM AIRSHAFT-230(071112) 7/11/2012	PM Air Shaft-50 PM AIRSHAFT-50(071112) 7/11/2012	PM Air Shaft-180 PMAIRSHAFT-180(091614) 9/16/2014	PM Air Shaft-50 PMAIRSHAFT-50(091614) 9/16/2014	PM Air Shaft-230 PMAIRSHAFT-230(091714) 9/17/2014	PM Air Shaft-50 PM AIRSHAFT-50-081215 8/12/2015	PM Air Shaft-180 PM AIR SHAFT-180-081715 8/17/2015
Volatile Organic Compounds												
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.24	< 0.24 [< 0.24]	< 0.24 [< 0.24]	< 0.24	< 0.24	< 0.32 U	< 0.32 U	< 0.32 U	< 0.19	< 0.19
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.2	< 0.2 [< 0.2]	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.39 U	< 0.39 U	< 0.39 U	< 0.19	< 0.19
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	µg/L	< 0.49	< 0.49 [< 0.49]	< 0.53 [< 0.53]	< 0.53	< 0.53	< 0.45 U	< 0.45 U	< 0.45 U	< 0.15	< 0.15
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.23	< 0.23 [< 0.23]	< 0.29 [< 0.29]	< 0.29	< 0.29	< 0.28 U	< 0.28 U	< 0.28 U	< 0.19	< 0.19
1,1-Dichloroethane	75-34-3	µg/L	< 0.19	< 0.19 [< 0.19]	< 0.11 [< 0.11]	< 0.11	< 0.11	0.61 J	< 0.35 U	< 0.35 U	< 0.24	0.39
1,1-Dichloroethene	75-35-4	µg/L	< 0.28	< 0.28 [< 0.28]	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.5 U	< 0.5 U	< 0.5 U	< 0.25	< 0.25
1,2,3-Trichlorobenzene	87-61-6	µg/L	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA	NA	NA
1,2,3-Trichloropropane	96-18-4	µg/L	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA	< 0.01	< 0.01
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.15	< 0.15 [< 0.15]	< 0.2 [< 0.2]	< 0.2	< 0.2	< 0.22 U	< 0.22 U	< 0.22 U	< 0.2	< 0.2
1,2-Dibromo-3-Chloropropane	96-12-8	µg/L	< 1.3	< 1.3 [< 1.3]	< 0.54 [< 0.54]	< 0.54	< 0.54	< 1.2 U	< 1.2 U	< 1.2 U	< 0.01	< 0.01
1,2-Dichlorobenzene	95-50-1	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.22 [< 0.22]	0.44 J	< 0.22	< 0.16 U	< 0.16 U	0.53 J	< 0.19	< 0.19
1,2-Dichloroethane	107-06-2	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.26 [< 0.26]	< 0.26	< 0.26	< 0.3 U	< 0.3 U	< 0.3 U	< 0.2	< 0.2
1,2-Dichloropropane	78-87-5	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.48 [< 0.48]	< 0.48	< 0.48	< 0.43 U	< 0.43 U	< 0.43 U	< 0.25	< 0.25
1,3-Dichlorobenzene	541-73-1	µg/L	< 0.29	< 0.29 [< 0.29]	< 0.22 [< 0.22]	1.8	< 0.22	< 0.26 U	< 0.26 U	1.7	< 0.18	< 0.18
1,4-Dichlorobenzene	106-46-7	µg/L	< 0.26	< 0.26 [< 0.26]	< 0.3 [< 0.3]	4.2	< 0.3	0.49 J	< 0.24 U	4.2	< 0.17	0.29
2-Butanone (MEK)	78-93-3	µg/L	< 2.9	< 2.9 [< 2.9]	< 2.4 [< 2.4]	< 2.4	< 2.4	< 2.5 U	< 2.5 U	< 2.5 U	< 2.6	< 2.6
2-Hexanone	591-78-6	µg/L	< 3	< 3 [< 3]	< 1.1 [< 1.1]	< 1.1	< 1.1	< 1.7 U	< 1.7 U	< 1.7 U	< 1.3	< 1.3
4-Methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 1.2	< 1.2 [< 1.2]	< 0.83 [< 0.83]	< 0.83	< 0.83	< 1.1 U	< 1.1 U	< 1.1 U	< 0.81	< 0.81
4-Methylphenol	106-44-5	µg/L	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Acetone	67-64-1	µg/L	< 5	< 5 [< 5]	< 3.3 [< 3.3]	< 3.3	< 3.3	< 2.6 U	< 2.6 U	< 2.6 U	< 2.7	< 2.7
Benzene	71-43-2	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.24 [< 0.24]	28.5	< 0.24	6.6	< 0.21 U	32.9	< 0.2	4.1
Benzene, (1-methylethyl)-	98-82-8	µg/L	< 0.19	< 0.19 [< 0.19]	< 0.45 [< 0.45]	8	< 0.45	2.1	< 0.26 U	8.9	< 0.33	1.1
Benzene, chloro-	108-90-7	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.23 [< 0.23]	9.4 JN	< 0.23	1.3	< 0.27 U	18.9	< 0.18	0.81
Bromoform	75-25-2	µg/L	< 0.24	< 0.24 [< 0.24]	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.31 U	< 0.31 U	< 0.31 U	< 0.29	< 0.29
Bromomethane	74-83-9	µg/L	< 0.31	< 0.31 [< 0.31]	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.39 U	< 0.39 U	< 0.39 U	< 0.35	< 0.35
Carbon disulfide	75-15-0	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.5 U	< 0.5 U	< 0.5 U	< 0.22	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 0.19	< 0.19 [< 0.19]	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.24 U	< 0.24 U	< 0.24 U	< 0.18	< 0.18
Chlorobenzene	108-90-7	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.23 [< 0.23]	9.4 JN	< 0.23	1.3	< 0.27 U	18.9	< 0.18	0.81
Chlorobromomethane	74-97-5	µg/L	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA	NA	NA
Chlorodibromomethane	124-48-1	µg/L	< 0.2	< 0.2 [< 0.2]	< 0.14 [< 0.14]	< 0.14	< 0.14	< 0.25 U	< 0.25 U	< 0.25 U	< 0.25	< 0.25
Chloroethane	75-00-3	µg/L	< 0.37	< 0.37 [< 0.37]	< 0.26 [< 0.26]	9.6	< 0.26	25.2	< 0.56 U	9.7	< 0.36	14
Chloroform	67-66-3	µg/L	< 0.21	< 0.21 [< 0.21]	< 0.2 [< 0.2]	< 0.2	< 0.2	< 0.2 U	< 0.2 U	< 0.2 U	< 0.23	< 0.23
Chloromethane	74-87-3	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.33 U	< 0.33 U	< 0.33 U	< 0.36	< 0.36
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.19 [< 0.19]	< 0.19	< 0.19	0.63 J	< 0.33 U	< 0.33 U	< 0.21	0.27
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.22	< 0.22 [< 0.22]	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.28 U	< 0.28 U	< 0.28 U	< 0.17	< 0.17
Cyclohexane	110-82-7	µg/L	< 0.29	< 0.29 [< 0.29]	< 0.35 [< 0.35]	0.83 J	< 0.35	0.94 J	< 0.37 U	2 J	< 0.13	0.79
Dichlorobromomethane	75-27-4	µg/L	< 0.23	< 0.23 [< 0.23]	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.28 U	< 0.28 U	< 0.28 U	< 0.17	< 0.17
Dichlorodifluoromethane	75-71-8	µg/L	< 0.31	< 0.31 [< 0.31]	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.73 U	< 0.73 U	< 0.73 U	< 0.17	< 0.17
Ethylbenzene	100-41-4	µg/L	< 0.21	< 0.21 [< 0.21]	< 0.23 [< 0.23]	< 0.23	< 0.23	< 0.4 U	< 0.4 U	< 0.4 U	< 0.19	< 0.19
Ethylene Dibromide	106-93-4	µg/L	< 0.21	< 0.21 [< 0.21]	< 0.2 [< 0.2]	< 0.2	< 0.2	< 0.23 U	< 0.23 U	< 0.23 U	< 0.01	< 0.01
Isopropylbenzene	98-82-8	µg/L	< 0.19	< 0.19 [< 0.19]	< 0.45 [< 0.45]	8	< 0.45	2.1	< 0.26 U	8.9	< 0.33	1.1
Methyl acetate	79-20-9	µg/L	< 2.9	< 2.9 [< 2.9]	< 1.2 [< 1.2]	< 1.2	< 1.2	< 3.1 U	< 3.1 U	< 3.1 U	< 0.58	< 0.58
Methyl tert-butyl ether	1634-04-4	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.16 [< 0.16]	< 0.16	< 0.16	< 0.26 U	< 0.26 U	< 0.26 U	< 0.17	< 0.17
Methylcyclohexane	108-87-2	µg/L	< 0.18	< 0.18 [< 0.18]	< 0.26 [< 0.26]	< 0.26	< 0.26	0.24 J	< 0.22 U	0.38 J	< 0.09	0.17
Methylene Chloride	75-09-2	µg/L	< 0.2	< 0.2 [< 0.2]	< 0.7 [< 0.7]	< 0.7	< 0.7	< 0.81 U	< 0.81 U	< 0.81 U	< 0.22	< 0.22
Styrene	100-42-5	µg/L	< 0.23	< 0.23 [< 0.23]	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.26 U	< 0.26 U	< 0.26 U	< 0.28	< 0.28
Tetrachloroethene	127-18-4	µg/L	< 0.32	< 0.32 [< 0.32]	< 0.28 [< 0.28]	< 0.28	< 0.28	< 0.35 U	< 0.35 U	< 0.35 U	< 0.14	< 0.14
Toluene	108-88-3	µg/L	< 0.15	< 0.15 [< 0.15]	< 0.23 [< 0.23]	0.45 J	< 0.23	0.27 J	< 0.22 U	0.39 J	< 0.17	0.18
trans-1,2-Dichloroethene	156-60-5	µg/L	< 0.31	< 0.31 [< 0.31]	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.51 U	< 0.51 U	< 0.51 U	< 0.23	< 0.23
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.19	< 0.19 [< 0.19]	< 0.19 [< 0.19]	< 0.19	< 0.19	< 0.32 U	< 0.32 U	< 0.32 U	< 0.17	< 0.17
Trichloroethene	79-01-6	µg/L	< 0.21	< 0.21 [< 0.21]	< 0.22 [< 0.22]	< 0.22	< 0.22	< 0.25 U	< 0.25 U	< 0.25 U	< 0.2	< 0.2
Trichlorofluoromethane	75-69-4	µg/L	< 0.35	< 0.35 [< 0.35]	< 0.27 [< 0.27]	< 0.27	< 0.27	< 0.28 U	< 0.28 U	< 0.28 U	< 0.21	< 0.21
Vinyl chloride	75-01-4	µg/L	< 0.27	< 0.27 [< 0.27]	< 0.21 [< 0.21]	< 0.21	< 0.21	< 0.17 U	< 0.17 U	< 0.17 U	< 0.18	0.25
Xylenes, Total	1330-20-7	µg/L	< 0.17	< 0.17 [< 0.17]	< 0.24 [< 0.24]	0.77 J	< 0.24	1.4	< 0.2 U	0.83 J	< 0.58	< 0.58
Semi-Volatile Organic Compounds												
1,1'-Biphenyl	92-52-4	µg/L	< 0.3	< 0.3 [< 0.3]	< 0.33 [< 0.3]	< 0.32	< 0.3	< 0.29 UJ	< 0.28 UJ	< 0.27 U	< 2.2	< 2.2
1,2,4,5-Tetrachlorobenzene	95-94-3	µg/L	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA	< 2.1	< 2.1
1,4-Dioxane	123-91-1	µg/L	NA	NA [NA]	NA [NA]	12 JN	NA	NA	NA	13 JN	< 0.27	12
2,3,4,6-Tetrachlorophenol	58-90-2	µg/L	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA	< 6.9	< 6.9
2,4,5-Trichlorophenol	95-95-4	µg/L	< 1.6	< 1.6 [< 1.6]	< 1.7 [< 1.6]	< 1.6	< 1.6	< 1.8 UJ	< 1.7 UJ	< 1.7 U	< 7.1	< 7.1
2,4,6-Trichlorophenol	88-06-2	µg/L	< 1.3	< 1.3 [< 1.3]	< 1.4 [< 1.3]	< 1.4	< 1.3	< 1.6 UJ	< 1.6 UJ	< 1.5 U	< 6.8	< 6.8
2,4-Dichlorophenol	120-83-2	µg/L	< 1.2	< 1.2 [< 1.2]	< 1.3 [< 1.2]	< 1.2	< 1.2	< 1.7 UJ	< 1.6 UJ	< 1.6 U	< 5.6	< 5.6
2,4-Dimethylphenol	105-67-9	µg/L	< 1.5	< 1.5 [< 1.5]	< 1.7 [< 1.5]	< 1.6	< 1.5	< 1.9 UJ	< 1.9 UJ	< 1.8 U	< 4.2	< 4.2
2,4-Dinitrophenol	51-28-5	µg/L	< 17	< 17 [< 17]	< 18 [< 17]	< 17	< 17	< 6.8 UJ	< 6.6 UJ	< 6.5 U	< 5.9	< 5.9
2,4-Dinitrotoluene	121-14-2	µg/L	< 0.43	< 0.43 [< 0.43]	< 0.47 [< 0.43]	< 0.45	< 0.43	< 0.33 UJ	< 0.32 UJ	< 0.32 U	< 3.2	< 3.2
2,6-Dinitrotoluene	606-20-2	µg/L	< 0.46	< 0.46 [< 0.46]	< 0.51 [< 0.46]	< 0.49	< 0.46	< 0.27 UJ	< 0.26 UJ	< 0.26 U	< 2.3	< 2.3
2-Chloronaphthalene	91-58-7	µg/L	< 0.3	< 0.3 [< 0.3]	< 0.33 [< 0.3]	< 0.31	< 0.3	< 0.36 UJ	< 0.35 UJ	< 0.34 U	< 2.8	< 2.8
2-Chlorophenol	95-57-8	µg/L	< 0.97	< 0.97 [< 0.97]	< 1.1 [< 0.97]	< 1	< 0.97	< 1.3 UJ	< 1.3 UJ	< 1.3 U	< 4.8	< 4.8
2-Methylnaphthalene	91-57-6	µg/L	< 0.38	< 0.38 [< 0.38]	< 0.42 [< 0.38]	< 0.4	< 0.38	< 0.3 UJ	< 0.29 UJ	< 0.29 U	< 0.4	< 0.4
2-Methylphenol	95-48-7	µg/L	< 1	< 1 [< 1]	< 1.1 [< 1]	< 1.1	< 1	< 1.3 UJ	< 1.3 UJ	< 1.3 U	< 2.3	< 2.3
2-Nitroaniline	88-74-4	µg/L	< 1.1	< 1.1 [< 1.1]	< 1.2 [< 1.1]	< 1.2	< 1.1	< 0.33 UJ	< 0.32 UJ	< 0.32 U	< 3.7	< 3.7
2-Nitrophenol	88-75-5	µg/L	< 1.5	< 1.5 [< 1.5]	< 1.6 [< 1.5]	< 1.6	< 1.5	< 1.9 UJ	< 1.9 UJ	< 1.9 U	< 5.3	< 5.3
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 0.36	< 0.36 [< 0.36]	< 0.4 [< 0.36]	< 0.38	< 0.36	< 0.58 UJ	< 0.57 UJ	< 0.56 UJ	< 3.3	< 3.3
3-Nitroaniline	99-09-2	µg/L	< 1.3	< 1.3 [< 1.3]	< 1.4 [< 1.3]	< 1.3	< 1.3	< 0.27 UJ	< 0.26 UJ	< 0.26 U	< 2.7	< 2.7
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 0.99	< 0.99 [< 0.99]	< 1.1 [< 0.99]	< 1	< 0.99	< 1.4 UJ	< 1.3 UJ	< 1.3 U	< 9.3	< 9.3
Semi-Volatile Organic Compounds												

Location ID Sample ID Sample Date	CAS	Units	PM Air Shaft-50 PM AIR SHAFT-50(042312) 4/23/2012	PM Air Shaft-230 PM AIR SHAFT-230(042412) & DUP 4/24/2012	PM Air Shaft-180 PM AIRSHAFT-180(071112) & DUP 7/11/2012	PM Air Shaft-230 PM AIRSHAFT-230(071112) 7/11/2012	PM Air Shaft-50 PM AIRSHAFT-50(071112) 7/11/2012	PM Air Shaft-180 PMAIRSHAFT-180(091614) 9/16/2014	PM Air Shaft-50 PMAIRSHAFT-50(091614) 9/16/2014	PM Air Shaft-230 PMAIRSHAFT-230(091714) 9/17/2014	PM Air Shaft-50 PM AIRSHAFT-50-081215 8/12/2015	PM Air Shaft-180 PM AIR SHAFT-180-081715 8/17/2015
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 0.36	< 0.36 [< 0.36]	< 0.39 [< 0.36]	< 0.38	< 0.36	< 0.26 UJ	< 0.25 UJ	< 0.25 U	< 2.7	< 2.7
4-Chloro-3-methylphenol	59-50-7	µg/L	< 1.8	< 1.8 [< 1.8]	< 2 [< 1.8]	< 1.9	< 1.8	< 1.4 UJ	< 1.3 UJ	< 1.3 U	< 4.5	< 4.5
4-Chloroaniline	106-47-8	µg/L	< 0.53	< 0.53 [< 0.53]	< 0.58 [< 0.53]	< 0.56	< 0.53	< 0.31 UJ	< 0.3 UJ	< 0.3 U	< 4.2	< 4.2
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 0.31	< 0.31 [< 0.31]	< 0.34 [< 0.31]	< 0.33	< 0.31	< 0.4 UJ	< 0.38 UJ	< 0.38 U	< 2.8	< 2.8
4-Nitroaniline	100-01-6	µg/L	< 1.7	< 1.7 [< 1.7]	< 1.8 [< 1.7]	< 1.7	< 1.7	< 0.31 UJ	< 0.3 UJ	< 0.3 U	< 3.1	< 3.1
4-Nitrophenol	100-02-7	µg/L	< 5.2	< 5.2 [< 5.2]	< 5.7 [< 5.2]	< 5.5	< 5.2	< 0.94 UJ	< 0.92 UJ	< 0.91 U	< 5.4	< 5.4
Acenaphthene	83-32-9	µg/L	< 0.014	< 0.014 [< 0.014]	< 0.015 [< 0.014]	0.176	< 0.014	< 0.021 UJ	< 0.021 UJ	0.191	< 0.32	< 0.32
Acenaphthylene	208-96-8	µg/L	< 0.016	< 0.016 [< 0.016]	< 0.018 [< 0.016]	< 0.017	< 0.016	< 0.025 UJ	< 0.024 UJ	< 0.024 U	< 0.35	< 0.35
Acetophenone	98-86-2	µg/L	< 0.29	< 0.29 [< 0.29]	< 0.31 [< 0.29]	< 0.3	< 0.29	< 0.38 UJ	< 0.37 UJ	< 0.36 U	< 2.3	< 2.3
Anthracene	120-12-7	µg/L	< 0.01	< 0.01 [< 0.01]	< 0.011 [< 0.01]	< 0.011	< 0.01	< 0.021 UJ	< 0.021 UJ	< 0.02 U	< 0.38	< 0.38
Atrazine	1912-24-9	µg/L	< 0.49	< 0.49 [< 0.49]	< 0.54 [< 0.49]	< 0.51	< 0.49	< 0.44 UJ	< 0.43 UJ	< 0.42 U	< 2.9	< 2.9
Benzaldehyde	100-52-7	µg/L	< 3.3	< 3.3 [< 3.3]	< 3.6 [< 3.3]	< 3.4	< 3.3	< 0.7 UJ	< 0.68 UJ	< 0.67 U	< 5.7	< 5.7
Benzenesulfonamide, N-cyclohexyl-4-methyl-	80-30-8	µg/L	NA	NA [NA]	NA [NA]	NA	NA	6.4 JN	NA	16 JN	NA	3.5
Benzo[a]anthracene	56-55-3	µg/L	< 0.015	< 0.015 [< 0.015]	< 0.017 [< 0.015]	< 0.016	< 0.015	< 0.012 UJ	< 0.012 UJ	< 0.012 U	< 0.025	< 0.025
Benzo[a]pyrene	50-32-8	µg/L	< 0.0049	< 0.0049 [< 0.0049]	< 0.0054 [< 0.0049]	< 0.0052	< 0.0049	< 0.013 UJ	< 0.012 UJ	< 0.012 U	< 0.025	< 0.025
Benzo[b]fluoranthene	205-99-2	µg/L	< 0.016	< 0.016 [< 0.016]	< 0.018 [< 0.016]	< 0.017	< 0.016	< 0.011 UJ	< 0.01 UJ	< 0.01 U	< 0.025	< 0.025
Benzo[g,h,i]perylene	191-24-2	µg/L	< 0.01	< 0.01 [< 0.01]	< 0.011 [< 0.01]	< 0.011	< 0.01	< 0.016 UJ	< 0.016 UJ	< 0.016 U	< 0.62	< 0.62
Benzo[k]fluoranthene	207-08-9	µg/L	< 0.013	< 0.013 [< 0.013]	< 0.014 [< 0.013]	< 0.013	< 0.013	< 0.015 UJ	< 0.015 UJ	< 0.015 U	< 0.37	< 0.37
Bis(2-chloroethoxy)methane	111-91-1	µg/L	< 0.31	< 0.31 [< 0.31]	< 0.34 [< 0.31]	< 0.32	< 0.31	< 0.44 UJ	< 0.42 UJ	< 0.42 U	< 3.1	< 3.1
Bis(2-chloroethyl)ether	111-44-4	µg/L	< 0.31	< 0.31 [< 0.31]	< 0.34 [< 0.31]	< 0.32	< 0.31	< 0.45 UJ	< 0.44 UJ	< 0.43 U	< 2.8	< 2.8
Bis(2-ethylhexyl) phthalate	117-81-7	µg/L	< 0.59	< 0.59 [< 0.59]	< 0.64 [< 0.59]	< 0.62	< 0.59	< 3.2 UBJ	< 3.5 UBJ	39.2	< 6	< 6
Bisphenol-A	80-05-7	µg/L	NA	NA [NA]	NA [NA]	6.2 JN	NA	4.7 JN	NA	8.2 JN	NA	NA
Butyl benzyl phthalate	85-68-7	µg/L	< 0.29	< 0.29 [< 0.29]	< 0.32 [< 0.29]	< 0.3	< 0.29	< 0.23 UJ	< 0.22 UJ	< 0.22 U	< 2.5	< 2.5
Caprolactam	105-60-2	µg/L	< 0.69	< 0.69 [< 0.69]	< 0.76 [< 0.69]	< 0.73	< 0.69	< 0.42 UJ	< 0.41 UJ	< 0.41 UJ	< 2.4	< 2.4
Carbazole	86-74-8	µg/L	< 0.36	< 0.36 [< 0.36]	< 0.4 [< 0.36]	< 0.38	< 0.36	< 0.18 UJ	< 0.17 UJ	< 0.17 U	< 2.8	< 2.8
Chrysene	218-01-9	µg/L	< 0.023	< 0.023 [< 0.023]	< 0.025 [< 0.023]	< 0.024	< 0.023	< 0.012 UJ	< 0.012 UJ	< 0.012 U	< 0.33	< 0.33
Dibenz(a,h)anthracene	53-70-3	µg/L	< 0.023	< 0.023 [< 0.023]	< 0.025 [< 0.023]	< 0.024	< 0.023	< 0.017 UJ	< 0.017 UJ	< 0.017 U	< 0.45	< 0.45
Dibenzofuran	132-64-9	µg/L	< 0.27	< 0.27 [< 0.27]	< 0.29 [< 0.27]	< 0.28	< 0.27	< 0.24 UJ	< 0.23 UJ	< 0.23 U	< 2.9	< 2.9
Diethyl phthalate	84-66-2	µg/L	< 0.33	< 0.33 [< 0.33]	< 0.36 [< 0.33]	< 0.34	< 0.33	< 0.24 UJ	< 0.24 UJ	< 0.23 U	< 3	< 3
Dimethyl phthalate	131-11-3	µg/L	< 0.28	< 0.28 [< 0.28]	< 0.31 [< 0.28]	< 0.3	< 0.28	< 0.27 UJ	< 0.26 UJ	< 0.26 U	< 3.1	< 3.1
Di-n-butyl phthalate	84-74-2	µg/L	< 0.56	< 0.56 [< 0.56]	< 0.61 [< 0.56]	< 0.58	< 0.56	< 2.1 UBJ	< 0.59 UJ	< 2.7 UB	< 2.5	< 2.5
Di-n-octyl phthalate	117-84-0	µg/L	< 0.31	< 0.31 [< 0.31]	< 0.34 [< 0.31]	< 0.32	< 0.31	< 0.26 UJ	< 0.25 UJ	5.6	< 2.5	< 2.5
Fluoranthene	206-44-0	µg/L	< 0.0096	< 0.0096 [< 0.0096]	< 0.011 [< 0.0096]	< 0.01	< 0.0096	< 0.014 UJ	< 0.013 UJ	< 0.013 U	< 0.32	< 0.32
Fluorene	86-73-7	µg/L	< 0.015	< 0.015 [< 0.015]	< 0.016 [< 0.015]	< 0.016	< 0.015	< 0.018 UJ	< 0.017 UJ	0.106	< 0.32	< 0.32
Hexachlorobenzene	118-74-1	µg/L	< 0.008	< 0.008 [< 0.008]	< 0.0088 [< 0.008]	< 0.0084	< 0.008	< 0.017 UJ	< 0.017 UJ	< 0.017 U	< 0.014	< 0.014
Hexachlorobutadiene	87-68-3	µg/L	< 0.51	< 0.51 [< 0.51]	< 0.56 [< 0.51]	< 0.54	< 0.51	< 0.4 UJ	< 0.39 UJ	< 0.39 U	< 0.2	< 0.2
Hexachlorocyclopentadiene	77-47-4	µg/L	< 7.1	< 7.1 [< 7.1]	< 7.8 [< 7.1]	< 7.5	< 7.1	< 0.5 UJ	< 0.49 UJ	< 0.48 U	< 1.8	< 1.8
Hexachloroethane	67-72-1	µg/L	< 0.55	< 0.55 [< 0.55]	< 0.6 [< 0.55]	< 0.58	< 0.55	< 0.3 UJ	< 0.29 UJ	< 0.29 U	< 1.9	< 1.9
Indeno[1,2,3-cd]pyrene	193-39-5	µg/L	< 0.011	< 0.011 [< 0.011]	< 0.012 [< 0.011]	< 0.011	< 0.011	< 0.015 UJ	< 0.015 UJ	< 0.014 U	< 0.41	< 0.41
Isophorone	78-59-1	µg/L	< 0.27	< 0.27 [< 0.27]	< 0.3 [< 0.27]	< 0.29	< 0.27	< 0.35 UJ	< 0.34 UJ	< 0.34 U	< 3.1	< 3.1
Naphthalene	91-20-3	µg/L	< 0.016	< 0.016 [< 0.016]	< 0.018 [< 0.016]	2.55	< 0.016	0.726 J	< 0.036 U	3.26	< 0.37	< 0.37
Nitrobenzene	98-95-3	µg/L	< 0.42	< 0.42 [< 0.42]	< 0.46 [< 0.42]	< 0.44	< 0.42	< 0.54 UJ	< 0.52 UJ	< 0.52 U	< 2.7	< 2.7
N-Nitrosodi-n-propylamine	621-64-7	µg/L	< 0.3	< 0.3 [< 0.3]	< 0.33 [< 0.3]	< 0.32	< 0.3	< 0.39 UJ	< 0.38 UJ	< 0.38 U	< 3.4	< 3.4
N-Nitrosodiphenylamine	86-30-6	µg/L	< 0.31	< 0.31 [< 0.31]	< 0.34 [< 0.31]	0.95 J	< 0.31	0.82 J	< 0.21 UJ	1.1 J	< 3.6	< 3.6
Pentachlorophenol	87-86-5	µg/L	< 0.1	< 0.1 J [< 0.1]	< 0.11 J [< 0.1 J]	< 0.11 J	< 0.1 J	< 0.1 UJ	< 0.1 UJ	< 0.1 U	< 0.1	< 0.1
Phenanthrene	85-01-8	µg/L	< 0.016	< 0.016 [< 0.016]	< 0.017 [< 0.016]	< 0.017	< 0.016	< 0.022 UJ	< 0.021 UJ	< 0.021 U	< 0.42	< 0.42
Phenol	108-95-2	µg/L	< 1.3	< 1.3 [< 1.3]	< 1.4 [< 1.3]	< 1.3	< 1.3	< 0.57 UJ	< 0.55 UJ	< 0.55 U	< 1.5	< 1.5
Pyrene	129-00-0	µg/L	< 0.0081	< 0.0081 [< 0.0081]	< 0.0089 [< 0.0081]	< 0.0085	< 0.0081	< 0.016 UJ	< 0.015 UJ	< 0.015 U	< 0.35	< 0.35
Metals - Total												
Aluminum, total	7429-90-5	µg/L	256	20.3 B [27.3 B]	< 16 [< 200]	< 16	< 200	163 B	42.1 B	66.1 B	0.05	50
Antimony, total	7440-36-0	µg/L	< 1.4	< 1.4 [< 1.4]	< 1.4 [< 1.4]	2.2 J	< 1.4	< 2.6 U	< 2.6 U	< 2.6 U	0.00061	< 0.5
Arsenic, total	7440-38-2	µg/L	< 0.97	1 B [< 0.97]	< 0.97 [< 0.97]	< 0.97	< 0.97	< 2.6 U	< 2.6 U	4.2	0.0013	1.2
Barium, total	7440-39-3	µg/L	9.1 B	9 B [9.2 B]	15.8 B [15.7 B]	513	9.7 B	369	8.8 B	542	0.0093	410
Beryllium, total	7440-41-7	µg/L	< 0.44	< 0.44 [< 0.44]	< 0.44 [< 0.44]	< 0.44	< 0.44	< 0.4 U	< 0.4 U	< 0.4 U	< 0.0005	< 0.5
Cadmium, total	7440-43-9	µg/L	< 0.24	< 0.24 [< 0.24]	< 0.24 [< 0.24]	< 3	< 0.24	< 0.7 U	< 0.7 U	< 0.7 U	< 0.0004	< 0.4
Calcium, total	7440-70-2	µg/L	5160	5490 [5590]	5380 [5380]	101000	5280	36700	5090	95400	6.4	44500
Chromium, total	7440-47-3	µg/L	< 0.91	< 0.91 [< 0.91]	< 0.91 [< 0.91]	2.9 J	< 0.91	4.8 J	< 0.89 U	4.1 B	0.00076	2.5
Cobalt, total	7440-48-4	µg/L	< 0.59	< 0.59 [< 0.59]	< 0.59 [< 0.59]	< 0.59	< 0.59	< 0.83 U	< 0.83 U	< 0.83 U	< 0.0005	0.64
Copper, total	7440-50-8	µg/L	2.3 J	1.7 B [1.6 B]	4.7 J [5.1 J]	4 J	< 10	< 10 UB	< 10 UB	< 10 UB	0.0024	1.7
Iron, total	7439-89-6	µg/L	425	173 [182]	609 [443]	133000	310	68100	< 143 UB	127000	0.47	79.3
Lead, total	7439-92-1	µg/L	< 1.7	< 1.7 [1.9 B]	< 1.7 [< 1.7]	< 1.7	< 1.7	13.3	< 1.3 U	3.4 J	0.0045	24
Magnesium, total	7439-95-4	µg/L	1460 B	1580 B [1620 B]	1440 J [1430 J]	11400 J	1480 J	3650 B	1430 B	10800	1.8	4400
Manganese, total	7439-96-5	µg/L	31.9	6.3 B [6.5 B]	14 B [13.3 B]	2270	14.1 B	709	6.2 J	2300	0.017	810
Mercury, total	7439-97-6	µg/L	< 0.2	< 0.2 [< 0.2]	< 0.075 [< 0.075]	< 0.075	< 0.075	< 0.064 U	< 0.064 U	< 0.064 U	< 0.00015	< 0
Nickel, total	7440-02-0	µg/L	< 0.94	< 0.94 [< 0.94]	< 0.94 [< 0.94]	< 0.94	< 0.94	2 J	< 0.75 U	1.3 B	0.0088	1.7
Potassium, total	7440-09-7	µg/L	492 B	342 B [341 B]	463 J [459 J]	8310 B	506 J	1700 J	505 J	8610 B	510	2000
Selenium, total	7782-49-2	µg/L	< 2.4	< 2.4 [< 2.4]	< 2.4 [< 2.4]	< 2.4	< 2.4	< 3.6 U	< 3.6 U	< 3.6 U	< 0.0006	< 0.6
Silver, total	7440-22-4	µg/L	< 0.85	< 0.85 [< 0.85]	< 0.85 [< 0.85]	< 10	< 0.85	< 1.2 U	< 1.2 U	< 1.2 U	< 0.5	< 0.0005
Sodium, total	7440-23-5	µg/L	2340 B	2350 B [2370 B]	2230 B [2220 B]	32500	2240 B	4630 B	2620 J	34200	2.8	4700
Thallium, total	7440-28-0	µg/L	< 1.7	< 1.7 [< 1.7]	< 1.7 [< 1.7]	< 1.7	< 1.7	< 1.8 U	< 1.8 U	< 1.8 U	0.00067	< 0.2
Vanadium, total	7440-62-2	µg/L	< 0.77	< 0.77 [< 0.77]	< 0.77 [< 0.77]	4.8 B	< 0.77	13.8 B	< 0.87 U	6.3 B	1.6	0.01
Zinc, total	7440-66-6	µg/L	< 20	65.6 [75.2]	19 J [17.5 J]	143 J	4.7 J	9230	1540	1190	1.6	4
Other												
Cyanide, total	57-12-5	µg/L	NA	NA [NA]	NA [NA]	NA	NA	NA	NA	NA	< 7	< 7

Location ID Sample ID Sample Date	CAS	Units	PM Air Shaft-230 PM AIRSHAFT-230-081815 8/18/2015	PM Air Shaft-180 PMP-AS-180-082316 8/23/2016	PM Air Shaft-230 PMP-AS-230-082316 8/23/2016	PM Air Shaft-50 PMP-AS-50-082316 8/23/2016	PM Air Shaft-180 PMP-AS-180-082317 8/23/2017	PM Air Shaft-230 PMP-AS-230-082317 8/23/2017	PM Air Shaft-50 PMP-AS-50-082317 8/23/2017
Volatile Organic Compounds									
1,1,1-Trichloroethane	71-55-6	µg/L	< 0.19	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28	< 0.28
1,1,2,2-Tetrachloroethane	79-34-5	µg/L	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	µg/L	< 0.15	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,1,2-Trichloroethane	79-00-5	µg/L	< 0.19	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
1,1-Dichloroethane	75-34-3	µg/L	< 0.24	0.64 J	< 0.24	< 0.24	0.56 J	< 0.24	< 0.24
1,1-Dichloroethene	75-35-4	µg/L	< 0.25	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34	< 0.34
1,2,3-Trichlorobenzene	87-61-6	µg/L	NA	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35	< 0.35
1,2,3-Trichloropropane	96-18-4	µg/L	< 0.01	< 0.011	< 0.011	< 0.011	< 0.003	< 0.003	< 0.003
1,2,4-Trichlorobenzene	120-82-1	µg/L	< 0.2	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27	< 0.27
1,2-Dibromo-3-Chloropropane	96-12-8	µg/L	< 0.01	< 0.007	< 0.007	< 0.007	< 0.004	< 0.004	< 0.004
1,2-Dichlorobenzene	95-50-1	µg/L	0.42	< 0.22	0.66 J	< 0.22	< 0.22	0.8 J	< 0.22
1,2-Dichloroethane	107-06-2	µg/L	< 0.2	< 0.25	0.33 J	< 0.25	< 0.25	< 0.25	< 0.25
1,2-Dichloropropane	78-87-5	µg/L	< 0.25	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
1,3-Dichlorobenzene	541-73-1	µg/L	1.4	< 0.33	2.7	< 0.33	< 0.33	3.2	< 0.33
1,4-Dichlorobenzene	106-46-7	µg/L	3.6	0.67 J	7.7	< 0.33	0.61 J	8.2	< 0.33
2-Butanone (MEK)	78-93-3	µg/L	< 2.6	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2	< 2.2
2-Hexanone	591-78-6	µg/L	< 1.3	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72	< 0.72
4-Methyl-2-pentanone (MIBK)	108-10-1	µg/L	< 0.81	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63	< 0.63
4-Methylphenol	106-44-5	µg/L	NA	< 0.87	< 0.87	< 0.91	< 0.91	< 0.89	< 0.89
Acetone	67-64-1	µg/L	< 2.7	< 1.1	< 1.1	< 1.1	< 1.1	3.3 J	< 1.1
Benzene	71-43-2	µg/L	25	5.9	29	< 0.09	6	33	< 0.09
Benzene, (1-methylethyl)-	98-82-8	µg/L	7.4	1.6	13	< 0.32	1.9	11 NJ	< 0.32
Benzene, chloro-	108-90-7	µg/L	15	1.5	20	< 0.24	1.3	9.9 NJ	< 0.24
Bromoform	75-25-2	µg/L	< 0.29	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Bromomethane	74-83-9	µg/L	< 0.35	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
Carbon disulfide	75-15-0	µg/L	< 0.22	0.24 J	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Carbon tetrachloride	56-23-5	µg/L	< 0.18	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33	< 0.33
Chlorobenzene	108-90-7	µg/L	15	1.5	20	< 0.24	1.3	9.9 NJ	< 0.24
Chlorobromomethane	74-97-5	µg/L	NA	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Chlorodibromomethane	124-48-1	µg/L	< 0.25	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloroethane	75-00-3	µg/L	7.7	44	17	< 0.37	15	6.4	< 0.37
Chloroform	67-66-3	µg/L	< 0.23	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Chloromethane	74-87-3	µg/L	< 0.36	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
cis-1,2-Dichloroethene	156-59-2	µg/L	< 0.21	0.31 J	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
cis-1,3-Dichloropropene	10061-01-5	µg/L	< 0.17	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Cyclohexane	110-82-7	µg/L	1.7	1.4	3.5	< 0.26	1.3	2.7	< 0.26
Dichlorobromomethane	75-27-4	µg/L	< 0.17	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Dichlorodifluoromethane	75-71-8	µg/L	< 0.17	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Ethylbenzene	100-41-4	µg/L	< 0.19	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Ethylene Dibromide	106-93-4	µg/L	< 0.21	< 0.006	< 0.006	< 0.006	< 0.001	< 0.001	< 0.001
Isopropylbenzene	98-82-8	µg/L	7.4	1.6	13	< 0.32	1.9	11 NJ	< 0.32
Methyl acetate	79-20-9	µg/L	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58	< 0.58
Methyl tert-butyl ether	1634-04-4	µg/L	< 0.17	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13
Methylcyclohexane	108-87-2	µg/L	0.27	0.47 J	0.73 J	< 0.22	0.53 J	0.62 J	< 0.22
Methylene Chloride	75-09-2	µg/L	< 0.22	0.25 J	0.81 J	0.46 J	0.5 J	0.51 J	0.49 J
Styrene	100-42-5	µg/L	< 0.28	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Tetrachloroethene	127-18-4	µg/L	< 0.14	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12	< 0.12
Toluene	108-88-3	µg/L	0.24	< 0.25	0.28 J	< 0.25	0.29 J	0.34 J	< 0.25
trans-1,2-Dichloroethene	156-60-5	µg/L	< 0.23	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18	< 0.18
trans-1,3-Dichloropropene	10061-02-6	µg/L	< 0.17	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19	< 0.19
Trichloroethene	79-01-6	µg/L	< 0.2	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22	< 0.22
Trichlorofluoromethane	75-69-4	µg/L	< 0.21	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15
Vinyl chloride	75-01-4	µg/L	< 0.18	0.12 J	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Xylenes, Total	1330-20-7	µg/L	0.85	1 J	1.1 J	< 0.28	< 0.28	1.3 J	< 0.28
Semi-Volatile Organic Compounds									
1,1'-Biphenyl	92-52-4	µg/L	< 2.1	< 0.63	< 0.63	< 0.66	< 0.66	< 0.64	< 0.64
1,2,4,5-Tetrachlorobenzene	95-94-3	µg/L	< 2	< 0.43 UJ	< 0.43 UJ	< 0.45 UJ	< 0.45	< 0.44	< 0.44
1,4-Dioxane	123-91-1	µg/L	140	20.3	146	< 0.0735	5.7 NJ	8 NJ	< 0.075
2,3,4,6-Tetrachlorophenol	58-90-2	µg/L	< 6.6	< 0.69	< 0.69	< 0.72	< 0.72	< 0.7	< 0.7
2,4,5-Trichlorophenol	95-95-4	µg/L	< 6.8	< 0.49	< 0.49	< 0.51	< 0.51	< 0.5	< 0.5
2,4,6-Trichlorophenol	88-06-2	µg/L	< 6.5	< 0.53	< 0.53	< 0.55	< 0.55	< 0.54	< 0.54
2,4-Dichlorophenol	120-83-2	µg/L	< 5.4	< 0.63	< 0.63	< 0.66	< 0.66	< 0.64	< 0.64
2,4-Dimethylphenol	105-67-9	µg/L	< 4	< 0.91	< 0.91	< 0.95	< 0.95	< 0.93	< 0.93
2,4-Dinitrophenol	51-28-5	µg/L	< 5.7	< 2.4	< 2.4	< 2.5	< 2.5	< 2.4	< 2.4
2,4-Dinitrotoluene	121-14-2	µg/L	< 3.1	< 1	< 1	< 1.1	< 1.1	< 1.1	< 1.1
2,6-Dinitrotoluene	606-20-2	µg/L	< 2.2	< 0.88	< 0.88	< 0.92	< 0.92	< 0.9	< 0.9
2-Chloronaphthalene	91-58-7	µg/L	< 2.7	< 0.61	< 0.61	< 0.64	< 0.64	< 0.62	< 0.62
2-Chlorophenol	95-57-8	µg/L	< 4.6	< 0.74	< 0.74	< 0.77	< 0.77	< 0.76	< 0.76
2-Methylnaphthalene	91-57-6	µg/L	< 0.38	< 0.88	< 0.88	< 0.92	< 0.92	< 0.9	< 0.9
2-Methylphenol	95-48-7	µg/L	< 2.2	< 1.3 UJ	< 1.3 UJ	< 1.3 UJ	< 1.3	< 1.3	< 1.3
2-Nitroaniline	88-74-4	µg/L	< 3.6	< 0.65	< 0.65	< 0.68	< 0.68	< 0.66	< 0.66
2-Nitrophenol	88-75-5	µg/L	< 5.1	< 0.59	< 0.59	< 0.61	< 0.61	< 0.6	< 0.6
3,3'-Dichlorobenzidine	91-94-1	µg/L	< 3.2	< 1	< 1	< 1.1	< 1.1	< 1.1	< 1.1
3-Nitroaniline	99-09-2	µg/L	< 2.6	< 0.82	< 0.82	< 0.85	< 0.85 F	< 0.84	< 0.84
4,6-Dinitro-2-methylphenol	534-52-1	µg/L	< 8.9	< 2	< 2	< 2.1	< 2.1	< 2.1	< 2.1
Semi-Volatile Organic Compounds									

Location ID Sample ID Sample Date	CAS	Units	PM Air Shaft-230 PM AIRSHAFT-230-081815 8/18/2015	PM Air Shaft-180 PMP-AS-180-082316 8/23/2016	PM Air Shaft-230 PMP-AS-230-082316 8/23/2016	PM Air Shaft-50 PMP-AS-50-082316 8/23/2016	PM Air Shaft-180 PMP-AS-180-082317 8/23/2017	PM Air Shaft-230 PMP-AS-230-082317 8/23/2017	PM Air Shaft-50 PMP-AS-50-082317 8/23/2017
4-Bromophenyl phenyl ether	101-55-3	µg/L	< 2.6	< 1	< 1	< 1.1	< 1.1	< 1	< 1
4-Chloro-3-methylphenol	59-50-7	µg/L	< 4.3	< 0.76	< 0.76	< 0.79	< 0.79	< 0.78	< 0.78
4-Chloroaniline	106-47-8	µg/L	< 4	< 0.73	< 0.73	< 0.76	< 0.76 F	< 0.74	< 0.74
4-Chlorophenyl phenyl ether	7005-72-3	µg/L	< 2.7	< 0.96	< 0.96	< 1	< 1	< 0.98	< 0.98
4-Nitroaniline	100-01-6	µg/L	< 3	< 0.48	< 0.48	< 0.5	< 0.5	< 0.49	< 0.49
4-Nitrophenol	100-02-7	µg/L	< 5.2	< 4.7	< 4.7	< 4.8	< 4.8	< 4.7	< 4.7
Acenaphthene	83-32-9	µg/L	< 0.31	< 0.88	< 0.88	< 0.92	< 0.92	< 0.9	< 0.9
Acenaphthylene	208-96-8	µg/L	< 0.34	< 0.65	< 0.65	< 0.68	< 0.68	< 0.66	< 0.66
Acetophenone	98-86-2	µg/L	< 2.2	< 1	< 1	< 1.1	< 1.1	< 1.1	< 1.1
Anthracene	120-12-7	µg/L	< 0.37	< 0.57	< 0.57	< 0.59	< 0.59	< 0.58	< 0.58
Atrazine	1912-24-9	µg/L	< 2.8	< 0.77	< 0.77	< 0.8	< 0.8 F	< 0.79	< 0.79
Benzaldehyde	100-52-7	µg/L	< 5.5	< 0.86	< 0.86	< 0.9	< 0.9	< 0.88	< 0.88
Benzenesulfonamide, N-cyclohexyl-4-methyl-	80-30-8	µg/L	NA	NA	NA	NA	NA	16 NJ	NA
Benzo[a]anthracene	56-55-3	µg/L	< 0.023	< 0.037	< 0.037	< 0.039	< 0.039	< 0.038	< 0.038
Benzo[a]pyrene	50-32-8	µg/L	< 0.023	< 0.026	< 0.026	< 0.027	< 0.027	< 0.027	< 0.027
Benzo[b]fluoranthene	205-99-2	µg/L	< 0.023	< 0.012	< 0.012	< 0.013	< 0.013	< 0.012	< 0.012
Benzo[g,h,i]perylene	191-24-2	µg/L	< 0.6	< 0.75	< 0.75	< 0.78	< 0.78 F	< 0.77	< 0.77
Benzo[k]fluoranthene	207-08-9	µg/L	< 0.36	< 0.18	< 0.18	< 0.19	< 0.19	< 0.18	< 0.18
Bis(2-chloroethoxy)methane	111-91-1	µg/L	< 3	< 0.69	< 0.69	< 0.72	< 0.72	< 0.7	< 0.7
Bis(2-chloroethyl)ether	111-44-4	µg/L	< 2.7	< 0.009	< 0.009	< 0.0094	< 0.0094	< 0.0092	< 0.0092
Bis(2-ethylhexyl) phthalate	117-81-7	µg/L	< 5.8	2.2 B	1.5 UB	1.5 UB	< 0.75 F	< 0.73	< 0.73
Bisphenol-A	80-05-7	µg/L	NA	NA	NA	NA	3.5 NJ	NA	NA
Butyl benzyl phthalate	85-68-7	µg/L	< 2.4	< 0.6	< 0.6	< 0.63	< 0.63 F	< 0.61	< 0.61
Caprolactam	105-60-2	µg/L	< 2.3	< 1.1 UJ	< 1.1 UJ	< 1.1 UJ	< 1.1	< 1.1	< 1.1
Carbazole	86-74-8	µg/L	< 2.7	< 0.85	< 0.85	< 0.89	< 0.89	< 0.87	< 0.87
Chrysene	218-01-9	µg/L	< 0.32	< 0.67	< 0.67	< 0.7	< 0.7	< 0.68	< 0.68
Dibenz(a,h)anthracene	53-70-3	µg/L	< 0.43	< 0.022	< 0.022	< 0.023	< 0.023	< 0.022	< 0.022
Dibenzofuran	132-64-9	µg/L	< 2.8	< 0.85	< 0.85	< 0.89	< 0.89	< 0.87	< 0.87
Diethyl phthalate	84-66-2	µg/L	< 2.9	< 1	< 1	< 1	< 1	< 1	< 1
Dimethyl phthalate	131-11-3	µg/L	< 3	< 0.98	< 0.98	< 1	< 1	< 1	< 1
Di-n-butyl phthalate	84-74-2	µg/L	< 2.4	1.7 UB	1.7 UB	1.5 UB	< 0.85	< 0.84	< 0.84
Di-n-octyl phthalate	117-84-0	µg/L	< 2.4	< 0.69	< 0.69	< 0.72	< 0.72	< 0.7	< 0.7
Fluoranthene	206-44-0	µg/L	< 0.31	< 0.72	< 0.72	< 0.75	< 0.75	< 0.73	< 0.73
Fluorene	86-73-7	µg/L	< 0.31	< 0.8	< 0.8	< 0.83	< 0.83	< 0.82	< 0.82
Hexachlorobenzene	118-74-1	µg/L	< 0.013	< 0.009 UJ	< 0.009 UJ	< 0.0094 UJ	< 0.0094	< 0.0092	< 0.0092
Hexachlorobutadiene	87-68-3	µg/L	< 0.19	< 0.76 UJ	< 0.76 UJ	< 0.79 UJ	< 0.79	< 0.78	< 0.78
Hexachlorocyclopentadiene	77-47-4	µg/L	< 1.7	< 0.61 UJ	< 0.61 UJ	< 0.64 UJ	< 0.64	< 0.62	< 0.62
Hexachloroethane	67-72-1	µg/L	< 1.8	< 0.09	< 0.09	< 0.094	< 0.094	< 0.092	< 0.092
Indeno[1,2,3-cd]pyrene	193-39-5	µg/L	< 0.39	< 0.027	< 0.027	< 0.028	< 0.028	< 0.028	< 0.028
Isophorone	78-59-1	µg/L	< 3	< 0.67	< 0.67	< 0.7	< 0.7	< 0.68	< 0.68
Naphthalene	91-20-3	µg/L	< 0.36	1.4 J	5.4 NJ	< 0.83	1.4 J	8.3 NJ	< 0.82
Nitrobenzene	98-95-3	µg/L	< 2.6	< 0.49	< 0.49	< 0.51	< 0.51	< 0.5	< 0.5
N-Nitrosodi-n-propylamine	621-64-7	µg/L	< 3.3	< 0.83	< 0.83	< 0.86	< 0.86	< 0.85	< 0.85
N-Nitrosodiphenylamine	86-30-6	µg/L	< 3.5	< 0.74	< 0.74	< 0.77	< 0.77	0.99 J	< 0.76
Pentachlorophenol	87-86-5	µg/L	< 0.093	< 0.077 UJ	< 0.077 UJ	< 0.08 UJ	< 0.08	< 0.079	< 0.079
Phenanthrene	85-01-8	µg/L	< 0.4	< 0.65	< 0.65	< 0.68	< 0.68	< 0.66	< 0.66
Phenol	108-95-2	µg/L	< 1.4	< 0.41	< 0.41	< 0.43	< 0.43	< 0.42	< 0.42
Pyrene	129-00-0	µg/L	< 0.34	< 0.83	< 0.83	< 0.86	< 0.86	< 0.85	< 0.85
Metals - Total									
Aluminum, total	7429-90-5	µg/L	0.035	32.5 J	54.7	80	31.3 J	44.8	36.1 J
Antimony, total	7440-36-0	µg/L	< 0.0005	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62	< 0.62
Arsenic, total	7440-38-2	µg/L	0.003	< 0.64	< 0.64	< 0.64	< 0.64	3.5	< 0.64
Barium, total	7440-39-3	µg/L	0.54	457	553	10.1	417	534	9.5
Beryllium, total	7440-41-7	µg/L	< 0.0005	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Cadmium, total	7440-43-9	µg/L	< 0.0004	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71	< 0.71
Calcium, total	7440-70-2	µg/L	98.9	48100	109000	6650	46200	102000	6210
Chromium, total	7440-47-3	µg/L	0.0088	3.2 J	3.3 J	< 1.3	3.3 J	10.2	< 1.3
Cobalt, total	7440-48-4	µg/L	0.0016	< 1.3	< 1.3	< 1.3	< 1.3	2.4 J	< 1.3
Copper, total	7440-50-8	µg/L	0.0061	1.8 J	< 1.4	2.7 J	4	11.4	2.5 J
Iron, total	7439-89-6	µg/L	126	89600	139000	176	81100	145000	339
Lead, total	7439-92-1	µg/L	0.98	131	8.2	1.7	9.8	203	0.88 J
Magnesium, total	7439-95-4	µg/L	11.4	4730	13000	1610	4720	12100	1820
Manganese, total	7439-96-5	µg/L	2.1	955	2340	4.8 J	877	2040	10.2
Mercury, total	7439-97-6	µg/L	< 0.00015	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17	< 0.17
Nickel, total	7440-02-0	µg/L	0.0029	< 1.4	< 1.4	< 1.4	1.7 J	6.2	< 1.4
Potassium, total	7440-09-7	µg/L	7.9	2170	8030	587	1960	8130	507
Selenium, total	7782-49-2	µg/L	< 0.0006	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73	< 0.73
Silver, total	7440-22-4	µg/L	< 0.0005	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3
Sodium, total	7440-23-5	µg/L	29.6	5750	32400	2510	5110	31900	3070
Thallium, total	7440-28-0	µg/L	< 0.0002	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26	< 0.26
Vanadium, total	7440-62-2	µg/L	5	6.2	3.7 J	< 1.9	7.2	4.1	< 1.9
Zinc, total	7440-66-6	µg/L	5.7	3090	294	405	3850	596	388
Other									
Cyanide, total	57-12-5	µg/L	< 0.007	< 2	< 2	< 2	3.8 B	3.8 B	3.9 B

APPENDIX B

ProUCL Outputs

APPENDIX B1

ProUCL Output - 2008 - 2017 Site-wide Annual Overburden and Bedrock Groundwater

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.14/24/2018 10:33:24 AM
From File	ProUCL input.xls.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result (1,1-dichloroethane)

General Statistics

Total Number of Observations	572	Number of Distinct Observations	57
Number of Detects	77	Number of Non-Detects	495
Number of Distinct Detects	55	Number of Distinct Non-Detects	7
Minimum Detect	0.24	Minimum Non-Detect	0.16
Maximum Detect	89.3	Maximum Non-Detect	1
Variance Detects	111.2	Percent Non-Detects	86.54%
Mean Detects	2.364	SD Detects	10.54
Median Detects	0.67	CV Detects	4.46
Skewness Detects	7.767	Kurtosis Detects	63.18
Mean of Logged Detects	-0.281	SD of Logged Detects	0.936

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.196	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.441	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.101	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.461	KM Standard Error of Mean	0.165
KM SD	3.917	95% KM (BCA) UCL	0.795
95% KM (t) UCL	0.732	95% KM (Percentile Bootstrap) UCL	0.769
95% KM (z) UCL	0.732	95% KM Bootstrap t UCL	2.695
90% KM Chebyshev UCL	0.955	95% KM Chebyshev UCL	1.179
97.5% KM Chebyshev UCL	1.49	99% KM Chebyshev UCL	2.101

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	14.23	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.813	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.365	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.107	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.548	k star (bias corrected MLE)	0.536
Theta hat (MLE)	4.31	Theta star (bias corrected MLE)	4.413
nu hat (MLE)	84.46	nu star (bias corrected)	82.51
Mean (detects)	2.364		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.33
Maximum	89.3	Median	0.01
SD	3.931	CV	11.91
k hat (MLE)	0.245	k star (bias corrected MLE)	0.245
Theta hat (MLE)	1.346	Theta star (bias corrected MLE)	1.347
nu hat (MLE)	280.5	nu star (bias corrected)	280.4
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (280.38, α)	242.6	Adjusted Chi Square Value (280.38, β)	242.5
95% Gamma Approximate UCL (use when n>=50)	0.382	95% Gamma Adjusted UCL (use when n<50)	0.382

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.461	SD (KM)	3.917
Variance (KM)	15.34	SE of Mean (KM)	0.165
k hat (KM)	0.0138	k star (KM)	0.0149
nu hat (KM)	15.83	nu star (KM)	17.08
theta hat (KM)	33.3	theta star (KM)	30.86
80% gamma percentile (KM)	5.6495E-6	90% gamma percentile (KM)	0.0151
95% gamma percentile (KM)	0.575	99% gamma percentile (KM)	13.04

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (17.08, α)	8.727	Adjusted Chi Square Value (17.08, β)	8.712
95% Gamma Approximate KM-UCL (use when n>=50)	0.901	95% Gamma Adjusted KM-UCL (use when n<50)	0.903

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.778	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	2.220E-16	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.213	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.101	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.361	Mean in Log Scale	-3.487
SD in Original Scale	3.928	SD in Log Scale	1.981
95% t UCL (assumes normality of ROS data)	0.632	95% Percentile Bootstrap UCL	0.661
95% BCA Bootstrap UCL	0.982	95% Bootstrap t UCL	2.545
95% H-UCL (Log ROS)	0.281		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.611	KM Geo Mean	0.2
KM SD (logged)	0.637	95% Critical H Value (KM-Log)	1.864
KM Standard Error of Mean (logged)	0.0273	95% H-UCL (KM -Log)	0.257
KM SD (logged)	0.637	95% Critical H Value (KM-Log)	1.864
KM Standard Error of Mean (logged)	0.0273		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.455	Mean in Log Scale	-1.749
SD in Original Scale	3.921	SD in Log Scale	0.79
95% t UCL (Assumes normality)	0.725	95% H-Stat UCL	0.254

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	1.179

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (1,4-dioxane)

General Statistics

Total Number of Observations	171	Number of Distinct Observations	92
Number of Detects	78	Number of Non-Detects	93
Number of Distinct Detects	76	Number of Distinct Non-Detects	18
Minimum Detect	0.079	Minimum Non-Detect	0.0735
Maximum Detect	201	Maximum Non-Detect	79.8
Variance Detects	939.7	Percent Non-Detects	54.39%
Mean Detects	12.96	SD Detects	30.65
Median Detects	1.565	CV Detects	2.366
Skewness Detects	4.206	Kurtosis Detects	20.47
Mean of Logged Detects	0.698	SD of Logged Detects	2.069

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.472	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.337	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.1	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	6.253	KM Standard Error of Mean	1.665
KM SD	21.55	95% KM (BCA) UCL	9.488
95% KM (t) UCL	9.007	95% KM (Percentile Bootstrap) UCL	9.189
95% KM (z) UCL	8.992	95% KM Bootstrap t UCL	10.87
90% KM Chebyshev UCL	11.25	95% KM Chebyshev UCL	13.51
97.5% KM Chebyshev UCL	16.65	99% KM Chebyshev UCL	22.82

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.193	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.851	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.154	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.109	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.359	k star (bias corrected MLE)	0.354
Theta hat (MLE)	36.06	Theta star (bias corrected MLE)	36.59
nu hat (MLE)	56.06	nu star (bias corrected)	55.23
Mean (detects)	12.96		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	6.235
Maximum	201	Median	0.079
SD	21.61	CV	3.465
k hat (MLE)	0.198	k star (bias corrected MLE)	0.198
Theta hat (MLE)	31.52	Theta star (bias corrected MLE)	31.45
nu hat (MLE)	67.66	nu star (bias corrected)	67.8
Adjusted Level of Significance (β)	0.0486		
Approximate Chi Square Value (67.80, α)	49.85	Adjusted Chi Square Value (67.80, β)	49.72
95% Gamma Approximate UCL (use when n>=50)	8.48	95% Gamma Adjusted UCL (use when n<50)	8.503

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	6.253	SD (KM)	21.55
Variance (KM)	464.4	SE of Mean (KM)	1.665
k hat (KM)	0.0842	k star (KM)	0.0866
nu hat (KM)	28.79	nu star (KM)	29.62
theta hat (KM)	74.28	theta star (KM)	72.2
80% gamma percentile (KM)	3.447	90% gamma percentile (KM)	15.53
95% gamma percentile (KM)	36.43	99% gamma percentile (KM)	106.6

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (29.62, α)	18.19	Adjusted Chi Square Value (29.62, β)	18.12
95% Gamma Approximate KM-UCL (use when n>=50)	10.18	95% Gamma Adjusted KM-UCL (use when n<50)	10.22

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.934	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	6.5168E-4	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.112	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.1	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6.068	Mean in Log Scale	-1.442
SD in Original Scale	21.59	SD in Log Scale	2.828
95% t UCL (assumes normality of ROS data)	8.799	95% Percentile Bootstrap UCL	8.922
95% BCA Bootstrap UCL	10.05	95% Bootstrap t UCL	10.34
95% H-UCL (Log ROS)	32.02		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.781	KM Geo Mean	0.458
KM SD (logged)	2.149	95% Critical H Value (KM-Log)	3.372
KM Standard Error of Mean (logged)	0.18	95% H-UCL (KM -Log)	8.045
KM SD (logged)	2.149	95% Critical H Value (KM-Log)	3.372
KM Standard Error of Mean (logged)	0.18		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	8.365	Mean in Log Scale	-0.15
SD in Original Scale	22.16	SD in Log Scale	2.499
95% t UCL (Assumes normality)	11.17	95% H-Stat UCL	40.49

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 13.51

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (aluminum, total)

General Statistics

Total Number of Observations	556	Number of Distinct Observations	346
Number of Detects	385	Number of Non-Detects	171
Number of Distinct Detects	334	Number of Distinct Non-Detects	14
Minimum Detect	9.6	Minimum Non-Detect	7.2
Maximum Detect	43100	Maximum Non-Detect	254
Variance Detects	14725711	Percent Non-Detects	30.76%
Mean Detects	923.4	SD Detects	3837
Median Detects	133	CV Detects	4.156
Skewness Detects	8.132	Kurtosis Detects	74.08
Mean of Logged Detects	5.196	SD of Logged Detects	1.478

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.238	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.406	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0455	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	646.2	KM Standard Error of Mean	136.6
KM SD	3216	95% KM (BCA) UCL	917.4
95% KM (t) UCL	871.2	95% KM (Percentile Bootstrap) UCL	882
95% KM (z) UCL	870.9	95% KM Bootstrap t UCL	978
90% KM Chebyshev UCL	1056	95% KM Chebyshev UCL	1242
97.5% KM Chebyshev UCL	1499	99% KM Chebyshev UCL	2005

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	37.21	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.846	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.211	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0495	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Statistics on Detected Data Only

k hat (MLE)	0.403	k star (bias corrected MLE)	0.401
Theta hat (MLE)	2293	Theta star (bias corrected MLE)	2301
nu hat (MLE)	310	nu star (bias corrected)	309
Mean (detects)	923.4		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	640.1
Maximum	43100	Median	69.05
SD	3220	CV	5.031
k hat (MLE)	0.177	k star (bias corrected MLE)	0.177
Theta hat (MLE)	3614	Theta star (bias corrected MLE)	3609
nu hat (MLE)	197	nu star (bias corrected)	197.2
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (197.25, α)	165.8	Adjusted Chi Square Value (197.25, β)	165.7
95% Gamma Approximate UCL (use when n>=50)	761.8	95% Gamma Adjusted UCL (use when n<50)	762.1

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	646.2	SD (KM)	3216
Variance (KM)	10343651	SE of Mean (KM)	136.6
k hat (KM)	0.0404	k star (KM)	0.0414
nu hat (KM)	44.89	nu star (KM)	45.98
theta hat (KM)	16007	theta star (KM)	15627
80% gamma percentile (KM)	41.23	90% gamma percentile (KM)	742.6
95% gamma percentile (KM)	3158	99% gamma percentile (KM)	15095

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (45.98, α)	31.43	Adjusted Chi Square Value (45.98, β)	31.39
95% Gamma Approximate KM-UCL (use when n>=50)	945.6	95% Gamma Adjusted KM-UCL (use when n<50)	946.5

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.94	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0918	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0455	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	645.9	Mean in Log Scale	4.297
SD in Original Scale	3219	SD in Log Scale	1.942
95% t UCL (assumes normality of ROS data)	870.8	95% Percentile Bootstrap UCL	885.7
95% BCA Bootstrap UCL	931.1	95% Bootstrap t UCL	1003
95% H-UCL (Log ROS)	621.3		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.38	KM Geo Mean	79.82
KM SD (logged)	1.801	95% Critical H Value (KM-Log)	2.87
KM Standard Error of Mean (logged)	0.079	95% H-UCL (KM -Log)	503
KM SD (logged)	1.801	95% Critical H Value (KM-Log)	2.87
KM Standard Error of Mean (logged)	0.079		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	650	Mean in Log Scale	4.488
SD in Original Scale	3218	SD in Log Scale	1.733
95% t UCL (Assumes normality)	874.9	95% H-Stat UCL	490.8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Suggested UCL to Use

95% KM (Chebyshev) UCL 1242

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (arsenic, total)

General Statistics

Total Number of Observations	555	Number of Distinct Observations	130
Number of Detects	240	Number of Non-Detects	315
Number of Distinct Detects	128	Number of Distinct Non-Detects	12
Minimum Detect	0.59	Minimum Non-Detect	0.64
Maximum Detect	36.8	Maximum Non-Detect	5.9
Variance Detects	43.52	Percent Non-Detects	56.76%
Mean Detects	6.236	SD Detects	6.597
Median Detects	3.55	CV Detects	1.058
Skewness Detects	1.869	Kurtosis Detects	3.249
Mean of Logged Detects	1.364	SD of Logged Detects	0.963

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.753	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.202	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0576	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.138	KM Standard Error of Mean	0.218
KM SD	5.113	95% KM (BCA) UCL	3.565
95% KM (t) UCL	3.497	95% KM (Percentile Bootstrap) UCL	3.491
95% KM (z) UCL	3.497	95% KM Bootstrap t UCL	3.527
90% KM Chebyshev UCL	3.792	95% KM Chebyshev UCL	4.088
97.5% KM Chebyshev UCL	4.499	99% KM Chebyshev UCL	5.307

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.138	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.779	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.116	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0605	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.21	k star (bias corrected MLE)	1.198
Theta hat (MLE)	5.152	Theta star (bias corrected MLE)	5.205
nu hat (MLE)	581	nu star (bias corrected)	575.1
Mean (detects)	6.236		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.768
Maximum	36.8	Median	0.01
SD	5.298	CV	1.914
k hat (MLE)	0.253	k star (bias corrected MLE)	0.253
Theta hat (MLE)	10.95	Theta star (bias corrected MLE)	10.96
nu hat (MLE)	280.7	nu star (bias corrected)	280.5
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (280.47, α)	242.7	Adjusted Chi Square Value (280.47, β)	242.6
95% Gamma Approximate UCL (use when n>=50)	3.2	95% Gamma Adjusted UCL (use when n<50)	3.201

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.138	SD (KM)	5.113
Variance (KM)	26.14	SE of Mean (KM)	0.218
k hat (KM)	0.377	k star (KM)	0.376
nu hat (KM)	418.2	nu star (KM)	417.2
theta hat (KM)	8.33	theta star (KM)	8.349
80% gamma percentile (KM)	5.024	90% gamma percentile (KM)	8.959
95% gamma percentile (KM)	13.32	99% gamma percentile (KM)	24.36

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (417.23, α)	370.9	Adjusted Chi Square Value (417.23, β)	370.8
95% Gamma Approximate KM-UCL (use when n>=50)	3.53	95% Gamma Adjusted KM-UCL (use when n<50)	3.531

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.954	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	6.5460E-7	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0689	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0576	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.041	Mean in Log Scale	0.0874
SD in Original Scale	5.169	SD in Log Scale	1.466
95% t UCL (assumes normality of ROS data)	3.402	95% Percentile Bootstrap UCL	3.418
95% BCA Bootstrap UCL	3.446	95% Bootstrap t UCL	3.424
95% H-UCL (Log ROS)	3.742		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.403	KM Geo Mean	1.496
KM SD (logged)	1.083	95% Critical H Value (KM-Log)	2.182
KM Standard Error of Mean (logged)	0.0484	95% H-UCL (KM -Log)	2.973
KM SD (logged)	1.083	95% Critical H Value (KM-Log)	2.182
KM Standard Error of Mean (logged)	0.0484		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	3.174	Mean in Log Scale	0.426
SD in Original Scale	5.101	SD in Log Scale	1.101
95% t UCL (Assumes normality)	3.531	95% H-Stat UCL	3.111

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	4.088

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (barium, total)

General Statistics

Total Number of Observations	557	Number of Distinct Observations	404
Number of Detects	545	Number of Non-Detects	12
Number of Distinct Detects	403	Number of Distinct Non-Detects	2
Minimum Detect	2	Minimum Non-Detect	7.7
Maximum Detect	1570	Maximum Non-Detect	200
Variance Detects	15579	Percent Non-Detects	2.154%
Mean Detects	62.63	SD Detects	124.8
Median Detects	27	CV Detects	1.993
Skewness Detects	5.786	Kurtosis Detects	49.41
Mean of Logged Detects	3.312	SD of Logged Detects	1.209

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.462	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.314	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0383	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	61.99	KM Standard Error of Mean	5.242
KM SD	123.5	95% KM (BCA) UCL	71.47
95% KM (t) UCL	70.63	95% KM (Percentile Bootstrap) UCL	70.93
95% KM (z) UCL	70.61	95% KM Bootstrap t UCL	72.41
90% KM Chebyshev UCL	77.71	95% KM Chebyshev UCL	84.84
97.5% KM Chebyshev UCL	94.73	99% KM Chebyshev UCL	114.1

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	19.53	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.799	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.132	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.041	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.728	k star (bias corrected MLE)	0.726
Theta hat (MLE)	85.98	Theta star (bias corrected MLE)	86.31
nu hat (MLE)	793.9	nu star (bias corrected)	790.9
Mean (detects)	62.63		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	62.12
Maximum	1570	Median	26.9
SD	123.7	CV	1.992
k hat (MLE)	0.686	k star (bias corrected MLE)	0.684
Theta hat (MLE)	90.49	Theta star (bias corrected MLE)	90.82
nu hat (MLE)	764.7	nu star (bias corrected)	761.9
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (761.94, α)	698.9	Adjusted Chi Square Value (761.94, β)	698.7
95% Gamma Approximate UCL (use when n>=50)	67.73	95% Gamma Adjusted UCL (use when n<50)	67.74

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	61.99	SD (KM)	123.5
Variance (KM)	15257	SE of Mean (KM)	5.242
k hat (KM)	0.252	k star (KM)	0.252
nu hat (KM)	280.6	nu star (KM)	280.4
theta hat (KM)	246.1	theta star (KM)	246.3
80% gamma percentile (KM)	90.24	90% gamma percentile (KM)	186
95% gamma percentile (KM)	299.4	99% gamma percentile (KM)	601.2

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (280.39, α)	242.6	Adjusted Chi Square Value (280.39, β)	242.5
95% Gamma Approximate KM-UCL (use when n>=50)	71.64	95% Gamma Adjusted KM-UCL (use when n<50)	71.67

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.969	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	3.5845E-7	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0332	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0383	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	61.96	Mean in Log Scale	3.306
SD in Original Scale	123.6	SD in Log Scale	1.205
95% t UCL (assumes normality of ROS data)	70.59	95% Percentile Bootstrap UCL	70.73
95% BCA Bootstrap UCL	72.14	95% Bootstrap t UCL	72.8
95% H-UCL (Log ROS)	63.35		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.305	KM Geo Mean	27.25
KM SD (logged)	1.206	95% Critical H Value (KM-Log)	2.287
KM Standard Error of Mean (logged)	0.0515	95% H-UCL (KM -Log)	63.37
KM SD (logged)	1.206	95% Critical H Value (KM-Log)	2.287
KM Standard Error of Mean (logged)	0.0515		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	63.26	Mean in Log Scale	3.334
SD in Original Scale	123.6	SD in Log Scale	1.212
95% t UCL (Assumes normality)	71.89	95% H-Stat UCL	65.81

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 63.37

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (benzene)

General Statistics

Total Number of Observations	572	Number of Distinct Observations	76
Number of Detects	106	Number of Non-Detects	466
Number of Distinct Detects	71	Number of Distinct Non-Detects	9
Minimum Detect	0.092	Minimum Non-Detect	0.05
Maximum Detect	43.8	Maximum Non-Detect	6
Variance Detects	23.26	Percent Non-Detects	81.47%
Mean Detects	2.334	SD Detects	4.823
Median Detects	0.95	CV Detects	2.067
Skewness Detects	6.529	Kurtosis Detects	52.95
Mean of Logged Detects	-0.0411	SD of Logged Detects	1.31

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.446	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.321	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0863	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.483	KM Standard Error of Mean	0.0945
KM SD	2.248	95% KM (BCA) UCL	0.682
95% KM (t) UCL	0.639	95% KM (Percentile Bootstrap) UCL	0.673
95% KM (z) UCL	0.639	95% KM Bootstrap t UCL	0.734
90% KM Chebyshev UCL	0.767	95% KM Chebyshev UCL	0.895
97.5% KM Chebyshev UCL	1.073	99% KM Chebyshev UCL	1.423

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.753	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.801	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.117	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0918	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Statistics on Detected Data Only

k hat (MLE)	0.683	k star (bias corrected MLE)	0.67
Theta hat (MLE)	3.419	Theta star (bias corrected MLE)	3.486
nu hat (MLE)	144.7	nu star (bias corrected)	141.9
Mean (detects)	2.334		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.441
Maximum	43.8	Median	0.01
SD	2.257	CV	5.113
k hat (MLE)	0.243	k star (bias corrected MLE)	0.243
Theta hat (MLE)	1.816	Theta star (bias corrected MLE)	1.816
nu hat (MLE)	278.1	nu star (bias corrected)	278
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (277.99, α)	240.4	Adjusted Chi Square Value (277.99, β)	240.3
95% Gamma Approximate UCL (use when n>=50)	0.51	95% Gamma Adjusted UCL (use when n<50)	0.511

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.483	SD (KM)	2.248
Variance (KM)	5.052	SE of Mean (KM)	0.0945
k hat (KM)	0.0462	k star (KM)	0.0471
nu hat (KM)	52.87	nu star (KM)	53.92
theta hat (KM)	10.46	theta star (KM)	10.25
80% gamma percentile (KM)	0.0528	90% gamma percentile (KM)	0.681
95% gamma percentile (KM)	2.512	99% gamma percentile (KM)	10.75

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (53.92, α)	38.05	Adjusted Chi Square Value (53.92, β)	38.02
95% Gamma Approximate KM-UCL (use when n>=50)	0.685	95% Gamma Adjusted KM-UCL (use when n<50)	0.685

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.961	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.0204	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.103	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0863	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.463	Mean in Log Scale	-3.824
SD in Original Scale	2.254	SD in Log Scale	2.62
95% t UCL (assumes normality of ROS data)	0.618	95% Percentile Bootstrap UCL	0.635
95% BCA Bootstrap UCL	0.678	95% Bootstrap t UCL	0.718
95% H-UCL (Log ROS)	1.043		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.357	KM Geo Mean	0.0947
KM SD (logged)	1.281	95% Critical H Value (KM-Log)	2.357
KM Standard Error of Mean (logged)	0.059	95% H-UCL (KM -Log)	0.244
KM SD (logged)	1.281	95% Critical H Value (KM-Log)	2.357
KM Standard Error of Mean (logged)	0.059		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.549	Mean in Log Scale	-1.793
SD in Original Scale	2.242	SD in Log Scale	1.153
95% t UCL (Assumes normality)	0.704	95% H-Stat UCL	0.361

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Suggested UCL to Use

95% KM (Chebyshev) UCL 0.895

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (bis(2-ethylhexyl)phthalate)

General Statistics

Total Number of Observations	555	Number of Distinct Observations	104
Number of Detects	54	Number of Non-Detects	501
Number of Distinct Detects	34	Number of Distinct Non-Detects	83
Minimum Detect	0.84	Minimum Non-Detect	0.33
Maximum Detect	156	Maximum Non-Detect	17.1
Variance Detects	496.6	Percent Non-Detects	90.27%
Mean Detects	6.754	SD Detects	22.28
Median Detects	2.2	CV Detects	3.299
Skewness Detects	6.14	Kurtosis Detects	40
Mean of Logged Detects	0.937	SD of Logged Detects	0.955

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.265	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.413	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.12	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.982	KM Standard Error of Mean	0.306
KM SD	7.148	95% KM (BCA) UCL	1.563
95% KM (t) UCL	1.486	95% KM (Percentile Bootstrap) UCL	1.554
95% KM (z) UCL	1.486	95% KM Bootstrap t UCL	3.472
90% KM Chebyshev UCL	1.901	95% KM Chebyshev UCL	2.318
97.5% KM Chebyshev UCL	2.896	99% KM Chebyshev UCL	4.031

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	9.036	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.803	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.35	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.127	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.63	k star (bias corrected MLE)	0.608
Theta hat (MLE)	10.72	Theta star (bias corrected MLE)	11.12
nu hat (MLE)	68.06	nu star (bias corrected)	65.61
Mean (detects)	6.754		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.686
Maximum	156	Median	0.01
SD	7.188	CV	10.48
k hat (MLE)	0.201	k star (bias corrected MLE)	0.201
Theta hat (MLE)	3.422	Theta star (bias corrected MLE)	3.42
nu hat (MLE)	222.6	nu star (bias corrected)	222.7
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (222.71, α)	189.2	Adjusted Chi Square Value (222.71, β)	189.1
95% Gamma Approximate UCL (use when n>=50)	0.808	95% Gamma Adjusted UCL (use when n<50)	0.808

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.982	SD (KM)	7.148
Variance (KM)	51.09	SE of Mean (KM)	0.306
k hat (KM)	0.0189	k star (KM)	0.02
nu hat (KM)	20.93	nu star (KM)	22.15
theta hat (KM)	52.05	theta star (KM)	49.18
80% gamma percentile (KM)	3.9073E-4	90% gamma percentile (KM)	0.143
95% gamma percentile (KM)	2.244	99% gamma percentile (KM)	27.43

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (22.15, α)	12.45	Adjusted Chi Square Value (22.15, β)	12.43
95% Gamma Approximate KM-UCL (use when n>=50)	1.746	95% Gamma Adjusted KM-UCL (use when n<50)	1.749

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.777	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	1.586E-10	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.201	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.12	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.762	Mean in Log Scale	-2.728
SD in Original Scale	7.171	SD in Log Scale	1.893
95% t UCL (assumes normality of ROS data)	1.263	95% Percentile Bootstrap UCL	1.349
95% BCA Bootstrap UCL	1.667	95% Bootstrap t UCL	3.57
95% H-UCL (Log ROS)	0.498		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.885	KM Geo Mean	0.413
KM SD (logged)	0.701	95% Critical H Value (KM-Log)	1.901
KM Standard Error of Mean (logged)	0.0315	95% H-UCL (KM -Log)	0.558
KM SD (logged)	0.701	95% Critical H Value (KM-Log)	1.901
KM Standard Error of Mean (logged)	0.0315		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1.419	Mean in Log Scale	-0.72
SD in Original Scale	7.244	SD in Log Scale	1.125
95% t UCL (Assumes normality)	1.925	95% H-Stat UCL	1.02

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	2.318

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (cadmium, total)

General Statistics

Total Number of Observations	558	Number of Distinct Observations	29
Number of Detects	54	Number of Non-Detects	504
Number of Distinct Detects	23	Number of Distinct Non-Detects	10
Minimum Detect	0.2	Minimum Non-Detect	0.17
Maximum Detect	11.8	Maximum Non-Detect	3
Variance Detects	4.35	Percent Non-Detects	90.32%
Mean Detects	1.277	SD Detects	2.086
Median Detects	0.65	CV Detects	1.633
Skewness Detects	3.999	Kurtosis Detects	16.94
Mean of Logged Detects	-0.271	SD of Logged Detects	0.861

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.474	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.331	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.12	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.297	KM Standard Error of Mean	0.0314
KM SD	0.725	95% KM (BCA) UCL	0.349
95% KM (t) UCL	0.349	95% KM (Percentile Bootstrap) UCL	0.351
95% KM (z) UCL	0.349	95% KM Bootstrap t UCL	0.394
90% KM Chebyshev UCL	0.391	95% KM Chebyshev UCL	0.434
97.5% KM Chebyshev UCL	0.493	99% KM Chebyshev UCL	0.609

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.168	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.777	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.246	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.124	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.107	k star (bias corrected MLE)	1.058
Theta hat (MLE)	1.154	Theta star (bias corrected MLE)	1.208
nu hat (MLE)	119.5	nu star (bias corrected)	114.2
Mean (detects)	1.277		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.147
Maximum	11.8	Median	0.01
SD	0.751	CV	5.116
k hat (MLE)	0.314	k star (bias corrected MLE)	0.314
Theta hat (MLE)	0.468	Theta star (bias corrected MLE)	0.468
nu hat (MLE)	350.6	nu star (bias corrected)	350.1
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (350.07, α)	307.7	Adjusted Chi Square Value (350.07, β)	307.6
95% Gamma Approximate UCL (use when n>=50)	0.167	95% Gamma Adjusted UCL (use when n<50)	0.167

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.297	SD (KM)	0.725
Variance (KM)	0.525	SE of Mean (KM)	0.0314
k hat (KM)	0.168	k star (KM)	0.168
nu hat (KM)	187.7	nu star (KM)	188
theta hat (KM)	1.767	theta star (KM)	1.764
80% gamma percentile (KM)	0.353	90% gamma percentile (KM)	0.893
95% gamma percentile (KM)	1.597	99% gamma percentile (KM)	3.594

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (188.01, α)	157.3	Adjusted Chi Square Value (188.01, β)	157.2
95% Gamma Approximate KM-UCL (use when n>=50)	0.355	95% Gamma Adjusted KM-UCL (use when n<50)	0.355

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.89	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	3.7987E-5	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.154	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.12	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.192	Mean in Log Scale	-3.161
SD in Original Scale	0.743	SD in Log Scale	1.69
95% t UCL (assumes normality of ROS data)	0.244	95% Percentile Bootstrap UCL	0.25
95% BCA Bootstrap UCL	0.262	95% Bootstrap t UCL	0.29
95% H-UCL (Log ROS)	0.216		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.562	KM Geo Mean	0.21
KM SD (logged)	0.557	95% Critical H Value (KM-Log)	1.82
KM Standard Error of Mean (logged)	0.0279	95% H-UCL (KM -Log)	0.256
KM SD (logged)	0.557	95% Critical H Value (KM-Log)	1.82
KM Standard Error of Mean (logged)	0.0279		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.449	Mean in Log Scale	-1.229
SD in Original Scale	0.777	SD in Log Scale	0.809
95% t UCL (Assumes normality)	0.503	95% H-Stat UCL	0.434

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	0.434

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (chromium, total)

General Statistics

Total Number of Observations	556	Number of Distinct Observations	96
Number of Detects	203	Number of Non-Detects	353
Number of Distinct Detects	90	Number of Distinct Non-Detects	18
Minimum Detect	0.55	Minimum Non-Detect	0.53
Maximum Detect	191	Maximum Non-Detect	20.8
Variance Detects	421.1	Percent Non-Detects	63.49%
Mean Detects	8.692	SD Detects	20.52
Median Detects	2	CV Detects	2.361
Skewness Detects	5.015	Kurtosis Detects	34.31
Mean of Logged Detects	1.047	SD of Logged Detects	1.246

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.439	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.361	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0626	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.644	KM Standard Error of Mean	0.551
KM SD	12.96	95% KM (BCA) UCL	4.655
95% KM (t) UCL	4.553	95% KM (Percentile Bootstrap) UCL	4.657
95% KM (z) UCL	4.551	95% KM Bootstrap t UCL	4.808
90% KM Chebyshev UCL	5.299	95% KM Chebyshev UCL	6.048
97.5% KM Chebyshev UCL	7.088	99% KM Chebyshev UCL	9.131

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	23.51	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.815	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.269	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0667	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Statistics on Detected Data Only

k hat (MLE)	0.56	k star (bias corrected MLE)	0.555
Theta hat (MLE)	15.53	Theta star (bias corrected MLE)	15.67
nu hat (MLE)	227.2	nu star (bias corrected)	225.2
Mean (detects)	8.692		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3.375
Maximum	191	Median	0.01
SD	13.12	CV	3.888
k hat (MLE)	0.203	k star (bias corrected MLE)	0.203
Theta hat (MLE)	16.6	Theta star (bias corrected MLE)	16.59
nu hat (MLE)	226	nu star (bias corrected)	226.2
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (226.15, α)	192.3	Adjusted Chi Square Value (226.15, β)	192.3
95% Gamma Approximate UCL (use when n>=50)	3.968	95% Gamma Adjusted UCL (use when n<50)	3.969

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.644	SD (KM)	12.96
Variance (KM)	167.9	SE of Mean (KM)	0.551
k hat (KM)	0.0791	k star (KM)	0.0799
nu hat (KM)	87.95	nu star (KM)	88.81
theta hat (KM)	46.08	theta star (KM)	45.63
80% gamma percentile (KM)	1.729	90% gamma percentile (KM)	8.632
95% gamma percentile (KM)	21.19	99% gamma percentile (KM)	64.6

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (88.81, α)	68.09	Adjusted Chi Square Value (88.81, β)	68.04
95% Gamma Approximate KM-UCL (use when n>=50)	4.754	95% Gamma Adjusted KM-UCL (use when n<50)	4.757

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.848	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.164	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0626	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.447	Mean in Log Scale	-0.7
SD in Original Scale	13.02	SD in Log Scale	1.86
95% t UCL (assumes normality of ROS data)	4.357	95% Percentile Bootstrap UCL	4.417
95% BCA Bootstrap UCL	4.589	95% Bootstrap t UCL	4.733
95% H-UCL (Log ROS)	3.527		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.114	KM Geo Mean	1.121
KM SD (logged)	1.078	95% Critical H Value (KM-Log)	2.179
KM Standard Error of Mean (logged)	0.0487	95% H-UCL (KM -Log)	2.216
KM SD (logged)	1.078	95% Critical H Value (KM-Log)	2.179
KM Standard Error of Mean (logged)	0.0487		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	4.014	Mean in Log Scale	0.219
SD in Original Scale	12.95	SD in Log Scale	1.217
95% t UCL (Assumes normality)	4.919	95% H-Stat UCL	2.941

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Suggested UCL to Use

95% KM (Chebyshev) UCL 6.048

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (cobalt, total)

General Statistics

Total Number of Observations	557	Number of Distinct Observations	90
Number of Detects	145	Number of Non-Detects	412
Number of Distinct Detects	84	Number of Distinct Non-Detects	13
Minimum Detect	0.4	Minimum Non-Detect	0.3
Maximum Detect	34.7	Maximum Non-Detect	50
Variance Detects	57.83	Percent Non-Detects	73.97%
Mean Detects	5.681	SD Detects	7.605
Median Detects	2.4	CV Detects	1.339
Skewness Detects	2.149	Kurtosis Detects	3.984
Mean of Logged Detects	1.085	SD of Logged Detects	1.094

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.658	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.269	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.074	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.83	KM Standard Error of Mean	0.204
KM SD	4.652	95% KM (BCA) UCL	2.186
95% KM (t) UCL	2.167	95% KM (Percentile Bootstrap) UCL	2.178
95% KM (z) UCL	2.166	95% KM Bootstrap t UCL	2.21
90% KM Chebyshev UCL	2.443	95% KM Chebyshev UCL	2.721
97.5% KM Chebyshev UCL	3.106	99% KM Chebyshev UCL	3.863

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	6.576	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.788	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.16	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0805	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.897	k star (bias corrected MLE)	0.883
Theta hat (MLE)	6.333	Theta star (bias corrected MLE)	6.433
nu hat (MLE)	260.2	nu star (bias corrected)	256.1
Mean (detects)	5.681		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.571
Maximum	34.7	Median	0.01
SD	4.661	CV	2.967
k hat (MLE)	0.21	k star (bias corrected MLE)	0.21
Theta hat (MLE)	7.477	Theta star (bias corrected MLE)	7.475
nu hat (MLE)	234	nu star (bias corrected)	234.1
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (234.11, α)	199.7	Adjusted Chi Square Value (234.11, β)	199.6
95% Gamma Approximate UCL (use when n>=50)	1.842	95% Gamma Adjusted UCL (use when n<50)	1.842

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.83	SD (KM)	4.652
Variance (KM)	21.64	SE of Mean (KM)	0.204
k hat (KM)	0.155	k star (KM)	0.155
nu hat (KM)	172.5	nu star (KM)	172.9
theta hat (KM)	11.82	theta star (KM)	11.8
80% gamma percentile (KM)	2.047	90% gamma percentile (KM)	5.451
95% gamma percentile (KM)	10.01	99% gamma percentile (KM)	23.13

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (172.86, α)	143.5	Adjusted Chi Square Value (172.86, β)	143.4
95% Gamma Approximate KM-UCL (use when n>=50)	2.205	95% Gamma Adjusted KM-UCL (use when n<50)	2.206

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.933	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	1.3067E-7	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0933	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.074	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.699	Mean in Log Scale	-1.364
SD in Original Scale	4.59	SD in Log Scale	2.012
95% t UCL (assumes normality of ROS data)	2.019	95% Percentile Bootstrap UCL	2.037
95% BCA Bootstrap UCL	2.065	95% Bootstrap t UCL	2.085
95% H-UCL (Log ROS)	2.52		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.501	KM Geo Mean	0.606
KM SD (logged)	1.167	95% Critical H Value (KM-Log)	2.254
KM Standard Error of Mean (logged)	0.0533	95% H-UCL (KM -Log)	1.339
KM SD (logged)	1.167	95% Critical H Value (KM-Log)	2.254
KM Standard Error of Mean (logged)	0.0533		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	3.334	Mean in Log Scale	-0.118
SD in Original Scale	7.12	SD in Log Scale	1.408
95% t UCL (Assumes normality)	3.831	95% H-Stat UCL	2.777

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	2.721

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (copper, total)

General Statistics

Total Number of Observations	559	Number of Distinct Observations	114
Number of Detects	240	Number of Non-Detects	319
Number of Distinct Detects	110	Number of Distinct Non-Detects	12
Minimum Detect	0.5	Minimum Non-Detect	0.7
Maximum Detect	307	Maximum Non-Detect	10
Variance Detects	582.1	Percent Non-Detects	57.07%
Mean Detects	9.074	SD Detects	24.13
Median Detects	4.1	CV Detects	2.659
Skewness Detects	8.993	Kurtosis Detects	100.8
Mean of Logged Detects	1.477	SD of Logged Detects	0.986

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.315	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.361	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0576	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4.494	KM Standard Error of Mean	0.692
KM SD	16.29	95% KM (BCA) UCL	5.84
95% KM (t) UCL	5.633	95% KM (Percentile Bootstrap) UCL	5.703
95% KM (z) UCL	5.631	95% KM Bootstrap t UCL	6.529
90% KM Chebyshev UCL	6.568	95% KM Chebyshev UCL	7.508
97.5% KM Chebyshev UCL	8.812	99% KM Chebyshev UCL	11.37

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	17.05	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.793	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.208	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0612	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.813	k star (bias corrected MLE)	0.806
Theta hat (MLE)	11.16	Theta star (bias corrected MLE)	11.26
nu hat (MLE)	390.5	nu star (bias corrected)	386.9
Mean (detects)	9.074		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4.145
Maximum	307	Median	0.01
SD	16.45	CV	3.969
k hat (MLE)	0.223	k star (bias corrected MLE)	0.223
Theta hat (MLE)	18.56	Theta star (bias corrected MLE)	18.56
nu hat (MLE)	249.7	nu star (bias corrected)	249.7
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (249.72, α)	214.1	Adjusted Chi Square Value (249.72, β)	214
95% Gamma Approximate UCL (use when n>=50)	4.834	95% Gamma Adjusted UCL (use when n<50)	4.836

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4.494	SD (KM)	16.29
Variance (KM)	265.3	SE of Mean (KM)	0.692
k hat (KM)	0.0761	k star (KM)	0.0769
nu hat (KM)	85.08	nu star (KM)	85.96
theta hat (KM)	59.05	theta star (KM)	58.45
80% gamma percentile (KM)	1.975	90% gamma percentile (KM)	10.38
95% gamma percentile (KM)	26.07	99% gamma percentile (KM)	81.09

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (85.96, α)	65.58	Adjusted Chi Square Value (85.96, β)	65.54
95% Gamma Approximate KM-UCL (use when n>=50)	5.889	95% Gamma Adjusted KM-UCL (use when n<50)	5.894

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.942	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	5.702E-11	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0921	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0576	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4.411	Mean in Log Scale	0.276
SD in Original Scale	16.33	SD in Log Scale	1.448
95% t UCL (assumes normality of ROS data)	5.549	95% Percentile Bootstrap UCL	5.637
95% BCA Bootstrap UCL	6.031	95% Bootstrap t UCL	6.331
95% H-UCL (Log ROS)	4.381		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.528	KM Geo Mean	1.695
KM SD (logged)	1.13	95% Critical H Value (KM-Log)	2.222
KM Standard Error of Mean (logged)	0.0609	95% H-UCL (KM -Log)	3.572
KM SD (logged)	1.13	95% Critical H Value (KM-Log)	2.222
KM Standard Error of Mean (logged)	0.0609		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	4.832	Mean in Log Scale	0.695
SD in Original Scale	16.26	SD in Log Scale	1.118
95% t UCL (Assumes normality)	5.965	95% H-Stat UCL	4.155

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 7.508

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (cyanide, total)

General Statistics

Total Number of Observations	168	Number of Distinct Observations	32
Number of Detects	39	Number of Non-Detects	129
Number of Distinct Detects	30	Number of Distinct Non-Detects	3
Minimum Detect	2.1	Minimum Non-Detect	2
Maximum Detect	16	Maximum Non-Detect	10
Variance Detects	8.229	Percent Non-Detects	76.79%
Mean Detects	5.236	SD Detects	2.869
Median Detects	4.8	CV Detects	0.548
Skewness Detects	2.189	Kurtosis Detects	6.043
Mean of Logged Detects	1.543	SD of Logged Detects	0.463

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.788	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.207	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.14	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.109	KM Standard Error of Mean	0.188
KM SD	2.071	95% KM (BCA) UCL	3.426
95% KM (t) UCL	3.419	95% KM (Percentile Bootstrap) UCL	3.424
95% KM (z) UCL	3.418	95% KM Bootstrap t UCL	3.458
90% KM Chebyshev UCL	3.672	95% KM Chebyshev UCL	3.927
97.5% KM Chebyshev UCL	4.281	99% KM Chebyshev UCL	4.977

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.753	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.752	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.14	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.142	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Statistics on Detected Data Only

k hat (MLE)	4.613	k star (bias corrected MLE)	4.275
Theta hat (MLE)	1.135	Theta star (bias corrected MLE)	1.225
nu hat (MLE)	359.8	nu star (bias corrected)	333.4
Mean (detects)	5.236		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.113
Maximum	16	Median	0.993
SD	2.747	CV	1.3
k hat (MLE)	0.341	k star (bias corrected MLE)	0.338
Theta hat (MLE)	6.204	Theta star (bias corrected MLE)	6.243
nu hat (MLE)	114.4	nu star (bias corrected)	113.7
Adjusted Level of Significance (β)	0.0486		
Approximate Chi Square Value (113.72, α)	90.11	Adjusted Chi Square Value (113.72, β)	89.92
95% Gamma Approximate UCL (use when n>=50)	2.667	95% Gamma Adjusted UCL (use when n<50)	2.672

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.109	SD (KM)	2.071
Variance (KM)	4.289	SE of Mean (KM)	0.188
k hat (KM)	2.253	k star (KM)	2.217
nu hat (KM)	757.1	nu star (KM)	744.9
theta hat (KM)	1.38	theta star (KM)	1.402
80% gamma percentile (KM)	4.598	90% gamma percentile (KM)	5.903
95% gamma percentile (KM)	7.14	99% gamma percentile (KM)	9.868

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (744.87, α)	682.5	Adjusted Chi Square Value (744.87, β)	682
95% Gamma Approximate KM-UCL (use when n>=50)	3.393	95% Gamma Adjusted KM-UCL (use when n<50)	3.395

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.955	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.939	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.107	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.14	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.754	Mean in Log Scale	0.731
SD in Original Scale	2.316	SD in Log Scale	0.752
95% t UCL (assumes normality of ROS data)	3.05	95% Percentile Bootstrap UCL	3.061
95% BCA Bootstrap UCL	3.118	95% Bootstrap t UCL	3.084
95% H-UCL (Log ROS)	3.092		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.997	KM Geo Mean	2.711
KM SD (logged)	0.472	95% Critical H Value (KM-Log)	1.797
KM Standard Error of Mean (logged)	0.0455	95% H-UCL (KM -Log)	3.237
KM SD (logged)	0.472	95% Critical H Value (KM-Log)	1.797
KM Standard Error of Mean (logged)	0.0455		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	3.539	Mean in Log Scale	0.989
SD in Original Scale	2.409	SD in Log Scale	0.795
95% t UCL (Assumes normality)	3.847	95% H-Stat UCL	4.167

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Suggested UCL to Use

95% KM Approximate Gamma UCL	3.393	95% GROS Approximate Gamma UCL	2.667

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (iron, total)

General Statistics

Total Number of Observations	558	Number of Distinct Observations	453
Number of Detects	503	Number of Non-Detects	55
Number of Distinct Detects	445	Number of Distinct Non-Detects	11
Minimum Detect	14	Minimum Non-Detect	7.4
Maximum Detect	84500	Maximum Non-Detect	143
Variance Detects	2.810E+8	Percent Non-Detects	9.857%
Mean Detects	9864	SD Detects	16764
Median Detects	1200	CV Detects	1.7
Skewness Detects	1.968	Kurtosis Detects	3.184
Mean of Logged Detects	7.231	SD of Logged Detects	2.319

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.639	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.31	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0399	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	8894	KM Standard Error of Mean	685.2
KM SD	16169	95% KM (BCA) UCL	9985
95% KM (t) UCL	10023	95% KM (Percentile Bootstrap) UCL	9986
95% KM (z) UCL	10021	95% KM Bootstrap t UCL	10080
90% KM Chebyshev UCL	10950	95% KM Chebyshev UCL	11881
97.5% KM Chebyshev UCL	13173	99% KM Chebyshev UCL	15712

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	16.65	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.861	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.169	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.0436	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.343	k star (bias corrected MLE)	0.342
Theta hat (MLE)	28745	Theta star (bias corrected MLE)	28806
nu hat (MLE)	345.2	nu star (bias corrected)	344.5
Mean (detects)	9864		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	8892
Maximum	84500	Median	849
SD	16185	CV	1.82
k hat (MLE)	0.237	k star (bias corrected MLE)	0.237
Theta hat (MLE)	37581	Theta star (bias corrected MLE)	37594
nu hat (MLE)	264	nu star (bias corrected)	264
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (263.96, α)	227.3	Adjusted Chi Square Value (263.96, β)	227.3
95% Gamma Approximate UCL (use when n>=50)	10324	95% Gamma Adjusted UCL (use when n<50)	10328

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	8894	SD (KM)	16169
Variance (KM)	2.614E+8	SE of Mean (KM)	685.2
k hat (KM)	0.303	k star (KM)	0.302
nu hat (KM)	337.7	nu star (KM)	337.2
theta hat (KM)	29392	theta star (KM)	29434
80% gamma percentile (KM)	13665	90% gamma percentile (KM)	26210
95% gamma percentile (KM)	40593	99% gamma percentile (KM)	77940

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (337.23, α)	295.7	Adjusted Chi Square Value (337.23, β)	295.6
95% Gamma Approximate KM-UCL (use when n>=50)	10144	95% Gamma Adjusted KM-UCL (use when n<50)	10148

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.936	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0773	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0399	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	8895	Mean in Log Scale	6.793
SD in Original Scale	16183	SD in Log Scale	2.597
95% t UCL (assumes normality of ROS data)	10023	95% Percentile Bootstrap UCL	10076
95% BCA Bootstrap UCL	10240	95% Bootstrap t UCL	10072
95% H-UCL (Log ROS)	39909		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	6.822	KM Geo Mean	918
KM SD (logged)	2.533	95% Critical H Value (KM-Log)	3.843
KM Standard Error of Mean (logged)	0.108	95% H-UCL (KM -Log)	34252
KM SD (logged)	2.533	95% Critical H Value (KM-Log)	3.843
KM Standard Error of Mean (logged)	0.108		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8895	Mean in Log Scale	6.831
SD in Original Scale	16183	SD in Log Scale	2.521
95% t UCL (Assumes normality)	10023	95% H-Stat UCL	33470

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 11881

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (lead, total)

General Statistics

Total Number of Observations	557	Number of Distinct Observations	96
Number of Detects	161	Number of Non-Detects	396
Number of Distinct Detects	94	Number of Distinct Non-Detects	14
Minimum Detect	0.2	Minimum Non-Detect	0.38
Maximum Detect	53.6	Maximum Non-Detect	4.2
Variance Detects	62.36	Percent Non-Detects	71.1%
Mean Detects	4.317	SD Detects	7.897
Median Detects	2	CV Detects	1.829
Skewness Detects	4.225	Kurtosis Detects	19.71
Mean of Logged Detects	0.721	SD of Logged Detects	1.137

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.482	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.31	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0702	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.562	KM Standard Error of Mean	0.196
KM SD	4.593	95% KM (BCA) UCL	1.917
95% KM (t) UCL	1.885	95% KM (Percentile Bootstrap) UCL	1.877
95% KM (z) UCL	1.885	95% KM Bootstrap t UCL	1.987
90% KM Chebyshev UCL	2.151	95% KM Chebyshev UCL	2.417
97.5% KM Chebyshev UCL	2.788	99% KM Chebyshev UCL	3.515

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	6.225	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.793	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.15	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0765	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.801	k star (bias corrected MLE)	0.79
Theta hat (MLE)	5.392	Theta star (bias corrected MLE)	5.465
nu hat (MLE)	257.8	nu star (bias corrected)	254.3
Mean (detects)	4.317		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.311
Maximum	53.6	Median	0.01
SD	4.661	CV	3.556
k hat (MLE)	0.23	k star (bias corrected MLE)	0.23
Theta hat (MLE)	5.697	Theta star (bias corrected MLE)	5.698
nu hat (MLE)	256.3	nu star (bias corrected)	256.3
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (256.26, α)	220.2	Adjusted Chi Square Value (256.26, β)	220.1
95% Gamma Approximate UCL (use when n>=50)	1.525	95% Gamma Adjusted UCL (use when n<50)	1.526

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.562	SD (KM)	4.593
Variance (KM)	21.09	SE of Mean (KM)	0.196
k hat (KM)	0.116	k star (KM)	0.116
nu hat (KM)	128.9	nu star (KM)	129.5
theta hat (KM)	13.5	theta star (KM)	13.44
80% gamma percentile (KM)	1.321	90% gamma percentile (KM)	4.386
95% gamma percentile (KM)	8.948	99% gamma percentile (KM)	22.98

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (129.51, α)	104.2	Adjusted Chi Square Value (129.51, β)	104.2
95% Gamma Approximate KM-UCL (use when n>=50)	1.941	95% Gamma Adjusted KM-UCL (use when n<50)	1.942

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.962	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.00357	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0621	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0702	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.52	Mean in Log Scale	-0.856
SD in Original Scale	4.609	SD in Log Scale	1.511
95% t UCL (assumes normality of ROS data)	1.842	95% Percentile Bootstrap UCL	1.862
95% BCA Bootstrap UCL	1.942	95% Bootstrap t UCL	1.926
95% H-UCL (Log ROS)	1.569		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.512	KM Geo Mean	0.599
KM SD (logged)	1.1	95% Critical H Value (KM-Log)	2.196
KM Standard Error of Mean (logged)	0.0651	95% H-UCL (KM -Log)	1.216
KM SD (logged)	1.1	95% Critical H Value (KM-Log)	2.196
KM Standard Error of Mean (logged)	0.0651		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1.792	Mean in Log Scale	-0.106
SD in Original Scale	4.543	SD in Log Scale	0.98
95% t UCL (Assumes normality)	2.109	95% H-Stat UCL	1.587

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 1.216

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (manganese, total)

General Statistics

Total Number of Observations	556	Number of Distinct Observations	416
Number of Detects	477	Number of Non-Detects	79
Number of Distinct Detects	409	Number of Distinct Non-Detects	8
Minimum Detect	0.3	Minimum Non-Detect	0.12
Maximum Detect	16300	Maximum Non-Detect	15
Variance Detects	8749591	Percent Non-Detects	14.21%
Mean Detects	1664	SD Detects	2958
Median Detects	288	CV Detects	1.778
Skewness Detects	2.398	Kurtosis Detects	5.519
Mean of Logged Detects	5.3	SD of Logged Detects	2.637

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.614	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.287	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0409	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1428	KM Standard Error of Mean	118.8
KM SD	2798	95% KM (BCA) UCL	1633
95% KM (t) UCL	1623	95% KM (Percentile Bootstrap) UCL	1630
95% KM (z) UCL	1623	95% KM Bootstrap t UCL	1634
90% KM Chebyshev UCL	1784	95% KM Chebyshev UCL	1945
97.5% KM Chebyshev UCL	2169	99% KM Chebyshev UCL	2609

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.989	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.866	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0847	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.045	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.322	k star (bias corrected MLE)	0.321
Theta hat (MLE)	5166	Theta star (bias corrected MLE)	5177
nu hat (MLE)	307.2	nu star (bias corrected)	306.6
Mean (detects)	1664		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1427
Maximum	16300	Median	143.5
SD	2800	CV	1.962
k hat (MLE)	0.216	k star (bias corrected MLE)	0.216
Theta hat (MLE)	6616	Theta star (bias corrected MLE)	6615
nu hat (MLE)	239.9	nu star (bias corrected)	239.9
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (239.93, α)	205.1	Adjusted Chi Square Value (239.93, β)	205
95% Gamma Approximate UCL (use when n>=50)	1670	95% Gamma Adjusted UCL (use when n<50)	1671

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1428	SD (KM)	2798
Variance (KM)	7827366	SE of Mean (KM)	118.8
k hat (KM)	0.26	k star (KM)	0.26
nu hat (KM)	289.5	nu star (KM)	289.3
theta hat (KM)	5483	theta star (KM)	5488
80% gamma percentile (KM)	2102	90% gamma percentile (KM)	4272
95% gamma percentile (KM)	6828	99% gamma percentile (KM)	13595

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (289.27, α)	250.9	Adjusted Chi Square Value (289.27, β)	250.8
95% Gamma Approximate KM-UCL (use when n>=50)	1646	95% Gamma Adjusted KM-UCL (use when n<50)	1647

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.942	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0763	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0409	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1428	Mean in Log Scale	4.565
SD in Original Scale	2800	SD in Log Scale	3.088
95% t UCL (assumes normality of ROS data)	1623	95% Percentile Bootstrap UCL	1631
95% BCA Bootstrap UCL	1653	95% Bootstrap t UCL	1634
95% H-UCL (Log ROS)	19946		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.466	KM Geo Mean	86.99
KM SD (logged)	3.234	95% Critical H Value (KM-Log)	4.493
KM Standard Error of Mean (logged)	0.14	95% H-UCL (KM -Log)	30106
KM SD (logged)	3.234	95% Critical H Value (KM-Log)	4.493
KM Standard Error of Mean (logged)	0.14		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1428	Mean in Log Scale	4.596
SD in Original Scale	2800	SD in Log Scale	3.042
95% t UCL (Assumes normality)	1623	95% H-Stat UCL	17594

DL/2 is not a recommended method, provided for comparisons and historical reasons

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 1945

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (methyl tert butyl ether)

General Statistics

Total Number of Observations	573	Number of Distinct Observations	34
Number of Detects	38	Number of Non-Detects	535
Number of Distinct Detects	28	Number of Distinct Non-Detects	9
Minimum Detect	0.17	Minimum Non-Detect	0.13
Maximum Detect	171	Maximum Non-Detect	1
Variance Detects	764.2	Percent Non-Detects	93.37%
Mean Detects	5.148	SD Detects	27.64
Median Detects	0.335	CV Detects	5.37
Skewness Detects	6.155	Kurtosis Detects	37.92
Mean of Logged Detects	-0.671	SD of Logged Detects	1.242

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.182	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.492	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.142	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.465	KM Standard Error of Mean	0.302
KM SD	7.135	95% KM (BCA) UCL	1.068
95% KM (t) UCL	0.962	95% KM (Percentile Bootstrap) UCL	1.06
95% KM (z) UCL	0.962	95% KM Bootstrap t UCL	13.37
90% KM Chebyshev UCL	1.371	95% KM Chebyshev UCL	1.781
97.5% KM Chebyshev UCL	2.351	99% KM Chebyshev UCL	3.47

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	9.883	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.858	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.408	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.155	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.299	k star (bias corrected MLE)	0.293
Theta hat (MLE)	17.23	Theta star (bias corrected MLE)	17.59
nu hat (MLE)	22.7	nu star (bias corrected)	22.24
Mean (detects)	5.148		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.355
Maximum	171	Median	0.01
SD	7.147	CV	20.12
k hat (MLE)	0.22	k star (bias corrected MLE)	0.22
Theta hat (MLE)	1.616	Theta star (bias corrected MLE)	1.616
nu hat (MLE)	251.8	nu star (bias corrected)	251.9
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (251.86, α)	216.1	Adjusted Chi Square Value (251.86, β)	216
95% Gamma Approximate UCL (use when n>=50)	0.414	95% Gamma Adjusted UCL (use when n<50)	0.414

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.465	SD (KM)	7.135
Variance (KM)	50.91	SE of Mean (KM)	0.302
k hat (KM)	0.00424	k star (KM)	0.00538
nu hat (KM)	4.862	nu star (KM)	6.169
theta hat (KM)	109.5	theta star (KM)	86.32
80% gamma percentile (KM)	4.850E-17	90% gamma percentile (KM)	1.5404E-7
95% gamma percentile (KM)	0.00354	99% gamma percentile (KM)	8.259

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (6.17, α)	1.727	Adjusted Chi Square Value (6.17, β)	1.721
95% Gamma Approximate KM-UCL (use when n>=50)	1.66	95% Gamma Adjusted KM-UCL (use when n<50)	1.666

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.66	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.25	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.142	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.352	Mean in Log Scale	-6.185
SD in Original Scale	7.147	SD in Log Scale	2.809
95% t UCL (assumes normality of ROS data)	0.844	95% Percentile Bootstrap UCL	0.947
95% BCA Bootstrap UCL	1.26	95% Bootstrap t UCL	11.72
95% H-UCL (Log ROS)	0.172		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.94	KM Geo Mean	0.144
KM SD (logged)	0.47	95% Critical H Value (KM-Log)	1.776
KM Standard Error of Mean (logged)	0.0203	95% H-UCL (KM -Log)	0.166
KM SD (logged)	0.47	95% Critical H Value (KM-Log)	1.776
KM Standard Error of Mean (logged)	0.0203		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.467	Mean in Log Scale	-2.102
SD in Original Scale	7.142	SD in Log Scale	0.722
95% t UCL (Assumes normality)	0.959	95% H-Stat UCL	0.168

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 1.781

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (naphthalene)

General Statistics

Total Number of Observations	555	Number of Distinct Observations	99
Number of Detects	57	Number of Non-Detects	498
Number of Distinct Detects	54	Number of Distinct Non-Detects	49
Minimum Detect	0.128	Minimum Non-Detect	0.014
Maximum Detect	9.1	Maximum Non-Detect	6.9
Variance Detects	5.139	Percent Non-Detects	89.73%
Mean Detects	1.849	SD Detects	2.267
Median Detects	0.98	CV Detects	1.226
Skewness Detects	1.961	Kurtosis Detects	3.322
Mean of Logged Detects	-0.0406	SD of Logged Detects	1.184

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.719	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	6.650E-14	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.233	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.117	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.214	KM Standard Error of Mean	0.0393
KM SD	0.913	95% KM (BCA) UCL	0.282
95% KM (t) UCL	0.279	95% KM (Percentile Bootstrap) UCL	0.281
95% KM (z) UCL	0.279	95% KM Bootstrap t UCL	0.296
90% KM Chebyshev UCL	0.332	95% KM Chebyshev UCL	0.385
97.5% KM Chebyshev UCL	0.459	99% KM Chebyshev UCL	0.605

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.095	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.12	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.122	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.893	k star (bias corrected MLE)	0.858
Theta hat (MLE)	2.069	Theta star (bias corrected MLE)	2.155
nu hat (MLE)	101.8	nu star (bias corrected)	97.81
Mean (detects)	1.849		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.203
Maximum	9.1	Median	0.01
SD	0.913	CV	4.507
k hat (MLE)	0.278	k star (bias corrected MLE)	0.277
Theta hat (MLE)	0.73	Theta star (bias corrected MLE)	0.731
nu hat (MLE)	308.1	nu star (bias corrected)	307.7
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (307.72, α)	268.1	Adjusted Chi Square Value (307.72, β)	268
95% Gamma Approximate UCL (use when n>=50)	0.232	95% Gamma Adjusted UCL (use when n<50)	0.233

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.214	SD (KM)	0.913
Variance (KM)	0.833	SE of Mean (KM)	0.0393
k hat (KM)	0.0548	k star (KM)	0.0557
nu hat (KM)	60.87	nu star (KM)	61.87
theta hat (KM)	3.899	theta star (KM)	3.835
80% gamma percentile (KM)	0.0415	90% gamma percentile (KM)	0.372
95% gamma percentile (KM)	1.177	99% gamma percentile (KM)	4.45

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (61.87, α)	44.78	Adjusted Chi Square Value (61.87, β)	44.74
95% Gamma Approximate KM-UCL (use when n>=50)	0.295	95% Gamma Adjusted KM-UCL (use when n<50)	0.296

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.956	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.0719	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0556	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.117	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.217	Mean in Log Scale	-4.47
SD in Original Scale	0.91	SD in Log Scale	2.416
95% t UCL (assumes normality of ROS data)	0.28	95% Percentile Bootstrap UCL	0.285
95% BCA Bootstrap UCL	0.288	95% Bootstrap t UCL	0.298
95% H-UCL (Log ROS)	0.309		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.756	KM Geo Mean	0.0234
KM SD (logged)	1.409	95% Critical H Value (KM-Log)	2.475
KM Standard Error of Mean (logged)	0.0653	95% H-UCL (KM -Log)	0.0731
KM SD (logged)	1.409	95% Critical H Value (KM-Log)	2.475
KM Standard Error of Mean (logged)	0.0653		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.372	Mean in Log Scale	-2.928
SD in Original Scale	0.936	SD in Log Scale	2.072
95% t UCL (Assumes normality)	0.438	95% H-Stat UCL	0.606

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	0.295

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (nickel, total)

General Statistics

Total Number of Observations	558	Number of Distinct Observations	144
Number of Detects	330	Number of Non-Detects	228
Number of Distinct Detects	138	Number of Distinct Non-Detects	16
Minimum Detect	0.57	Minimum Non-Detect	0.41
Maximum Detect	104	Maximum Non-Detect	40.9
Variance Detects	174.2	Percent Non-Detects	40.86%
Mean Detects	7.906	SD Detects	13.2
Median Detects	3.35	CV Detects	1.67
Skewness Detects	4.034	Kurtosis Detects	19.5
Mean of Logged Detects	1.404	SD of Logged Detects	1.042

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.528	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.289	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0492	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	5.154	KM Standard Error of Mean	0.455
KM SD	10.7	95% KM (BCA) UCL	5.979
95% KM (t) UCL	5.904	95% KM (Percentile Bootstrap) UCL	5.912
95% KM (z) UCL	5.903	95% KM Bootstrap t UCL	6.011
90% KM Chebyshev UCL	6.52	95% KM Chebyshev UCL	7.138
97.5% KM Chebyshev UCL	7.997	99% KM Chebyshev UCL	9.684

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	16.78	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.171	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0518	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.883	k star (bias corrected MLE)	0.877
Theta hat (MLE)	8.953	Theta star (bias corrected MLE)	9.015
nu hat (MLE)	582.8	nu star (bias corrected)	578.8
Mean (detects)	7.906		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4.981
Maximum	104	Median	1.8
SD	10.85	CV	2.178
k hat (MLE)	0.295	k star (bias corrected MLE)	0.294
Theta hat (MLE)	16.91	Theta star (bias corrected MLE)	16.93
nu hat (MLE)	328.8	nu star (bias corrected)	328.4
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (328.37, α)	287.4	Adjusted Chi Square Value (328.37, β)	287.3
95% Gamma Approximate UCL (use when n>=50)	5.691	95% Gamma Adjusted UCL (use when n<50)	5.693

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	5.154	SD (KM)	10.7
Variance (KM)	114.6	SE of Mean (KM)	0.455
k hat (KM)	0.232	k star (KM)	0.232
nu hat (KM)	258.8	nu star (KM)	258.7
theta hat (KM)	22.23	theta star (KM)	22.23
80% gamma percentile (KM)	7.273	90% gamma percentile (KM)	15.54
95% gamma percentile (KM)	25.5	99% gamma percentile (KM)	52.32

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (258.71, α)	222.5	Adjusted Chi Square Value (258.71, β)	222.4
95% Gamma Approximate KM-UCL (use when n>=50)	5.994	95% Gamma Adjusted KM-UCL (use when n<50)	5.996

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.94	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0985	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0492	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5.126	Mean in Log Scale	0.64
SD in Original Scale	10.73	SD in Log Scale	1.382
95% t UCL (assumes normality of ROS data)	5.874	95% Percentile Bootstrap UCL	5.921
95% BCA Bootstrap UCL	5.998	95% Bootstrap t UCL	6.012
95% H-UCL (Log ROS)	5.687		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.732	KM Geo Mean	2.079
KM SD (logged)	1.243	95% Critical H Value (KM-Log)	2.321
KM Standard Error of Mean (logged)	0.0574	95% H-UCL (KM -Log)	5.088
KM SD (logged)	1.243	95% Critical H Value (KM-Log)	2.321
KM Standard Error of Mean (logged)	0.0574		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	5.544	Mean in Log Scale	0.899
SD in Original Scale	10.65	SD in Log Scale	1.219
95% t UCL (Assumes normality)	6.287	95% H-Stat UCL	5.816

DL/2 is not a recommended method, provided for comparisons and historical reasons

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 7.138

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (selenium, total)

General Statistics

Total Number of Observations	557	Number of Distinct Observations	72
Number of Detects	110	Number of Non-Detects	447
Number of Distinct Detects	65	Number of Distinct Non-Detects	12
Minimum Detect	0.65	Minimum Non-Detect	0.73
Maximum Detect	24	Maximum Non-Detect	10
Variance Detects	10.28	Percent Non-Detects	80.25%
Mean Detects	4.394	SD Detects	3.206
Median Detects	3.55	CV Detects	0.73
Skewness Detects	2.659	Kurtosis Detects	12.32
Mean of Logged Detects	1.262	SD of Logged Detects	0.678

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.811	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.16	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.0848	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.495	KM Standard Error of Mean	0.0913
KM SD	2.076	95% KM (BCA) UCL	1.71
95% KM (t) UCL	1.645	95% KM (Percentile Bootstrap) UCL	1.674
95% KM (z) UCL	1.645	95% KM Bootstrap t UCL	1.641
90% KM Chebyshev UCL	1.769	95% KM Chebyshev UCL	1.893
97.5% KM Chebyshev UCL	2.065	99% KM Chebyshev UCL	2.403

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.607	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0733	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.0878	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	2.447	k star (bias corrected MLE)	2.387
Theta hat (MLE)	1.795	Theta star (bias corrected MLE)	1.841
nu hat (MLE)	538.4	nu star (bias corrected)	525.1
Mean (detects)	4.394		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.017
Maximum	24	Median	0.01
SD	2.259	CV	2.221
k hat (MLE)	0.242	k star (bias corrected MLE)	0.242
Theta hat (MLE)	4.196	Theta star (bias corrected MLE)	4.198
nu hat (MLE)	270.1	nu star (bias corrected)	270
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (269.98, α)	232.9	Adjusted Chi Square Value (269.98, β)	232.8
95% Gamma Approximate UCL (use when n>=50)	1.179	95% Gamma Adjusted UCL (use when n<50)	1.18

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.495	SD (KM)	2.076
Variance (KM)	4.31	SE of Mean (KM)	0.0913
k hat (KM)	0.518	k star (KM)	0.517
nu hat (KM)	577.5	nu star (KM)	575.7
theta hat (KM)	2.884	theta star (KM)	2.892
80% gamma percentile (KM)	2.458	90% gamma percentile (KM)	4.016
95% gamma percentile (KM)	5.675	99% gamma percentile (KM)	9.741

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (575.72, α)	521.1	Adjusted Chi Square Value (575.72, β)	520.9
95% Gamma Approximate KM-UCL (use when n>=50)	1.652	95% Gamma Adjusted KM-UCL (use when n<50)	1.652

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.975	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0.278	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0868	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0848	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.409	Mean in Log Scale	-0.36
SD in Original Scale	2.118	SD in Log Scale	1.186
95% t UCL (assumes normality of ROS data)	1.557	95% Percentile Bootstrap UCL	1.562
95% BCA Bootstrap UCL	1.58	95% Bootstrap t UCL	1.579
95% H-UCL (Log ROS)	1.579		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.0172	KM Geo Mean	0.983
KM SD (logged)	0.761	95% Critical H Value (KM-Log)	1.94
KM Standard Error of Mean (logged)	0.036	95% H-UCL (KM -Log)	1.398
KM SD (logged)	0.761	95% Critical H Value (KM-Log)	1.94
KM Standard Error of Mean (logged)	0.036		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	1.842	Mean in Log Scale	0.226
SD in Original Scale	2.081	SD in Log Scale	0.839
95% t UCL (Assumes normality)	1.987	95% H-Stat UCL	1.912

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM Approximate Gamma UCL	1.652	95% GROS Approximate Gamma UCL	1.179

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (vanadium, total)

General Statistics

Total Number of Observations	558	Number of Distinct Observations	117
Number of Detects	274	Number of Non-Detects	284
Number of Distinct Detects	111	Number of Distinct Non-Detects	10
Minimum Detect	0.5	Minimum Non-Detect	0.43
Maximum Detect	77.8	Maximum Non-Detect	50
Variance Detects	93.94	Percent Non-Detects	50.9%
Mean Detects	6.205	SD Detects	9.692
Median Detects	2.6	CV Detects	1.562
Skewness Detects	3.465	Kurtosis Detects	15
Mean of Logged Detects	1.175	SD of Logged Detects	1.044

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.571	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.289	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0539	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	3.519	KM Standard Error of Mean	0.33
KM SD	7.538	95% KM (BCA) UCL	4.06
95% KM (t) UCL	4.062	95% KM (Percentile Bootstrap) UCL	4.034
95% KM (z) UCL	4.061	95% KM Bootstrap t UCL	4.135
90% KM Chebyshev UCL	4.508	95% KM Chebyshev UCL	4.957
97.5% KM Chebyshev UCL	5.579	99% KM Chebyshev UCL	6.801

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	13.99	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.789	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.177	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.057	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.899	k star (bias corrected MLE)	0.892
Theta hat (MLE)	6.899	Theta star (bias corrected MLE)	6.956
nu hat (MLE)	492.9	nu star (bias corrected)	488.8
Mean (detects)	6.205		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	3.273
Maximum	77.8	Median	0.7
SD	7.568	CV	2.312
k hat (MLE)	0.256	k star (bias corrected MLE)	0.256
Theta hat (MLE)	12.8	Theta star (bias corrected MLE)	12.81
nu hat (MLE)	285.4	nu star (bias corrected)	285.2
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (285.23, α)	247.1	Adjusted Chi Square Value (285.23, β)	247
95% Gamma Approximate UCL (use when n>=50)	3.778	95% Gamma Adjusted UCL (use when n<50)	3.78

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	3.519	SD (KM)	7.538
Variance (KM)	56.82	SE of Mean (KM)	0.33
k hat (KM)	0.218	k star (KM)	0.218
nu hat (KM)	243.2	nu star (KM)	243.2
theta hat (KM)	16.15	theta star (KM)	16.14
80% gamma percentile (KM)	4.836	90% gamma percentile (KM)	10.63
95% gamma percentile (KM)	17.72	99% gamma percentile (KM)	36.96

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (243.24, α)	208.1	Adjusted Chi Square Value (243.24, β)	208.1
95% Gamma Approximate KM-UCL (use when n>=50)	4.112	95% Gamma Adjusted KM-UCL (use when n<50)	4.114

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.94	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	4.463E-14	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.102	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0539	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.408	Mean in Log Scale	-0.00145
SD in Original Scale	7.443	SD in Log Scale	1.585
95% t UCL (assumes normality of ROS data)	3.927	95% Percentile Bootstrap UCL	3.971
95% BCA Bootstrap UCL	4.027	95% Bootstrap t UCL	4.006
95% H-UCL (Log ROS)	4.188		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.289	KM Geo Mean	1.334
KM SD (logged)	1.224	95% Critical H Value (KM-Log)	2.304
KM Standard Error of Mean (logged)	0.0549	95% H-UCL (KM -Log)	3.181
KM SD (logged)	1.224	95% Critical H Value (KM-Log)	2.304
KM Standard Error of Mean (logged)	0.0549		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	5.065	Mean in Log Scale	0.462
SD in Original Scale	9.182	SD in Log Scale	1.46
95% t UCL (Assumes normality)	5.705	95% H-Stat UCL	5.386

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	4.957

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (vinyl chloride)

General Statistics

Total Number of Observations	356	Number of Distinct Observations	12
Number of Detects	4	Number of Non-Detects	352
Number of Distinct Detects	4	Number of Distinct Non-Detects	8
Minimum Detect	0.11	Minimum Non-Detect	0.06
Maximum Detect	0.24	Maximum Non-Detect	1
Variance Detects	0.0035	Percent Non-Detects	98.88%
Mean Detects	0.195	SD Detects	0.0592
Median Detects	0.215	CV Detects	0.303
Skewness Detects	-1.545	Kurtosis Detects	2.229
Mean of Logged Detects	-1.678	SD of Logged Detects	0.361

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.848	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.284	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.064	KM Standard Error of Mean	0.00236
KM SD	0.0237	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.0679	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.0679	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.0711	95% KM Chebyshev UCL	0.0743
97.5% KM Chebyshev UCL	0.0787	99% KM Chebyshev UCL	0.0875

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.528	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.323	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.395	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Statistics on Detected Data Only

k hat (MLE)	11.63	k star (bias corrected MLE)	3.073
Theta hat (MLE)	0.0168	Theta star (bias corrected MLE)	0.0634
nu hat (MLE)	93.01	nu star (bias corrected)	24.59
Mean (detects)	0.195		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0192
Maximum	0.24	Median	0.01
SD	0.0313	CV	1.631
k hat (MLE)	1.363	k star (bias corrected MLE)	1.353
Theta hat (MLE)	0.0141	Theta star (bias corrected MLE)	0.0142
nu hat (MLE)	970.2	nu star (bias corrected)	963.4
Adjusted Level of Significance (β)	0.0493		
Approximate Chi Square Value (963.40, α)	892.4	Adjusted Chi Square Value (963.40, β)	892.1
95% Gamma Approximate UCL (use when n>=50)	0.0207	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.064	SD (KM)	0.0237
Variance (KM)	5.6369E-4	SE of Mean (KM)	0.00236
k hat (KM)	7.275	k star (KM)	7.216
nu hat (KM)	5180	nu star (KM)	5138
theta hat (KM)	0.0088	theta star (KM)	0.00887
80% gamma percentile (KM)	0.0828	90% gamma percentile (KM)	0.0959
95% gamma percentile (KM)	0.108	99% gamma percentile (KM)	0.132

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (N/A, α)	4972	Adjusted Chi Square Value (N/A, β)	4971
95% Gamma Approximate KM-UCL (use when n>=50)	0.0662	95% Gamma Adjusted KM-UCL (use when n<50)	0.0662

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.8	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.326	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.375	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0308	Mean in Log Scale	-3.902
SD in Original Scale	0.033	SD in Log Scale	0.922
95% t UCL (assumes normality of ROS data)	0.0336	95% Percentile Bootstrap UCL	0.0338
95% BCA Bootstrap UCL	0.0342	95% Bootstrap t UCL	0.034
95% H-UCL (Log ROS)	0.0342		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.778	KM Geo Mean	0.0622
KM SD (logged)	0.198	95% Critical H Value (KM-Log)	1.681
KM Standard Error of Mean (logged)	0.0203	95% H-UCL (KM -Log)	0.0645
KM SD (logged)	0.198	95% Critical H Value (KM-Log)	1.681
KM Standard Error of Mean (logged)	0.0203		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.164	Mean in Log Scale	-2.125
SD in Original Scale	0.129	SD in Log Scale	0.845
95% t UCL (Assumes normality)	0.175	95% H-Stat UCL	0.187

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Suggested UCL to Use

95% KM (t) UCL 0.0679

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (zinc, total)

General Statistics

Total Number of Observations	558	Number of Distinct Observations	223
Number of Detects	264	Number of Non-Detects	294
Number of Distinct Detects	212	Number of Distinct Non-Detects	17
Minimum Detect	1.9	Minimum Non-Detect	1.4
Maximum Detect	10700	Maximum Non-Detect	30
Variance Detects	1585519	Percent Non-Detects	52.69%
Mean Detects	441.7	SD Detects	1259
Median Detects	18.75	CV Detects	2.851
Skewness Detects	5.259	Kurtosis Detects	33.46
Mean of Logged Detects	3.721	SD of Logged Detects	2.11

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.402	**Normal GOF Test on Detected Observations Only**
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.363	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0549	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	210.9	KM Standard Error of Mean	37.82
KM SD	891.7	95% KM (BCA) UCL	274
95% KM (t) UCL	273.2	95% KM (Percentile Bootstrap) UCL	273.9
95% KM (z) UCL	273.1	95% KM Bootstrap t UCL	294.1
90% KM Chebyshev UCL	324.3	95% KM Chebyshev UCL	375.7
97.5% KM Chebyshev UCL	447.1	99% KM Chebyshev UCL	587.2

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	25.36	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.874	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.255	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.0612	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.292	k star (bias corrected MLE)	0.291
Theta hat (MLE)	1511	Theta star (bias corrected MLE)	1516
nu hat (MLE)	154.3	nu star (bias corrected)	153.9
Mean (detects)	441.7		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	209.5
Maximum	10700	Median	0.01
SD	892.9	CV	4.263
k hat (MLE)	0.132	k star (bias corrected MLE)	0.132
Theta hat (MLE)	1590	Theta star (bias corrected MLE)	1584
nu hat (MLE)	147	nu star (bias corrected)	147.6
Adjusted Level of Significance (β)	0.0496		
Approximate Chi Square Value (147.56, α)	120.5	Adjusted Chi Square Value (147.56, β)	120.4
95% Gamma Approximate UCL (use when n>=50)	256.5	95% Gamma Adjusted UCL (use when n<50)	256.7

Appendix B1
ProUCL Output - 2008-2017 Site-wide Annual Overburden and Bedrock Groundwater Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	210.9	SD (KM)	891.7
Variance (KM)	795148	SE of Mean (KM)	37.82
k hat (KM)	0.0559	k star (KM)	0.0568
nu hat (KM)	62.41	nu star (KM)	63.41
theta hat (KM)	3771	theta star (KM)	3711
80% gamma percentile (KM)	43.44	90% gamma percentile (KM)	374.9
95% gamma percentile (KM)	1167	99% gamma percentile (KM)	4354

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (63.41, α)	46.09	Adjusted Chi Square Value (63.41, β)	46.05
95% Gamma Approximate KM-UCL (use when n>=50)	290.1	95% Gamma Adjusted KM-UCL (use when n<50)	290.4

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.868	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	0	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.171	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.0549	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	210.5	Mean in Log Scale	1.487
SD in Original Scale	892.6	SD in Log Scale	2.934
95% t UCL (assumes normality of ROS data)	272.7	95% Percentile Bootstrap UCL	274.2
95% BCA Bootstrap UCL	292.6	95% Bootstrap t UCL	297.1
95% H-UCL (Log ROS)	551.4		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.27	KM Geo Mean	9.677
KM SD (logged)	2.067	95% Critical H Value (KM-Log)	3.166
KM Standard Error of Mean (logged)	0.094	95% H-UCL (KM -Log)	108.1
KM SD (logged)	2.067	95% Critical H Value (KM-Log)	3.166
KM Standard Error of Mean (logged)	0.094		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	212.1	Mean in Log Scale	2.538
SD in Original Scale	892.2	SD in Log Scale	1.92
95% t UCL (Assumes normality)	274.3	95% H-Stat UCL	102.1

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	375.7

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

APPENDIX B2

ProUCL Output - 2008 - 2017 Peters Mine Pit Air Shaft Annual Mine Water

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.14/25/2018 5:57:45 PM
From File	ProUCL input.xls.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result (1,4-dichlorobenzene)

General Statistics

Total Number of Observations	30	Number of Distinct Observations	24
Number of Detects	19	Number of Non-Detects	11
Number of Distinct Detects	17	Number of Distinct Non-Detects	7
Minimum Detect	0.29	Minimum Non-Detect	0.17
Maximum Detect	8.2	Maximum Non-Detect	0.33
Variance Detects	8.23	Percent Non-Detects	36.67%
Mean Detects	3.192	SD Detects	2.869
Median Detects	3.3	CV Detects	0.899
Skewness Detects	0.552	Kurtosis Detects	-1.105
Mean of Logged Detects	0.582	SD of Logged Detects	1.224

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.848	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.197	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.087	KM Standard Error of Mean	0.498
KM SD	2.655	95% KM (BCA) UCL	2.976
95% KM (t) UCL	2.933	95% KM (Percentile Bootstrap) UCL	2.914
95% KM (z) UCL	2.906	95% KM Bootstrap t UCL	3.045
90% KM Chebyshev UCL	3.58	95% KM Chebyshev UCL	4.257
97.5% KM Chebyshev UCL	5.196	99% KM Chebyshev UCL	7.041

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.142	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.231	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.204	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.998	k star (bias corrected MLE)	0.875
Theta hat (MLE)	3.2	Theta star (bias corrected MLE)	3.647
nu hat (MLE)	37.91	nu star (bias corrected)	33.25
Mean (detects)	3.192		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.025
Maximum	8.2	Median	0.485
SD	2.746	CV	1.356
k hat (MLE)	0.334	k star (bias corrected MLE)	0.323
Theta hat (MLE)	6.055	Theta star (bias corrected MLE)	6.265
nu hat (MLE)	20.07	nu star (bias corrected)	19.39
Adjusted Level of Significance (β)	0.041		
Approximate Chi Square Value (19.39, α)	10.4	Adjusted Chi Square Value (19.39, β)	10.02
95% Gamma Approximate UCL (use when n>=50)	3.774	95% Gamma Adjusted UCL (use when n<50)	3.917

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.087	SD (KM)	2.655
Variance (KM)	7.048	SE of Mean (KM)	0.498
k hat (KM)	0.618	k star (KM)	0.578
nu hat (KM)	37.06	nu star (KM)	34.69
theta hat (KM)	3.378	theta star (KM)	3.609
80% gamma percentile (KM)	3.439	90% gamma percentile (KM)	5.472
95% gamma percentile (KM)	7.609	99% gamma percentile (KM)	12.79

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (34.69, α)	22.22	Adjusted Chi Square Value (34.69, β)	21.64
95% Gamma Approximate KM-UCL (use when n>=50)	3.258	95% Gamma Adjusted KM-UCL (use when n<50)	3.345

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.848	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.218	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.197	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.065	Mean in Log Scale	-0.44
SD in Original Scale	2.716	SD in Log Scale	1.691
95% t UCL (assumes normality of ROS data)	2.908	95% Percentile Bootstrap UCL	2.856
95% BCA Bootstrap UCL	2.998	95% Bootstrap t UCL	3.066
95% H-UCL (Log ROS)	7.948		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.269	KM Geo Mean	0.764
KM SD (logged)	1.468	95% Critical H Value (KM-Log)	3.117
KM Standard Error of Mean (logged)	0.276	95% H-UCL (KM -Log)	5.247
KM SD (logged)	1.468	95% Critical H Value (KM-Log)	3.117
KM Standard Error of Mean (logged)	0.276		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2.072	Mean in Log Scale	-0.362
SD in Original Scale	2.711	SD in Log Scale	1.591
95% t UCL (Assumes normality)	2.913	95% H-Stat UCL	6.553

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	4.257

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (1,4-dioxane)

General Statistics

Total Number of Observations	12	Number of Distinct Observations	10
Number of Detects	9	Number of Non-Detects	3
Number of Distinct Detects	7	Number of Distinct Non-Detects	3
Minimum Detect	5.7	Minimum Non-Detect	0.0735
Maximum Detect	146	Maximum Non-Detect	0.27
Variance Detects	3362	Percent Non-Detects	25%
Mean Detects	41	SD Detects	57.98
Median Detects	12	CV Detects	1.414
Skewness Detects	1.603	Kurtosis Detects	0.719
Mean of Logged Detects	2.975	SD of Logged Detects	1.179

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.601	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.417	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	30.77	KM Standard Error of Mean	15.48
KM SD	50.55	95% KM (BCA) UCL	61.33
95% KM (t) UCL	58.57	95% KM (Percentile Bootstrap) UCL	54.4
95% KM (z) UCL	56.23	95% KM Bootstrap t UCL	219
90% KM Chebyshev UCL	77.2	95% KM Chebyshev UCL	98.24
97.5% KM Chebyshev UCL	127.4	99% KM Chebyshev UCL	184.8

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.369	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.75	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.347	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.289	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.803	k star (bias corrected MLE)	0.61
Theta hat (MLE)	51.05	Theta star (bias corrected MLE)	67.26
nu hat (MLE)	14.46	nu star (bias corrected)	10.97
Mean (detects)	41		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	30.75
Maximum	146	Median	12
SD	52.81	CV	1.717
k hat (MLE)	0.295	k star (bias corrected MLE)	0.277
Theta hat (MLE)	104.3	Theta star (bias corrected MLE)	111.2
nu hat (MLE)	7.075	nu star (bias corrected)	6.639
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (6.64, α)	1.975	Adjusted Chi Square Value (6.64, β)	1.611
95% Gamma Approximate UCL (use when n>=50)	103.4	95% Gamma Adjusted UCL (use when n<50)	126.7

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	30.77	SD (KM)	50.55
Variance (KM)	2555	SE of Mean (KM)	15.48
k hat (KM)	0.37	k star (KM)	0.333
nu hat (KM)	8.891	nu star (KM)	8.002
theta hat (KM)	83.05	theta star (KM)	92.29
80% gamma percentile (KM)	48.29	90% gamma percentile (KM)	89.49
95% gamma percentile (KM)	136	99% gamma percentile (KM)	255.3

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (8.00, α)	2.736	Adjusted Chi Square Value (8.00, β)	2.289
95% Gamma Approximate KM-UCL (use when n>=50)	89.99	95% Gamma Adjusted KM-UCL (use when n<50)	107.6

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.782	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.303	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	31.09	Mean in Log Scale	2.31
SD in Original Scale	52.6	SD in Log Scale	1.568
95% t UCL (assumes normality of ROS data)	58.36	95% Percentile Bootstrap UCL	54.23
95% BCA Bootstrap UCL	65.73	95% Bootstrap t UCL	233.9
95% H-UCL (Log ROS)	232		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	1.579	KM Geo Mean	4.849
KM SD (logged)	2.603	95% Critical H Value (KM-Log)	6.297
KM Standard Error of Mean (logged)	0.797	95% H-UCL (KM -Log)	20115
KM SD (logged)	2.603	95% Critical H Value (KM-Log)	6.297
KM Standard Error of Mean (logged)	0.797		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	30.77	Mean in Log Scale	1.515
SD in Original Scale	52.8	SD in Log Scale	2.843
95% t UCL (Assumes normality)	58.14	95% H-Stat UCL	90932

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	98.24

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (aluminum)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	34
Number of Detects	30	Number of Non-Detects	30
Number of Distinct Detects	28	Number of Distinct Non-Detects	7
Minimum Detect	0.035	Minimum Non-Detect	0.0096
Maximum Detect	256	Maximum Non-Detect	200
Variance Detects	3199	Percent Non-Detects	50%
Mean Detects	61.36	SD Detects	56.56
Median Detects	43.45	CV Detects	0.922
Skewness Detects	2.117	Kurtosis Detects	4.873
Mean of Logged Detects	3.464	SD of Logged Detects	1.919

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.769	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.927	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.182	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.159	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	33.82	KM Standard Error of Mean	6.736
KM SD	49.85	95% KM (BCA) UCL	46.11
95% KM (t) UCL	45.07	95% KM (Percentile Bootstrap) UCL	45.5
95% KM (z) UCL	44.9	95% KM Bootstrap t UCL	48.83
90% KM Chebyshev UCL	54.03	95% KM Chebyshev UCL	63.18
97.5% KM Chebyshev UCL	75.88	99% KM Chebyshev UCL	100.8

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.712	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.781	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.244	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.165	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Statistics on Detected Data Only

k hat (MLE)	0.897	k star (bias corrected MLE)	0.829
Theta hat (MLE)	68.42	Theta star (bias corrected MLE)	73.98
nu hat (MLE)	53.81	nu star (bias corrected)	49.76
Mean (detects)	61.36		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	33.02
Maximum	256	Median	16.9
SD	49.98	CV	1.514
k hat (MLE)	0.22	k star (bias corrected MLE)	0.22
Theta hat (MLE)	150	Theta star (bias corrected MLE)	149.9
nu hat (MLE)	26.42	nu star (bias corrected)	26.44
Adjusted Level of Significance (β)	0.046		
Approximate Chi Square Value (26.44, α)	15.72	Adjusted Chi Square Value (26.44, β)	15.51
95% Gamma Approximate UCL (use when n>=50)	55.55	95% Gamma Adjusted UCL (use when n<50)	56.28

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	33.82	SD (KM)	49.85
Variance (KM)	2485	SE of Mean (KM)	6.736
k hat (KM)	0.46	k star (KM)	0.448
nu hat (KM)	55.21	nu star (KM)	53.79
theta hat (KM)	73.5	theta star (KM)	75.45
80% gamma percentile (KM)	55.18	90% gamma percentile (KM)	93.52
95% gamma percentile (KM)	135	99% gamma percentile (KM)	238.2

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (53.79, α)	37.94	Adjusted Chi Square Value (53.79, β)	37.61
95% Gamma Approximate KM-UCL (use when n>=50)	47.95	95% Gamma Adjusted KM-UCL (use when n<50)	48.36

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.609	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.927	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.339	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.159	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	33	Mean in Log Scale	2.038
SD in Original Scale	49.43	SD in Log Scale	2.148
95% t UCL (assumes normality of ROS data)	43.67	95% Percentile Bootstrap UCL	44.2
95% BCA Bootstrap UCL	45.37	95% Bootstrap t UCL	47.16
95% H-UCL (Log ROS)	246.3		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.305	KM Geo Mean	1.357
KM SD (logged)	3.948	95% Critical H Value (KM-Log)	7.139
KM Standard Error of Mean (logged)	0.595	95% H-UCL (KM -Log)	128762
KM SD (logged)	3.948	95% Critical H Value (KM-Log)	7.139
KM Standard Error of Mean (logged)	0.595		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	44.05	Mean in Log Scale	2.807
SD in Original Scale	50.64	SD in Log Scale	2.194
95% t UCL (Assumes normality)	54.97	95% H-Stat UCL	617

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Suggested UCL to Use

95% KM (Chebyshev) UCL 63.18

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (arsenic)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	18
Number of Detects	9	Number of Non-Detects	51
Number of Distinct Detects	9	Number of Distinct Non-Detects	9
Minimum Detect	5.8000E-4	Minimum Non-Detect	5.0000E-4
Maximum Detect	4.9	Maximum Non-Detect	2.6
Variance Detects	3.618	Percent Non-Detects	85%
Mean Detects	1.845	SD Detects	1.902
Median Detects	1.2	CV Detects	1.031
Skewness Detects	0.618	Kurtosis Detects	-1.283
Mean of Logged Detects	-1.651	SD of Logged Detects	3.799

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.868	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.188	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.311	KM Standard Error of Mean	0.137
KM SD	0.969	95% KM (BCA) UCL	0.588
95% KM (t) UCL	0.54	95% KM (Percentile Bootstrap) UCL	0.552
95% KM (z) UCL	0.536	95% KM Bootstrap t UCL	0.629
90% KM Chebyshev UCL	0.722	95% KM Chebyshev UCL	0.908
97.5% KM Chebyshev UCL	1.166	99% KM Chebyshev UCL	1.673

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.865	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.807	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.287	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.301	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.304	k star (bias corrected MLE)	0.277
Theta hat (MLE)	6.069	Theta star (bias corrected MLE)	6.667
nu hat (MLE)	5.472	nu star (bias corrected)	4.981
Mean (detects)	1.845		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	5.8000E-4	Mean	0.352
Maximum	4.9	Median	0.01
SD	0.96	CV	2.726
k hat (MLE)	0.279	k star (bias corrected MLE)	0.276
Theta hat (MLE)	1.262	Theta star (bias corrected MLE)	1.275
nu hat (MLE)	33.5	nu star (bias corrected)	33.16
Adjusted Level of Significance (β)	0.046		
Approximate Chi Square Value (33.16, α)	20.99	Adjusted Chi Square Value (33.16, β)	20.75
95% Gamma Approximate UCL (use when n>=50)	0.556	95% Gamma Adjusted UCL (use when n<50)	0.563

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ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.311	SD (KM)	0.969
Variance (KM)	0.939	SE of Mean (KM)	0.137
k hat (KM)	0.103	k star (KM)	0.109
nu hat (KM)	12.37	nu star (KM)	13.09
theta hat (KM)	3.017	theta star (KM)	2.852
80% gamma percentile (KM)	0.243	90% gamma percentile (KM)	0.856
95% gamma percentile (KM)	1.794	99% gamma percentile (KM)	4.73

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (13.09, α)	5.952	Adjusted Chi Square Value (13.09, β)	5.833
95% Gamma Approximate KM-UCL (use when n>=50)	0.684	95% Gamma Adjusted KM-UCL (use when n<50)	0.698

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.765	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.335	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.274	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.284	Mean in Log Scale	-6.465
SD in Original Scale	0.963	SD in Log Scale	3.6
95% t UCL (assumes normality of ROS data)	0.492	95% Percentile Bootstrap UCL	0.498
95% BCA Bootstrap UCL	0.563	95% Bootstrap t UCL	0.691
95% H-UCL (Log ROS)	22.44		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-5.912	KM Geo Mean	0.00271
KM SD (logged)	2.622	95% Critical H Value (KM-Log)	5.131
KM Standard Error of Mean (logged)	0.518	95% H-UCL (KM -Log)	0.485
KM SD (logged)	2.622	95% Critical H Value (KM-Log)	5.131
KM Standard Error of Mean (logged)	0.518		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.854	Mean in Log Scale	-0.8
SD in Original Scale	0.883	SD in Log Scale	1.822
95% t UCL (Assumes normality)	1.045	95% H-Stat UCL	5.599

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.54

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (barium)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	56
		Number of Missing Observations	0
Minimum	0.0093	Mean	229.8
Maximum	643	Median	198
SD	224.1	Std. Error of Mean	28.93
Coefficient of Variation	0.975	Skewness	0.337

Normal GOF Test

Shapiro Wilk Test Statistic	0.817	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk P Value	8.619E-10	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.262	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.114	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	278.2	95% Adjusted-CLT UCL (Chen-1995)	278.7
		95% Modified-t UCL (Johnson-1978)	278.4

Gamma GOF Test

A-D Test Statistic	3.71	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.822	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.222	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.122	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.473	k star (bias corrected MLE)	0.46
Theta hat (MLE)	486.3	Theta star (bias corrected MLE)	499.5
nu hat (MLE)	56.71	nu star (bias corrected)	55.21
MLE Mean (bias corrected)	229.8	MLE Sd (bias corrected)	338.8
		Approximate Chi Square Value (0.05)	39.13
Adjusted Level of Significance	0.046	Adjusted Chi Square Value	38.8

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	324.2	95% Adjusted Gamma UCL (use when n<50)	327

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.819	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk P Value	1.0036E-9	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.228	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.114	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.678	Mean of logged Data	4.081
Maximum of Logged Data	6.466	SD of logged Data	2.397

Assuming Lognormal Distribution

95% H-UCL	4505	90% Chebyshev (MVUE) UCL	2196
95% Chebyshev (MVUE) UCL	2789	97.5% Chebyshev (MVUE) UCL	3612
99% Chebyshev (MVUE) UCL	5228		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	277.4	95% Jackknife UCL	278.2
95% Standard Bootstrap UCL	277.5	95% Bootstrap-t UCL	282.2
95% Hall's Bootstrap UCL	276.2	95% Percentile Bootstrap UCL	278.6
95% BCA Bootstrap UCL	279.5		
90% Chebyshev(Mean, Sd) UCL	316.6	95% Chebyshev(Mean, Sd) UCL	355.9
97.5% Chebyshev(Mean, Sd) UCL	410.5	99% Chebyshev(Mean, Sd) UCL	517.7

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	355.9

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Result (benzene)

General Statistics

Total Number of Observations	30	Number of Distinct Observations	26
Number of Detects	19	Number of Non-Detects	11
Number of Distinct Detects	19	Number of Distinct Non-Detects	7
Minimum Detect	0.6	Minimum Non-Detect	0.09
Maximum Detect	33.2	Maximum Non-Detect	0.26
Variance Detects	167.6	Percent Non-Detects	36.67%
Mean Detects	19.57	SD Detects	12.94
Median Detects	26.4	CV Detects	0.662
Skewness Detects	-0.319	Kurtosis Detects	-1.934
Mean of Logged Detects	2.563	SD of Logged Detects	1.144

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.793	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.243	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.197	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	12.43	KM Standard Error of Mean	2.576
KM SD	13.73	95% KM (BCA) UCL	16.62
95% KM (t) UCL	16.8	95% KM (Percentile Bootstrap) UCL	16.73
95% KM (z) UCL	16.66	95% KM Bootstrap t UCL	17.34
90% KM Chebyshev UCL	20.16	95% KM Chebyshev UCL	23.66
97.5% KM Chebyshev UCL	28.52	99% KM Chebyshev UCL	38.06

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.653	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.298	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.203	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.361	k star (bias corrected MLE)	1.181
Theta hat (MLE)	14.38	Theta star (bias corrected MLE)	16.57
nu hat (MLE)	51.71	nu star (bias corrected)	44.88
Mean (detects)	19.57		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.6	Mean	13.41
Maximum	33.2	Median	5.95
SD	13.13	CV	0.979
k hat (MLE)	0.914	k star (bias corrected MLE)	0.844
Theta hat (MLE)	14.68	Theta star (bias corrected MLE)	15.88
nu hat (MLE)	54.81	nu star (bias corrected)	50.66
Adjusted Level of Significance (β)	0.041		
Approximate Chi Square Value (50.66, α)	35.32	Adjusted Chi Square Value (50.66, β)	34.58
95% Gamma Approximate UCL (use when n>=50)	19.24	95% Gamma Adjusted UCL (use when n<50)	19.65

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	12.43	SD (KM)	13.73
Variance (KM)	188.6	SE of Mean (KM)	2.576
k hat (KM)	0.819	k star (KM)	0.759
nu hat (KM)	49.11	nu star (KM)	45.53
theta hat (KM)	15.18	theta star (KM)	16.37
80% gamma percentile (KM)	20.36	90% gamma percentile (KM)	30.6
95% gamma percentile (KM)	41.08	99% gamma percentile (KM)	65.94

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (45.53, α)	31.05	Adjusted Chi Square Value (45.53, β)	30.36
95% Gamma Approximate KM-UCL (use when n>=50)	18.22	95% Gamma Adjusted KM-UCL (use when n<50)	18.63

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.794	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.296	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.197	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	12.89	Mean in Log Scale	1.719
SD in Original Scale	13.55	SD in Log Scale	1.459
95% t UCL (assumes normality of ROS data)	17.1	95% Percentile Bootstrap UCL	16.92
95% BCA Bootstrap UCL	17.21	95% Bootstrap t UCL	17.44
95% H-UCL (Log ROS)	37.51		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.741	KM Geo Mean	2.097
KM SD (logged)	2.554	95% Critical H Value (KM-Log)	4.836
KM Standard Error of Mean (logged)	0.479	95% H-UCL (KM -Log)	543
KM SD (logged)	2.554	95% Critical H Value (KM-Log)	4.836
KM Standard Error of Mean (logged)	0.479		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	12.43	Mean in Log Scale	0.763
SD in Original Scale	13.97	SD in Log Scale	2.58
95% t UCL (Assumes normality)	16.76	95% H-Stat UCL	619

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 23.66

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (bis(2-ethylhexyl) phthalate)

General Statistics

Total Number of Observations	30	Number of Distinct Observations	18
Number of Detects	4	Number of Non-Detects	26
Number of Distinct Detects	4	Number of Distinct Non-Detects	15
Minimum Detect	2.2	Minimum Non-Detect	0.33
Maximum Detect	39.2	Maximum Non-Detect	6
Variance Detects	327.4	Percent Non-Detects	86.67%
Mean Detects	12.08	SD Detects	18.09
Median Detects	3.45	CV Detects	1.498
Skewness Detects	1.994	Kurtosis Detects	3.979
Mean of Logged Detects	1.733	SD of Logged Detects	1.308

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.659	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.432	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.375	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.942	KM Standard Error of Mean	1.472
KM SD	6.975	95% KM (BCA) UCL	N/A
95% KM (t) UCL	4.444	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	4.364	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	6.359	95% KM Chebyshev UCL	8.36
97.5% KM Chebyshev UCL	11.14	99% KM Chebyshev UCL	16.59

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.753	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.67	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.444	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.405	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.785	k star (bias corrected MLE)	0.363
Theta hat (MLE)	15.38	Theta star (bias corrected MLE)	33.27
nu hat (MLE)	6.282	nu star (bias corrected)	2.904
Mean (detects)	12.08		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.619
Maximum	39.2	Median	0.01
SD	7.16	CV	4.423
k hat (MLE)	0.177	k star (bias corrected MLE)	0.181
Theta hat (MLE)	9.154	Theta star (bias corrected MLE)	8.925
nu hat (MLE)	10.61	nu star (bias corrected)	10.88
Adjusted Level of Significance (β)	0.041		
Approximate Chi Square Value (10.88, α)	4.5	Adjusted Chi Square Value (10.88, β)	4.265
95% Gamma Approximate UCL (use when n>=50)	3.914	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.942	SD (KM)	6.975
Variance (KM)	48.65	SE of Mean (KM)	1.472
k hat (KM)	0.0775	k star (KM)	0.092
nu hat (KM)	4.65	nu star (KM)	5.518
theta hat (KM)	25.06	theta star (KM)	21.11
80% gamma percentile (KM)	1.185	90% gamma percentile (KM)	4.976
95% gamma percentile (KM)	11.31	99% gamma percentile (KM)	32.15

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (5.52, α)	1.399	Adjusted Chi Square Value (5.52, β)	1.284
95% Gamma Approximate KM-UCL (use when n>=50)	7.66	95% Gamma Adjusted KM-UCL (use when n<50)	8.345

95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.768	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.393	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.375	Detected Data Not Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.671	Mean in Log Scale	-2.5
SD in Original Scale	7.148	SD in Log Scale	2.009
95% t UCL (assumes normality of ROS data)	3.888	95% Percentile Bootstrap UCL	4.213
95% BCA Bootstrap UCL	5.643	95% Bootstrap t UCL	18.99
95% H-UCL (Log ROS)	2.693		

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-0.691	KM Geo Mean	0.501
KM SD (logged)	1.076	95% Critical H Value (KM-Log)	2.574
KM Standard Error of Mean (logged)	0.235	95% H-UCL (KM -Log)	1.494
KM SD (logged)	1.076	95% Critical H Value (KM-Log)	2.574
KM Standard Error of Mean (logged)	0.235		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.287	Mean in Log Scale	-0.395
SD in Original Scale	7.058	SD in Log Scale	1.278
95% t UCL (Assumes normality)	4.476	95% H-Stat UCL	2.994

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

KM H-UCL 1.494

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (cadmium)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	14
Number of Detects	5	Number of Non-Detects	55
Number of Distinct Detects	5	Number of Distinct Non-Detects	9
Minimum Detect	1.6	Minimum Non-Detect	4.0000E-4
Maximum Detect	2.6	Maximum Non-Detect	3
Variance Detects	0.152	Percent Non-Detects	91.67%
Mean Detects	2.02	SD Detects	0.39
Median Detects	1.9	CV Detects	0.193
Skewness Detects	0.805	Kurtosis Detects	8.6565E-4
Mean of Logged Detects	0.689	SD of Logged Detects	0.188

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.953	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.221	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.343	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.195	KM Standard Error of Mean	0.0938
KM SD	0.605	95% KM (BCA) UCL	0.355
95% KM (t) UCL	0.351	95% KM (Percentile Bootstrap) UCL	0.354
95% KM (z) UCL	0.349	95% KM Bootstrap t UCL	0.256
90% KM Chebyshev UCL	0.476	95% KM Chebyshev UCL	0.604
97.5% KM Chebyshev UCL	0.78	99% KM Chebyshev UCL	1.128

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.228	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.678	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.219	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.357	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	34.95	k star (bias corrected MLE)	14.11
Theta hat (MLE)	0.0578	Theta star (bias corrected MLE)	0.143
nu hat (MLE)	349.5	nu star (bias corrected)	141.1
Mean (detects)	2.02		

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.371
Maximum	2.6	Median	0.0298
SD	0.605	CV	1.63
k hat (MLE)	0.378	k star (bias corrected MLE)	0.371
Theta hat (MLE)	0.98	Theta star (bias corrected MLE)	1.001
nu hat (MLE)	45.4	nu star (bias corrected)	44.46
Adjusted Level of Significance (β)	0.046		
Approximate Chi Square Value (44.46, α)	30.17	Adjusted Chi Square Value (44.46, β)	29.88
95% Gamma Approximate UCL (use when n>=50)	0.547	95% Gamma Adjusted UCL (use when n<50)	0.552

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.195	SD (KM)	0.605
Variance (KM)	0.366	SE of Mean (KM)	0.0938
k hat (KM)	0.103	k star (KM)	0.109
nu hat (KM)	12.41	nu star (KM)	13.12
theta hat (KM)	1.882	theta star (KM)	1.78
80% gamma percentile (KM)	0.153	90% gamma percentile (KM)	0.536
95% gamma percentile (KM)	1.122	99% gamma percentile (KM)	2.955

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (13.12, α)	5.975	Adjusted Chi Square Value (13.12, β)	5.856
95% Gamma Approximate KM-UCL (use when n>=50)	0.427	95% Gamma Adjusted KM-UCL (use when n<50)	0.436

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.974	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.198	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.343	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.776	Mean in Log Scale	-0.398
SD in Original Scale	0.472	SD in Log Scale	0.526
95% t UCL (assumes normality of ROS data)	0.878	95% Percentile Bootstrap UCL	0.871
95% BCA Bootstrap UCL	0.887	95% Bootstrap t UCL	0.901
95% H-UCL (Log ROS)	0.878		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-7.006	KM Geo Mean	9.0687E-4
KM SD (logged)	2.51	95% Critical H Value (KM-Log)	4.939
KM Standard Error of Mean (logged)	0.389	95% H-UCL (KM -Log)	0.106
KM SD (logged)	2.51	95% Critical H Value (KM-Log)	4.939
KM Standard Error of Mean (logged)	0.389		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.53	Mean in Log Scale	-1.615
SD in Original Scale	0.649	SD in Log Scale	2.104
95% t UCL (Assumes normality)	0.67	95% H-Stat UCL	5.554

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.351

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Result (chlorobenzene)

General Statistics

Total Number of Observations	30	Number of Distinct Observations	25
Number of Detects	19	Number of Non-Detects	11
Number of Distinct Detects	18	Number of Distinct Non-Detects	7
Minimum Detect	0.49	Minimum Non-Detect	0.14
Maximum Detect	23.8	Maximum Non-Detect	0.39
Variance Detects	55.28	Percent Non-Detects	36.67%
Mean Detects	7.678	SD Detects	7.435
Median Detects	6.8	CV Detects	0.968
Skewness Detects	0.843	Kurtosis Detects	-0.35
Mean of Logged Detects	1.352	SD of Logged Detects	1.37

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.865	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.218	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.197	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	4.914	KM Standard Error of Mean	1.277
KM SD	6.809	95% KM (BCA) UCL	7.226
95% KM (t) UCL	7.085	95% KM (Percentile Bootstrap) UCL	7.061
95% KM (z) UCL	7.015	95% KM Bootstrap t UCL	7.425
90% KM Chebyshev UCL	8.746	95% KM Chebyshev UCL	10.48
97.5% KM Chebyshev UCL	12.89	99% KM Chebyshev UCL	17.62

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.765	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.775	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.21	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.205	Detected Data Not Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.857	k star (bias corrected MLE)	0.756
Theta hat (MLE)	8.964	Theta star (bias corrected MLE)	10.15
nu hat (MLE)	32.55	nu star (bias corrected)	28.75
Mean (detects)	7.678		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	4.867
Maximum	23.8	Median	0.905
SD	6.96	CV	1.43
k hat (MLE)	0.288	k star (bias corrected MLE)	0.281
Theta hat (MLE)	16.93	Theta star (bias corrected MLE)	17.32
nu hat (MLE)	17.25	nu star (bias corrected)	16.86
Adjusted Level of Significance (β)	0.041		
Approximate Chi Square Value (16.86, α)	8.572	Adjusted Chi Square Value (16.86, β)	8.232
95% Gamma Approximate UCL (use when n>=50)	9.572	95% Gamma Adjusted UCL (use when n<50)	9.968

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4.914	SD (KM)	6.809
Variance (KM)	46.37	SE of Mean (KM)	1.277
k hat (KM)	0.521	k star (KM)	0.491
nu hat (KM)	31.25	nu star (KM)	29.46
theta hat (KM)	9.435	theta star (KM)	10.01
80% gamma percentile (KM)	8.064	90% gamma percentile (KM)	13.35
95% gamma percentile (KM)	19	99% gamma percentile (KM)	32.93

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (29.46, α)	18.07	Adjusted Chi Square Value (29.46, β)	17.55
95% Gamma Approximate KM-UCL (use when n>=50)	8.012	95% Gamma Adjusted KM-UCL (use when n<50)	8.248

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.883	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.223	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.197	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	4.928	Mean in Log Scale	0.185
SD in Original Scale	6.916	SD in Log Scale	1.917
95% t UCL (assumes normality of ROS data)	7.073	95% Percentile Bootstrap UCL	7.007
95% BCA Bootstrap UCL	7.438	95% Bootstrap t UCL	7.634
95% H-UCL (Log ROS)	29.27		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	0.135	KM Geo Mean	1.145
KM SD (logged)	1.919	95% Critical H Value (KM-Log)	3.807
KM Standard Error of Mean (logged)	0.36	95% H-UCL (KM -Log)	28.03
KM SD (logged)	1.919	95% Critical H Value (KM-Log)	3.807
KM Standard Error of Mean (logged)	0.36		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	4.906	Mean in Log Scale	0.0597
SD in Original Scale	6.932	SD in Log Scale	2.042
95% t UCL (Assumes normality)	7.056	95% H-Stat UCL	38.94

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

mma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	8.248

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (chromium)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	23
Number of Detects	15	Number of Non-Detects	45
Number of Distinct Detects	12	Number of Distinct Non-Detects	12
Minimum Detect	7.6000E-4	Minimum Non-Detect	5.0000E-4
Maximum Detect	10.2	Maximum Non-Detect	10
Variance Detects	5.808	Percent Non-Detects	75%
Mean Detects	3.094	SD Detects	2.41
Median Detects	3.2	CV Detects	0.779
Skewness Detects	1.732	Kurtosis Detects	5.235
Mean of Logged Detects	0.189	SD of Logged Detects	2.586

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.829	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.205	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.22	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Approximate Normal at 5% Significance Level

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.848	KM Standard Error of Mean	0.248
KM SD	1.804	95% KM (BCA) UCL	1.31
95% KM (t) UCL	1.263	95% KM (Percentile Bootstrap) UCL	1.288
95% KM (z) UCL	1.256	95% KM Bootstrap t UCL	1.425
90% KM Chebyshev UCL	1.593	95% KM Chebyshev UCL	1.93
97.5% KM Chebyshev UCL	2.399	99% KM Chebyshev UCL	3.319

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.921	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.34	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.232	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.649	k star (bias corrected MLE)	0.564
Theta hat (MLE)	4.764	Theta star (bias corrected MLE)	5.486
nu hat (MLE)	19.48	nu star (bias corrected)	16.92
Mean (detects)	3.094		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.6000E-4	Mean	0.886
Maximum	10.2	Median	0.01
SD	1.767	CV	1.994
k hat (MLE)	0.267	k star (bias corrected MLE)	0.265
Theta hat (MLE)	3.321	Theta star (bias corrected MLE)	3.35
nu hat (MLE)	32.02	nu star (bias corrected)	31.76
Adjusted Level of Significance (β)	0.046		
Approximate Chi Square Value (31.76, α)	19.88	Adjusted Chi Square Value (31.76, β)	19.65
95% Gamma Approximate UCL (use when n>=50)	1.416	95% Gamma Adjusted UCL (use when n<50)	1.433

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.848	SD (KM)	1.804
Variance (KM)	3.254	SE of Mean (KM)	0.248
k hat (KM)	0.221	k star (KM)	0.221
nu hat (KM)	26.5	nu star (KM)	26.51
theta hat (KM)	3.838	theta star (KM)	3.837
80% gamma percentile (KM)	1.172	90% gamma percentile (KM)	2.561
95% gamma percentile (KM)	4.252	99% gamma percentile (KM)	8.837

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (26.51, α)	15.77	Adjusted Chi Square Value (26.51, β)	15.57
95% Gamma Approximate KM-UCL (use when n>=50)	1.425	95% Gamma Adjusted KM-UCL (use when n<50)	1.443

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.609	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.377	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.22	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.8	Mean in Log Scale	-3.582
SD in Original Scale	1.78	SD in Log Scale	3.019
95% t UCL (assumes normality of ROS data)	1.184	95% Percentile Bootstrap UCL	1.192
95% BCA Bootstrap UCL	1.325	95% Bootstrap t UCL	1.357
95% H-UCL (Log ROS)	25.05		

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-4.852	KM Geo Mean	0.00782
KM SD (logged)	3.552	95% Critical H Value (KM-Log)	6.528
KM Standard Error of Mean (logged)	0.672	95% H-UCL (KM -Log)	87.76
KM SD (logged)	3.552	95% Critical H Value (KM-Log)	6.528
KM Standard Error of Mean (logged)	0.672		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.518	Mean in Log Scale	-0.575
SD in Original Scale	1.954	SD in Log Scale	2.071
95% t UCL (Assumes normality)	1.939	95% H-Stat UCL	14.16

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 1.263

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (cobalt)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	20
Number of Detects	11	Number of Non-Detects	49
Number of Distinct Detects	11	Number of Distinct Non-Detects	10
Minimum Detect	0.001	Minimum Non-Detect	5.0000E-4
Maximum Detect	3.3	Maximum Non-Detect	50
Variance Detects	1.394	Percent Non-Detects	81.67%
Mean Detects	1.722	SD Detects	1.181
Median Detects	1.5	CV Detects	0.686
Skewness Detects	-0.247	Kurtosis Detects	-1.339
Mean of Logged Detects	-0.694	SD of Logged Detects	2.996

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.922	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.172	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.251	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.357	KM Standard Error of Mean	0.121
KM SD	0.849	95% KM (BCA) UCL	0.589
95% KM (t) UCL	0.559	95% KM (Percentile Bootstrap) UCL	0.569
95% KM (z) UCL	0.555	95% KM Bootstrap t UCL	0.588
90% KM Chebyshev UCL	0.719	95% KM Chebyshev UCL	0.883
97.5% KM Chebyshev UCL	1.111	99% KM Chebyshev UCL	1.559

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.599	**Anderson-Darling GOF Test**	
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.34	**Kolmogorov-Smirnov GOF**	
5% K-S Critical Value	0.269	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.511	k star (bias corrected MLE)	0.433
Theta hat (MLE)	3.367	Theta star (bias corrected MLE)	3.981
nu hat (MLE)	11.25	nu star (bias corrected)	9.517
Mean (detects)	1.722		

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.001	Mean	0.407
Maximum	3.3	Median	0.01
SD	0.815	CV	2.004
k hat (MLE)	0.314	k star (bias corrected MLE)	0.31
Theta hat (MLE)	1.294	Theta star (bias corrected MLE)	1.313
nu hat (MLE)	37.71	nu star (bias corrected)	37.16
Adjusted Level of Significance (β)	0.046		
Approximate Chi Square Value (37.16, α)	24.2	Adjusted Chi Square Value (37.16, β)	23.95
95% Gamma Approximate UCL (use when n>=50)	0.624	95% Gamma Adjusted UCL (use when n<50)	0.631

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.357	SD (KM)	0.849
Variance (KM)	0.72	SE of Mean (KM)	0.121
k hat (KM)	0.177	k star (KM)	0.179
nu hat (KM)	21.19	nu star (KM)	21.46
theta hat (KM)	2.02	theta star (KM)	1.994
80% gamma percentile (KM)	0.441	90% gamma percentile (KM)	1.075
95% gamma percentile (KM)	1.89	99% gamma percentile (KM)	4.175

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (21.46, α)	11.93	Adjusted Chi Square Value (21.46, β)	11.76
95% Gamma Approximate KM-UCL (use when n>=50)	0.641	95% Gamma Adjusted KM-UCL (use when n<50)	0.651

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.628	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.352	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.251	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.322	Mean in Log Scale	-6.097
SD in Original Scale	0.827	SD in Log Scale	3.746
95% t UCL (assumes normality of ROS data)	0.5	95% Percentile Bootstrap UCL	0.5
95% BCA Bootstrap UCL	0.532	95% Bootstrap t UCL	0.561
95% H-UCL (Log ROS)	70.1		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-5.736	KM Geo Mean	0.00323
KM SD (logged)	3.005	95% Critical H Value (KM-Log)	5.688
KM Standard Error of Mean (logged)	0.502	95% H-UCL (KM -Log)	2.727
KM SD (logged)	3.005	95% Critical H Value (KM-Log)	5.688
KM Standard Error of Mean (logged)	0.502		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2.292	Mean in Log Scale	-0.859
SD in Original Scale	6.163	SD in Log Scale	2.161
95% t UCL (Assumes normality)	3.622	95% H-Stat UCL	14.16

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.559

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Result (cyanide, total)

General Statistics

Total Number of Observations	13	Number of Distinct Observations	6
Number of Detects	3	Number of Non-Detects	10
Number of Distinct Detects	2	Number of Distinct Non-Detects	4
Minimum Detect	3.8	Minimum Non-Detect	0.007
Maximum Detect	3.9	Maximum Non-Detect	10
Variance Detects	0.00333	Percent Non-Detects	76.92%
Mean Detects	3.833	SD Detects	0.0577
Median Detects	3.8	CV Detects	0.0151
Skewness Detects	1.732	Kurtosis Detects	N/A
Mean of Logged Detects	1.344	SD of Logged Detects	0.015

Warning: Data set has only 3 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	1.647	KM Standard Error of Mean	0.877
KM SD	1.894	95% KM (BCA) UCL	N/A
95% KM (t) UCL	3.209	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	3.089	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	4.277	95% KM Chebyshev UCL	5.468
97.5% KM Chebyshev UCL	7.122	99% KM Chebyshev UCL	10.37

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	6650	k star (bias corrected MLE)	N/A
Theta hat (MLE)	5.7640E-4	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	39903	nu star (bias corrected)	N/A
Mean (detects)	3.833		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	3.58	Mean	3.723
Maximum	3.9	Median	3.698
SD	0.0957	CV	0.0257
k hat (MLE)	1647	k star (bias corrected MLE)	1267
Theta hat (MLE)	0.00226	Theta star (bias corrected MLE)	0.00294
nu hat (MLE)	42821	nu star (bias corrected)	32940
Adjusted Level of Significance (β)	0.0301		
Approximate Chi Square Value (N/A, α)	32519	Adjusted Chi Square Value (N/A, β)	32460
95% Gamma Approximate UCL (use when n>=50)	3.772	95% Gamma Adjusted UCL (use when n<50)	N/A

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	1.647	SD (KM)	1.894
Variance (KM)	3.586	SE of Mean (KM)	0.877
k hat (KM)	0.756	k star (KM)	0.633
nu hat (KM)	19.66	nu star (KM)	16.46
theta hat (KM)	2.178	theta star (KM)	2.602
80% gamma percentile (KM)	2.713	90% gamma percentile (KM)	4.232
95% gamma percentile (KM)	5.813	99% gamma percentile (KM)	9.619

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (16.46, α)	8.286	Adjusted Chi Square Value (16.46, β)	7.473
95% Gamma Approximate KM-UCL (use when n>=50)	3.271	95% Gamma Adjusted KM-UCL (use when n<50)	3.627

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.75	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.767	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.385	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.726	Mean in Log Scale	1.315
SD in Original Scale	0.0934	SD in Log Scale	0.025
95% t UCL (assumes normality of ROS data)	3.772	95% Percentile Bootstrap UCL	3.768
95% BCA Bootstrap UCL	3.765	95% Bootstrap t UCL	3.773
95% H-UCL (Log ROS)	N/A		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.259	KM Geo Mean	0.104
KM SD (logged)	3.12	95% Critical H Value (KM-Log)	7.209
KM Standard Error of Mean (logged)	1.444	95% H-UCL (KM -Log)	8981
KM SD (logged)	3.12	95% Critical H Value (KM-Log)	7.209
KM Standard Error of Mean (logged)	1.444		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	3.193	Mean in Log Scale	0.563
SD in Original Scale	1.805	SD in Log Scale	1.974
95% t UCL (Assumes normality)	4.085	95% H-Stat UCL	183.7

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL 3.209

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test

When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (iron)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	56
Number of Detects	57	Number of Non-Detects	3
Number of Distinct Detects	54	Number of Distinct Non-Detects	2
Minimum Detect	0.47	Minimum Non-Detect	0.01
Maximum Detect	169000	Maximum Non-Detect	143
Variance Detects	3.345E+9	Percent Non-Detects	5%
Mean Detects	51635	SD Detects	57834
Median Detects	22400	CV Detects	1.12
Skewness Detects	0.59	Kurtosis Detects	-1.207
Mean of Logged Detects	8.39	SD of Logged Detects	3.356

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.794	**Normal GOF Test on Detected Observations Only**	
5% Shapiro Wilk P Value	2.106E-10	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.26	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.117	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	49055	KM Standard Error of Mean	7423
KM SD	56994	95% KM (BCA) UCL	59674
95% KM (t) UCL	61460	95% KM (Percentile Bootstrap) UCL	61073
95% KM (z) UCL	61265	95% KM Bootstrap t UCL	62394
90% KM Chebyshev UCL	71325	95% KM Chebyshev UCL	81412
97.5% KM Chebyshev UCL	95413	99% KM Chebyshev UCL	122916

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.269	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.872	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.226	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.128	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.283	k star (bias corrected MLE)	0.28
Theta hat (MLE)	182584	Theta star (bias corrected MLE)	184666
nu hat (MLE)	32.24	nu star (bias corrected)	31.88
Mean (detects)	51635		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.47	Mean	50140
Maximum	169000	Median	21739
SD	56727	CV	1.131
k hat (MLE)	0.294	k star (bias corrected MLE)	0.29
Theta hat (MLE)	170513	Theta star (bias corrected MLE)	172621
nu hat (MLE)	35.29	nu star (bias corrected)	34.86
Adjusted Level of Significance (β)	0.046		
Approximate Chi Square Value (34.86, α)	22.35	Adjusted Chi Square Value (34.86, β)	22.1
95% Gamma Approximate UCL (use when n>=50)	78197	95% Gamma Adjusted UCL (use when n<50)	79071

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	49055	SD (KM)	56994
Variance (KM)	3.248E+9	SE of Mean (KM)	7423
k hat (KM)	0.741	k star (KM)	0.715
nu hat (KM)	88.9	nu star (KM)	85.79
theta hat (KM)	66218	theta star (KM)	68620
80% gamma percentile (KM)	80577	90% gamma percentile (KM)	122528
95% gamma percentile (KM)	165708	99% gamma percentile (KM)	268606

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (85.79, α)	65.44	Adjusted Chi Square Value (85.79, β)	65
95% Gamma Approximate KM-UCL (use when n>=50)	64310	95% Gamma Adjusted KM-UCL (use when n<50)	64742

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Approximate Test Statistic	0.815	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	2.2947E-9	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.229	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.117	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	49055	Mean in Log Scale	8.07
SD in Original Scale	57475	SD in Log Scale	3.581
95% t UCL (assumes normality of ROS data)	61454	95% Percentile Bootstrap UCL	60845
95% BCA Bootstrap UCL	62125	95% Bootstrap t UCL	61810
95% H-UCL (Log ROS)	41657021		

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	7.869	KM Geo Mean	2614
KM SD (logged)	4.063	95% Critical H Value (KM-Log)	7.316
KM Standard Error of Mean (logged)	0.532	95% H-UCL (KM -Log)	4.808E+8
KM SD (logged)	4.063	95% Critical H Value (KM-Log)	7.316
KM Standard Error of Mean (logged)	0.532		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	49055	Mean in Log Scale	7.865
SD in Original Scale	57475	SD in Log Scale	4.129
95% t UCL (Assumes normality)	61454	95% H-Stat UCL	7.078E+8

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL 95413

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (lead)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	26
Number of Detects	22	Number of Non-Detects	38
Number of Distinct Detects	21	Number of Distinct Non-Detects	8
Minimum Detect	0.0045	Minimum Non-Detect	2.0000E-4
Maximum Detect	203	Maximum Non-Detect	3
Variance Detects	2444	Percent Non-Detects	63.33%
Mean Detects	19.16	SD Detects	49.44
Median Detects	2.2	CV Detects	2.581
Skewness Detects	3.263	Kurtosis Detects	10.32
Mean of Logged Detects	1.009	SD of Logged Detects	2.152

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.42	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.411	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.184	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	7.24	KM Standard Error of Mean	4.047
KM SD	30.62	95% KM (BCA) UCL	15.49
95% KM (t) UCL	14	95% KM (Percentile Bootstrap) UCL	14.6
95% KM (z) UCL	13.9	95% KM Bootstrap t UCL	54.33
90% KM Chebyshev UCL	19.38	95% KM Chebyshev UCL	24.88
97.5% KM Chebyshev UCL	32.51	99% KM Chebyshev UCL	47.51

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.918	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.838	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.229	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.2	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.347	k star (bias corrected MLE)	0.33
Theta hat (MLE)	55.28	Theta star (bias corrected MLE)	58.12
nu hat (MLE)	15.25	nu star (bias corrected)	14.5
Mean (detects)	19.16		

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0045	Mean	7.03
Maximum	203	Median	0.01
SD	30.93	CV	4.399
k hat (MLE)	0.168	k star (bias corrected MLE)	0.171
Theta hat (MLE)	41.83	Theta star (bias corrected MLE)	41.17
nu hat (MLE)	20.17	nu star (bias corrected)	20.49
Adjusted Level of Significance (β)	0.046		
Approximate Chi Square Value (20.49, α)	11.22	Adjusted Chi Square Value (20.49, β)	11.05
95% Gamma Approximate UCL (use when n>=50)	12.85	95% Gamma Adjusted UCL (use when n<50)	13.04

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	7.24	SD (KM)	30.62
Variance (KM)	937.8	SE of Mean (KM)	4.047
k hat (KM)	0.0559	k star (KM)	0.0642
nu hat (KM)	6.707	nu star (KM)	7.705
theta hat (KM)	129.5	theta star (KM)	112.8
80% gamma percentile (KM)	2.099	90% gamma percentile (KM)	14.52
95% gamma percentile (KM)	41.12	99% gamma percentile (KM)	141.8

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.70, α)	2.565	Adjusted Chi Square Value (7.70, β)	2.493
95% Gamma Approximate KM-UCL (use when n>=50)	21.74	95% Gamma Adjusted KM-UCL (use when n<50)	22.38

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.905	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.152	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.184	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	7.13	Mean in Log Scale	-1.505
SD in Original Scale	30.9	SD in Log Scale	2.695
95% t UCL (assumes normality of ROS data)	13.8	95% Percentile Bootstrap UCL	14.15
95% BCA Bootstrap UCL	17.38	95% Bootstrap t UCL	58.5
95% H-UCL (Log ROS)	52.85		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.598	KM Geo Mean	0.0745
KM SD (logged)	4.257	95% Critical H Value (KM-Log)	7.617
KM Standard Error of Mean (logged)	0.904	95% H-UCL (KM -Log)	43654
KM SD (logged)	4.257	95% Critical H Value (KM-Log)	7.617
KM Standard Error of Mean (logged)	0.904		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	7.49	Mean in Log Scale	-0.146
SD in Original Scale	30.82	SD in Log Scale	2.261
95% t UCL (Assumes normality)	14.14	95% H-Stat UCL	40.3

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	24.88

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Result (manganese)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	57
		Number of Missing Observations	0
Minimum	0.017	Mean	995.4
Maximum	2900	Median	660.5
SD	1084	Std. Error of Mean	140
Coefficient of Variation	1.089	Skewness	0.53

Normal GOF Test

Shapiro Wilk Test Statistic	0.769	**Shapiro Wilk GOF Test**
5% Shapiro Wilk P Value	2.576E-12	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.235	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.114	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	1229	95% Adjusted-CLT UCL (Chen-1995)	1236
		95% Modified-t UCL (Johnson-1978)	1231

Gamma GOF Test

A-D Test Statistic	3.52	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.852	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.184	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.124	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.347	k star (bias corrected MLE)	0.34
Theta hat (MLE)	2871	Theta star (bias corrected MLE)	2924
nu hat (MLE)	41.6	nu star (bias corrected)	40.86
MLE Mean (bias corrected)	995.4	MLE Sd (bias corrected)	1706
		Approximate Chi Square Value (0.05)	27.21
Adjusted Level of Significance	0.046	Adjusted Chi Square Value	26.93

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1495	95% Adjusted Gamma UCL (use when n<50)	1510

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.842	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk P Value	1.8151E-8	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.231	**Lilliefors Lognormal GOF Test**
5% Lilliefors Critical Value	0.114	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-4.075	Mean of logged Data	4.961
Maximum of Logged Data	7.972	SD of logged Data	2.912

Assuming Lognormal Distribution

95% H-UCL	81726	90% Chebyshev (MVUE) UCL	20730
95% Chebyshev (MVUE) UCL	26846	97.5% Chebyshev (MVUE) UCL	35335
99% Chebyshev (MVUE) UCL	52010		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	1226	95% Jackknife UCL	1229
95% Standard Bootstrap UCL	1221	95% Bootstrap-t UCL	1247
95% Hall's Bootstrap UCL	1227	95% Percentile Bootstrap UCL	1231
95% BCA Bootstrap UCL	1249		
90% Chebyshev(Mean, Sd) UCL	1415	95% Chebyshev(Mean, Sd) UCL	1606
97.5% Chebyshev(Mean, Sd) UCL	1870	99% Chebyshev(Mean, Sd) UCL	2388

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Suggested UCL to Use

97.5% Chebyshev (Mean, Sd) UCL 1870

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (naphthalene)

General Statistics

Total Number of Observations	30	Number of Distinct Observations	25
Number of Detects	18	Number of Non-Detects	12
Number of Distinct Detects	17	Number of Distinct Non-Detects	8
Minimum Detect	0.293	Minimum Non-Detect	0.016
Maximum Detect	8.3	Maximum Non-Detect	0.83
Variance Detects	6.145	Percent Non-Detects	40%
Mean Detects	3.492	SD Detects	2.479
Median Detects	2.905	CV Detects	0.71
Skewness Detects	0.367	Kurtosis Detects	-1.014
Mean of Logged Detects	0.888	SD of Logged Detects	1.006

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.94	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.897	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.148	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.202	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.116	KM Standard Error of Mean	0.473
KM SD	2.516	95% KM (BCA) UCL	2.925
95% KM (t) UCL	2.92	95% KM (Percentile Bootstrap) UCL	2.888
95% KM (z) UCL	2.894	95% KM Bootstrap t UCL	3.04
90% KM Chebyshev UCL	3.535	95% KM Chebyshev UCL	4.177
97.5% KM Chebyshev UCL	5.069	99% KM Chebyshev UCL	6.822

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.389	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.756	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.148	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.207	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.524	k star (bias corrected MLE)	1.307
Theta hat (MLE)	2.292	Theta star (bias corrected MLE)	2.672
nu hat (MLE)	54.85	nu star (bias corrected)	47.04
Mean (detects)	3.492		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.099
Maximum	8.3	Median	0.765
SD	2.571	CV	1.225
k hat (MLE)	0.333	k star (bias corrected MLE)	0.322
Theta hat (MLE)	6.301	Theta star (bias corrected MLE)	6.518
nu hat (MLE)	19.99	nu star (bias corrected)	19.33
Adjusted Level of Significance (β)	0.041		
Approximate Chi Square Value (19.33, α)	10.36	Adjusted Chi Square Value (19.33, β)	9.978
95% Gamma Approximate UCL (use when n>=50)	3.918	95% Gamma Adjusted UCL (use when n<50)	4.067

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.116	SD (KM)	2.516
Variance (KM)	6.33	SE of Mean (KM)	0.473
k hat (KM)	0.707	k star (KM)	0.659
nu hat (KM)	42.44	nu star (KM)	39.53
theta hat (KM)	2.991	theta star (KM)	3.212
80% gamma percentile (KM)	3.484	90% gamma percentile (KM)	5.387
95% gamma percentile (KM)	7.362	99% gamma percentile (KM)	12.1

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (39.53, α)	26.13	Adjusted Chi Square Value (39.53, β)	25.5
95% Gamma Approximate KM-UCL (use when n>=50)	3.202	95% Gamma Adjusted KM-UCL (use when n<50)	3.281

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.913	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.897	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.162	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.202	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.204	Mean in Log Scale	-0.0161
SD in Original Scale	2.486	SD in Log Scale	1.386
95% t UCL (assumes normality of ROS data)	2.975	95% Percentile Bootstrap UCL	2.939
95% BCA Bootstrap UCL	3.052	95% Bootstrap t UCL	3.118
95% H-UCL (Log ROS)	5.563		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.014	KM Geo Mean	0.363
KM SD (logged)	2.514	95% Critical H Value (KM-Log)	4.77
KM Standard Error of Mean (logged)	0.486	95% H-UCL (KM -Log)	79.35
KM SD (logged)	2.514	95% Critical H Value (KM-Log)	4.77
KM Standard Error of Mean (logged)	0.486		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	2.143	Mean in Log Scale	-0.782
SD in Original Scale	2.537	SD in Log Scale	2.46
95% t UCL (Assumes normality)	2.93	95% H-Stat UCL	79.93

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	2.92

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (vanadium)

General Statistics

Total Number of Observations	60	Number of Distinct Observations	28
Number of Detects	22	Number of Non-Detects	38
Number of Distinct Detects	21	Number of Distinct Non-Detects	7
Minimum Detect	8.4000E-4	Minimum Non-Detect	0.43
Maximum Detect	25.7	Maximum Non-Detect	50
Variance Detects	45.53	Percent Non-Detects	63.33%
Mean Detects	6.664	SD Detects	6.748
Median Detects	4.9	CV Detects	1.013
Skewness Detects	1.664	Kurtosis Detects	2.603
Mean of Logged Detects	0.651	SD of Logged Detects	2.93

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.816	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.243	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.184	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	2.684	KM Standard Error of Mean	0.73
KM SD	5.289	95% KM (BCA) UCL	3.905
95% KM (t) UCL	3.904	95% KM (Percentile Bootstrap) UCL	3.931
95% KM (z) UCL	3.885	95% KM Bootstrap t UCL	4.34
90% KM Chebyshev UCL	4.875	95% KM Chebyshev UCL	5.867
97.5% KM Chebyshev UCL	7.245	99% KM Chebyshev UCL	9.951

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.495	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.804	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.235	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.196	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.509	k star (bias corrected MLE)	0.469
Theta hat (MLE)	13.11	Theta star (bias corrected MLE)	14.19
nu hat (MLE)	22.37	nu star (bias corrected)	20.66
Mean (detects)	6.664		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	8.4000E-4	Mean	2.605
Maximum	25.7	Median	0.01
SD	5.159	CV	1.98
k hat (MLE)	0.219	k star (bias corrected MLE)	0.22
Theta hat (MLE)	11.87	Theta star (bias corrected MLE)	11.86
nu hat (MLE)	26.33	nu star (bias corrected)	26.35
Adjusted Level of Significance (β)	0.046		
Approximate Chi Square Value (26.35, α)	15.65	Adjusted Chi Square Value (26.35, β)	15.45
95% Gamma Approximate UCL (use when n>=50)	4.386	95% Gamma Adjusted UCL (use when n<50)	4.444

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	2.684	SD (KM)	5.289
Variance (KM)	27.97	SE of Mean (KM)	0.73
k hat (KM)	0.258	k star (KM)	0.256
nu hat (KM)	30.91	nu star (KM)	30.69
theta hat (KM)	10.42	theta star (KM)	10.49
80% gamma percentile (KM)	3.929	90% gamma percentile (KM)	8.043
95% gamma percentile (KM)	12.9	99% gamma percentile (KM)	25.8

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (30.69, α)	19.04	Adjusted Chi Square Value (30.69, β)	18.81
95% Gamma Approximate KM-UCL (use when n>=50)	4.327	95% Gamma Adjusted KM-UCL (use when n<50)	4.379

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.665	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.339	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.184	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.53	Mean in Log Scale	-2.33
SD in Original Scale	5.141	SD in Log Scale	3.31
95% t UCL (assumes normality of ROS data)	3.64	95% Percentile Bootstrap UCL	3.652
95% BCA Bootstrap UCL	3.889	95% Bootstrap t UCL	4.011
95% H-UCL (Log ROS)	330.2		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-3.417	KM Geo Mean	0.0328
KM SD (logged)	3.94	95% Critical H Value (KM-Log)	7.128
KM Standard Error of Mean (logged)	0.695	95% H-UCL (KM -Log)	2991
KM SD (logged)	3.94	95% Critical H Value (KM-Log)	7.128
KM Standard Error of Mean (logged)	0.695		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.801	Mean in Log Scale	0.0544
SD in Original Scale	7.904	SD in Log Scale	2.146
95% t UCL (Assumes normality)	6.506	95% H-Stat UCL	33.62

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	7.245

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (vinyl chloride)

General Statistics

Total Number of Observations	30	Number of Distinct Observations	8
Number of Detects	2	Number of Non-Detects	28
Number of Distinct Detects	2	Number of Distinct Non-Detects	6
Minimum Detect	0.12	Minimum Non-Detect	0.06
Maximum Detect	0.25	Maximum Non-Detect	0.44
Variance Detects	0.00845	Percent Non-Detects	93.33%
Mean Detects	0.185	SD Detects	0.0919
Median Detects	0.185	CV Detects	0.497
Skewness Detects	N/A	Kurtosis Detects	N/A
Mean of Logged Detects	-1.753	SD of Logged Detects	0.519

Warning: Data set has only 2 Detected Values.

This is not enough to compute meaningful or reliable statistics and estimates.

Normal GOF Test on Detects Only

Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	0.0795	KM Standard Error of Mean	0.0179
KM SD	0.0457	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.11	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.109	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.133	95% KM Chebyshev UCL	0.157
97.5% KM Chebyshev UCL	0.191	99% KM Chebyshev UCL	0.257

Gamma GOF Tests on Detected Observations Only

Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only

k hat (MLE)	7.753	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0239	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	31.01	nu star (bias corrected)	N/A
Mean (detects)	0.185		

Appendix B2
ProUCL Output - 2008-2017 PMP Air Shaft Annual Mine Water Data

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	0.0795	SD (KM)	0.0457
Variance (KM)	0.00209	SE of Mean (KM)	0.0179
k hat (KM)	3.023	k star (KM)	2.743
nu hat (KM)	181.4	nu star (KM)	164.6
theta hat (KM)	0.0263	theta star (KM)	0.029
80% gamma percentile (KM)	0.115	90% gamma percentile (KM)	0.144
95% gamma percentile (KM)	0.171	99% gamma percentile (KM)	0.231

Gamma Kaplan-Meier (KM) Statistics

		Adjusted Level of Significance (β)	0.041
Approximate Chi Square Value (164.59, α)	135.9	Adjusted Chi Square Value (164.59, β)	134.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.0962	95% Gamma Adjusted KM-UCL (use when n<50)	0.0973

Lognormal GOF Test on Detected Observations Only

Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0568	Mean in Log Scale	-3.107
SD in Original Scale	0.0471	SD in Log Scale	0.678
95% t UCL (assumes normality of ROS data)	0.0714	95% Percentile Bootstrap UCL	0.0722
95% BCA Bootstrap UCL	0.0759	95% Bootstrap t UCL	0.0788
95% H-UCL (Log ROS)	0.0735		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-2.629	KM Geo Mean	0.0722
KM SD (logged)	0.386	95% Critical H Value (KM-Log)	1.864
KM Standard Error of Mean (logged)	0.17	95% H-UCL (KM -Log)	0.0889
KM SD (logged)	0.386	95% Critical H Value (KM-Log)	1.864
KM Standard Error of Mean (logged)	0.17		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	0.123	Mean in Log Scale	-2.271
SD in Original Scale	0.0657	SD in Log Scale	0.654
95% t UCL (Assumes normality)	0.143	95% H-Stat UCL	0.165

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	0.157

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

APPENDIX C

Shower Model Calculations

TABLE C.1.CT
Shower Model Calculations (Hypothetical Future Adult Resident) - Site-wide Groundwater
Central Tendency

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	500	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.33	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1 / V_a$
t_2	Time Spent in Bathroom after Showering	0.13	hour	USEPA 2011 (3),(4)	$f_i = f_j \times (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j / (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (unitless)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	6.34E+00	4.06E+00
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	4.72E+00	3.03E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	8.03E+00	5.15E+00
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	3.98E-01	2.55E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	1.19E+01	7.64E+00
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	1.28E+00	8.23E-01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Low end of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The mean for ages 16 - <21 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (198
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

References:

Andelman, J.B. 1990. Total exposure to volatile organic compounds in potable water. Significance and Treatment of Volatile Organic Compounds in Water Supplies. N.M. Ram, R.F. Christman and K.P. Cantor, eds. Lewis Publishers, Chelsea, Michigan, pp. 485-504.

Giardino, N.J. and J.B. Andelman. 1996. Characterization of the emissions of trichloroethylene, chloroform, and 1,2-dibromo-3-chloropropane in a full-size experimental shower. J. Exposure Anal. Environ. Epidemiol., vol. 6, pp. 413-423.

Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

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McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

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Schaum, J., K. Hoang, R. Kinerson, J. Moya and R.G.M. Wang. 1994. Estimating dermal and inhalation exposure to volatile chemicals in domestic water. Water Contamination and Health. R.G.M. Wang, ed. Marcel Dekker, Inc., New York, pp.305-321.

United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.1.RME
Shower Model Calculations (Hypothetical Future Adult Resident) - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.67	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.25	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfe Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	1.93E+01	1.23E+01
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.44E+01	9.14E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	2.45E+01	1.56E+01
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	1.21E+00	7.70E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	3.63E+01	2.31E+01
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	3.91E+00	2.48E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The 90th percentile for ages 16 - <21 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

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TABLE C.2.CT
Shower Model Calculations (Hypothetical Future Youth Resident) - Site-wide Groundwater
Central Tendency

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	500	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.30	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.12	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	5.76E+00	3.70E+00
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	4.29E+00	2.76E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	7.30E+00	4.70E+00
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	3.62E-01	2.32E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	1.08E+01	6.96E+00
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	1.17E+00	7.50E-01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Low end of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted mean for ages 7 - 16 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

Pritchard, G.M. and T.F. Gesell. 1981. An estimate of population exposures due to radon in public water supplies in the area of Houston, Texas. Health Phys., vol. 41, pp. 599-606.

Sanders, P.F. 2002. A screening model for predicting concentrations of volatile organic chemicals in shower stall air. Division of Science, Research and Technology, New Jersey Department of Environmental Protection, Trenton. May.

Schaum, J., K. Hoang, R. Kinerson, J. Moya and R.G.M. Wang. 1994. Estimating dermal and inhalation exposure to volatile chemicals in domestic water. Water Contamination and Health. R.G.M. Wang, ed. Marcel Dekker, Inc., New York, pp.305-321.

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TABLE C.2.RME
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Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.52	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.27	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	1.50E+01	1.00E+01
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.12E+01	7.48E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	1.90E+01	1.27E+01
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	9.40E-01	6.31E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	2.82E+01	1.89E+01
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	3.03E+00	2.03E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted average of 90th percentile values for ages 7 - 16 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Andelman, J.B. 1990. Total exposure to volatile organic compounds in potable water. Significance and Treatment of Volatile Organic Compounds in Water Supplies. N.M. Ram, R.F. Christman and K.P. Cantor, eds. Lewis Publishers, Chelsea, Michigan, pp. 485-504.

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Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

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Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.3.CT
Shower Model Calculations (Hypothetical Future Child Resident) - Site-wide Groundwater
Central Tendency

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	500	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.31	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.12	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	5.95E+00	3.81E+00
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	4.43E+00	2.84E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	7.55E+00	4.83E+00
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	3.74E-01	2.39E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	1.12E+01	7.16E+00
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	1.21E+00	7.71E-01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Low end of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted mean for ages 1 - 6 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

References:

Andelman, J.B. 1990. Total exposure to volatile organic compounds in potable water. Significance and Treatment of Volatile Organic Compounds in Water Supplies. N.M. Ram, R.F. Christman and K.P. Cantor, eds. Lewis Publishers, Chelsea, Michigan, pp. 485-504.

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Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

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McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

Pritchard, G.M. and T.F. Gesell. 1981. An estimate of population exposures due to radon in public water supplies in the area of Houston, Texas. Health Phys., vol. 41, pp. 599-606.

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Schaum, J., K. Hoang, R. Kinerson, J. Moya and R.G.M. Wang. 1994. Estimating dermal and inhalation exposure to volatile chemicals in domestic water. Water Contamination and Health. R.G.M. Wang, ed. Marcel Dekker, Inc., New York, pp.305-321.

United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.3.RME
Shower Model Calculations (Hypothetical Future Child Resident) - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.50	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.22	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	1.44E+01	9.40E+00
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.07E+01	7.00E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	1.83E+01	1.19E+01
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	9.04E-01	5.90E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	2.71E+01	1.77E+01
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	2.92E+00	1.90E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted average of 90th percentile values for ages 1 - 6 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Andelman, J.B. 1990. Total exposure to volatile organic compounds in potable water. Significance and Treatment of Volatile Organic Compounds in Water Supplies. N.M. Ram, R.F. Christman and K.P. Cantor, eds. Lewis Publishers, Chelsea, Michigan, pp. 485-504.

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Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.4.RME
Shower Model Calculations (Hypothetical Future Adult Resident) - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.71	hour	USEPA 2014	$C_{amax} = C_W\ f\ F_W\ t_1 / V_a$
t_2	Time Spent in Bathroom after Showering	0.12	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j / (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfe Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	2.04E+01	1.17E+01
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.52E+01	8.72E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	2.59E+01	1.48E+01
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	1.28E+00	7.35E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	3.85E+01	2.20E+01
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	4.14E+00	2.37E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.2.RME.
4. The 90th percentile for ages 16 - <21 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Giardino, N.J. and J.B. Andelman. 1996. Characterization of the emissions of trichloroethylene, chloroform, and 1,2-dibromo-3-chloropropane in a full-size experimental shower. J. Exposure Anal. Environ. Epidemiol., vol. 6, pp. 413-423.

Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

Keating, G.A., McKone, T.E., and J.W. Gillett. 1997. Measured and estimated air concentrations of chloroform in showers: effects of water temperature and aerosols. Atmos. Environ, vol. 31, pp. 123-130.

McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

Pritchard, G.M. and T.F. Gesell. 1981. An estimate of population exposures due to radon in public water supplies in the area of Houston, Texas. Health Phys., vol. 41, pp. 599-606.

Sanders, P.F. 2002. A screening model for predicting concentrations of volatile organic chemicals in shower stall air. Division of Science, Research and Technology, New Jersey Department of Environmental Protection, Trenton. May.

Schaum, J., K. Hoang, R. Kinerson, J. Moya and R.G.M. Wang. 1994. Estimating dermal and inhalation exposure to volatile chemicals in domestic water. Water Contamination and Health. R.G.M. Wang, ed. Marcel Dekker, Inc., New York, pp.305-321.

United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.5.RME
Shower Model Calculations (Hypothetical Future Youth Resident) - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.61	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.18	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	1.75E+01	1.07E+01
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.30E+01	8.00E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	2.22E+01	1.36E+01
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	1.10E+00	6.74E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	3.29E+01	2.02E+01
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	3.54E+00	2.17E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.2.RME.
4. The age-weighted average of 90th percentile values for ages 7 - 16 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.6.RME
Shower Model Calculations (Hypothetical Future Child Resident) - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : Site-wide Groundwater
Exposure Medium : Groundwater

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.54	hour	USEPA 2014	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.20	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
75-34-3	1,1-Dichloroethane	1.2E+00	5.62E-03	9.90E+01	8.36E-06	1.06E-09	2.42E+06	0.52	1.56E+01	9.88E+00
71-43-2	Benzene	9.0E-01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.16E+01	7.36E+00
1634-04-4	Methyl tert butyl ether	1.8E+00	5.87E-04	8.82E+01	7.53E-06	8.59E-10	2.88E+06	0.44	1.97E+01	1.25E+01
75-01-4	Vinyl Chloride	6.8E-02	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	9.76E-01	6.20E-01
123-91-1	1,4-Dioxane	1.4E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	2.92E+01	1.86E+01
91-20-3	Naphthalene	3.0E-01	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	3.15E+00	2.00E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.2.RME.
4. The age-weighted average of 90th percentile values for ages 1 - 6 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Andelman, J.B. 1990. Total exposure to volatile organic compounds in potable water. Significance and Treatment of Volatile Organic Compounds in Water Supplies. N.M. Ram, R.F. Christman and K.P. Cantor, eds. Lewis Publishers, Chelsea, Michigan, pp. 485-504.

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Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

Keating, G.A., McKone, T.E., and J.W. Gillett. 1997. Measured and estimated air concentrations of chloroform in showers: effects of water temperature and aerosols. Atmos. Environ, vol. 31, pp. 123-130.

McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

Pritchard, G.M. and T.F. Gesell. 1981. An estimate of population exposures due to radon in public water supplies in the area of Houston, Texas. Health Phys., vol. 41, pp. 599-606.

Sanders, P.F. 2002. A screening model for predicting concentrations of volatile organic chemicals in shower stall air. Division of Science, Research and Technology, New Jersey Department of Environmental Protection, Trenton. May.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.7.CT
Shower Model Calculations (Hypothetical Future Adult Resident) - Mine Water
Central Tendency

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	500	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.33	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1 / V_a$
t_2	Time Spent in Bathroom after Showering	0.13	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j / (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (unitless)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	1.99E+01	1.27E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.25E+02	8.00E+01
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	4.10E+01	2.63E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	9.20E-01	5.90E-01
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	8.66E+01	5.56E+01
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	1.27E+01	8.14E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Low end of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The mean for ages 16 - <21 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (198
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Keating, G.A., McKone, T.E., and J.W. Gillett. 1997. Measured and estimated air concentrations of chloroform in showers: effects of water temperature and aerosols. Atmos. Environ, vol. 31, pp. 123-130.

McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.7.RME
Shower Model Calculations (Hypothetical Future Adult Resident) - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.67	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1 / V_a$
t_2	Time Spent in Bathroom after Showering	0.25	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfe Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	6.05E+01	3.85E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	3.80E+02	2.42E+02
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	1.25E+02	7.94E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	2.80E+00	1.78E+00
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	2.64E+02	1.68E+02
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	3.87E+01	2.46E+01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The 90th percentile for ages 16 - <21 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Giardino, N.J. and J.B. Andelman. 1996. Characterization of the emissions of trichloroethylene, chloroform, and 1,2-dibromo-3-chloropropane in a full-size experimental shower. J. Exposure Anal. Environ. Epidemiol., vol. 6, pp. 413-423.

Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

Keating, G.A., McKone, T.E., and J.W. Gillett. 1997. Measured and estimated air concentrations of chloroform in showers: effects of water temperature and aerosols. Atmos. Environ, vol. 31, pp. 123-130.

McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

Pritchard, G.M. and T.F. Gesell. 1981. An estimate of population exposures due to radon in public water supplies in the area of Houston, Texas. Health Phys., vol. 41, pp. 599-606.

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Schaum, J., K. Hoang, R. Kinerson, J. Moya and R.G.M. Wang. 1994. Estimating dermal and inhalation exposure to volatile chemicals in domestic water. Water Contamination and Health. R.G.M. Wang, ed. Marcel Dekker, Inc., New York, pp.305-321.

United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.8.CT
Shower Model Calculations (Hypothetical Future Youth Resident) - Mine Water
Central Tendency

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	500	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax} t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.30	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.12	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	1.81E+01	1.16E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.13E+02	7.29E+01
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	3.73E+01	2.39E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	8.36E-01	5.38E-01
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	7.88E+01	5.06E+01
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	1.15E+01	7.42E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Low end of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted mean for ages 7 - 16 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.8.RME
Shower Model Calculations (Hypothetical Future Youth Resident) - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.52	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.27	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	4.70E+01	3.15E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	2.95E+02	1.98E+02
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	9.69E+01	6.50E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	2.17E+00	1.46E+00
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	2.05E+02	1.37E+02
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	3.00E+01	2.01E+01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted average of 90th percentile values for ages 7 - 16 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Andelman, J.B. 1990. Total exposure to volatile organic compounds in potable water. Significance and Treatment of Volatile Organic Compounds in Water Supplies. N.M. Ram, R.F. Christman and K.P. Cantor, eds. Lewis Publishers, Chelsea, Michigan, pp. 485-504.

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Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.9.CT
Shower Model Calculations (Hypothetical Future Child Resident) - Mine Water
Central Tendency

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	500	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.31	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.12	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	1.87E+01	1.19E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	1.17E+02	7.50E+01
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	3.85E+01	2.46E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	8.64E-01	5.53E-01
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	8.14E+01	5.21E+01
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	1.19E+01	7.63E+00

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Low end of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted mean for ages 1 - 6 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.9.RME
Shower Model Calculations (Hypothetical Future Child Resident) - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax} t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.50	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.22	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	4.52E+01	2.95E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	2.84E+02	1.85E+02
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	9.31E+01	6.08E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	2.09E+00	1.36E+00
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	1.97E+02	1.29E+02
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	2.89E+01	1.88E+01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted average of 90th percentile values for ages 1 - 6 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Keating, G.A., McKone, T.E., and J.W. Gillett. 1997. Measured and estimated air concentrations of chloroform in showers: effects of water temperature and aerosols. Atmos. Environ, vol. 31, pp. 123-130.

McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

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Sanders, P.F. 2002. A screening model for predicting concentrations of volatile organic chemicals in shower stall air. Division of Science, Research and Technology, New Jersey Department of Environmental Protection, Trenton. May.

Schaum, J., K. Hoang, R. Kinerson, J. Moya and R.G.M. Wang. 1994. Estimating dermal and inhalation exposure to volatile chemicals in domestic water. Water Contamination and Health. R.G.M. Wang, ed. Marcel Dekker, Inc., New York, pp.305-321.

United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.10.RME
Shower Model Calculations (Hypothetical Future Adult Resident) - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.71	hour	USEPA 2014	$C_{amax} = C_W\ f\ F_W\ t_1 / V_a$
t_2	Time Spent in Bathroom after Showering	0.12	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j / (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfe Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	6.41E+01	3.67E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	4.03E+02	2.30E+02
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	1.32E+02	7.57E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	2.97E+00	1.70E+00
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	2.80E+02	1.60E+02
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	4.10E+01	2.35E+01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The 90th percentile for ages 16 - <21 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.11.RME
Shower Model Calculations (Hypothetical Future Youth Resident) - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.61	hour	USEPA 2011 (3),(4)	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.18	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	5.48E+01	3.37E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	3.44E+02	2.11E+02
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	1.13E+02	6.94E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	2.54E+00	1.56E+00
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	2.39E+02	1.47E+02
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	3.50E+01	2.15E+01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted average of 90th percentile values for ages 7 - 16 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

References:

Andelman, J.B. 1990. Total exposure to volatile organic compounds in potable water. Significance and Treatment of Volatile Organic Compounds in Water Supplies. N.M. Ram, R.F. Christman and K.P. Cantor, eds. Lewis Publishers, Chelsea, Michigan, pp. 485-504.

Giardino, N.J. and J.B. Andelman. 1996. Characterization of the emissions of trichloroethylene, chloroform, and 1,2-dibromo-3-chloropropane in a full-size experimental shower. J. Exposure Anal. Environ. Epidemiol., vol. 6, pp. 413-423.

Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

Keating, G.A., McKone, T.E., and J.W. Gillett. 1997. Measured and estimated air concentrations of chloroform in showers: effects of water temperature and aerosols. Atmos. Environ, vol. 31, pp. 123-130.

McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

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United States Environmental Protection Agency. 2011. Exposure Factors Handbook: 2011 Edition. Office of Research and Development. National Center for Environmental Assessment,

TABLE C.12.RME
Shower Model Calculations (Hypothetical Future Child Resident) - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum Addendum
Ringwood Mines/Landfill Superfund Site

Scenario Timeframe : Future
Medium : PMP Air Shaft Mine Water
Exposure Medium : Mine Water

Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Model Equations
T	Temperature	305	K	Sanders 2002 (1)	
F_w	Shower Water Flow Rate	750	L/hour	Schaum et al. 1994 (2)	Concentration in Air (C_A) = $((C_{amax}/2)\ t_1 + C_{amax}t_2)/(t_1+t_2)$
t_1	Time Spent Showering	0.54	hour	USEPA 2014	$C_{amax} = C_W\ f\ F_W\ t_1\ /\ V_a$
t_2	Time Spent in Bathroom after Showering	0.20	hour	USEPA 2011 (3),(4)	$f_i = f_j\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_j\ /\ (2.5/D_W^{0.67} + RT/D_a^{0.67}\ H)_i$
V_a	Bathroom Air Volume	16	m^3	Schaum et al. 1994 (5)	$K = 2.5/D_W^{0.67} + RT/D_a^{0.67}\ H$
R	Gas Constant	8.21E-05	atm-m^3/mol-K	Schaum et al. 1994	

CAS Number	Chemical of Potential Concern	Exposure Point Concentration in Groundwater C_w (µg/L)	Henry's Law Constant (6) H (atm-m^3/mol)	Molecular Weight (6) MW (g/mol)	Diffusivity in Air (6) D_a (m^2/sec)	Diffusivity in Water (6) D_w (m^2/sec)	Mass-Transfer Coefficient K (cm/hr)	Fraction Volatilized (7) *f* (unitless)	Maximum Concentration in Air $C_{a,\ max}$ (µg/m^3)	Exposure Point Concentration in Air C_a (µg/m^3)
10043-92-2	Radon	NA	9.21E-02	2.22E+02	2.00E-05	1.40E-09	2.00E+06	0.63	NA	NA
106-46-7	1,4-Dichlorobenzene	4.3E+00	2.41E-03	1.47E+02	5.50E-06	8.68E-10	2.78E+06	0.45	4.88E+01	3.10E+01
71-43-2	Benzene	2.4E+01	5.55E-03	7.81E+01	8.95E-06	1.03E-09	2.46E+06	0.51	3.06E+02	1.95E+02
108-90-7	Chlorobenzene	8.2E+00	3.11E-03	1.13E+02	7.21E-06	9.48E-10	2.61E+06	0.48	1.01E+02	6.39E+01
75-01-4	Vinyl Chloride	1.6E-01	2.78E-02	6.25E+01	1.07E-05	1.20E-09	2.22E+06	0.57	2.26E+00	1.43E+00
123-91-1	1,4-Dioxane	9.8E+01	4.80E-06	8.81E+01	8.74E-06	1.05E-09	1.47E+07	0.09	2.13E+02	1.35E+02
91-20-3	Naphthalene	2.9E+00	4.40E-04	1.28E+02	6.05E-06	8.38E-10	2.98E+06	0.42	3.12E+01	1.98E+01

Notes:
1. Average of the temperatures (21-46 degrees Celsius) reported in shower model studies from the literature (Keating et al. 1997; Giardino and Andelman 1996; Jo et al. 1990; and Moya et al. 1999) as summarized by Sanders (2002).
2. Middle of default range of estimates (500 to 1000 L/hour).
3. See Table 4.1.CT.
4. The age-weighted average of 90th percentile values for ages 1 - 6 from Table 16-28 in USEPA (2011).
5. Assumes bathroom dimensions of 7 feet by 10 feet by 8 feet, which approximates a bathroom containing a sink, toilet, and shower stall.
6. Chemical parameter values for constituents of potential concern obtained from the USEPA (2016) Regional Screening Levels (RSLs) tables. Chemical parameters for radon obtained from McKone (1987)
7. Fraction volatilized (*f*) values were estimated using the reported *f* for radon (63%) during showers in Pritchard and Gesell (1981) as cited by Andelman (1990).

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Jo, W.K., C.P. Weisel and P.J. Lioy. 1990. Routes of chloroform exposure and body burden from showering with chlorinated tap water. Risk Anal., vol 10, pp. 575-580.

Keating, G.A., McKone, T.E., and J.W. Gillett. 1997. Measured and estimated air concentrations of chloroform in showers: effects of water temperature and aerosols. Atmos. Environ, vol. 31, pp. 123-130.

McKone, T.E. 1987. Human exposure to volatile organic compounds in household tap water: the indoor inhalation pathway. Environ. Sci. Technol., vol. 21, no. 12, pp.1194-1201.

Moya, J., C. Howard-Reed, and R.L. Corsi. 1999. Volatilization of chemicals from tap water to indoor air from contaminated water used for showering. Environ. Sci. Technol., vol. 33, no. 14, pp. 2321-2327.

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APPENDIX D

Mutagenic Exposure Calculations

Table D.2.CT
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 7 - <16 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 7 - <16 years		
				Ingestion	Dermal	Inhalation
Vinyl Chloride	6.8E-02	2.3E-01	3	8.9E-08	1.1E-08	5.0E-04
Chromium	6.0E+00	NA	3	8.0E-06	7.0E-08	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Youth is assumed to be 7 to 16 years of age, but only the first 3 years are evaluated under the CT scenario.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.2.RME
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 7 - <16 yrs	ADAF 16 - <17 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 7 - <16 years Ingestion	Dermal	Inhalation	16 - <17 years Ingestion	Dermal	Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	Dermal	Inhalation
Vinyl Chloride	6.8E-02	6.3E-01	3	1	1.1E-06	4.3E-08	7.7E-03	4.1E-08	1.6E-09	2.8E-04	1.2E-06	4.4E-08	8.0E-03
Chromium	6.0E+00	NA	3	1	9.9E-05	3.6E-07	NA	3.7E-06	1.4E-08	NA	1.0E-04	3.8E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Youth is assumed to be 7 to 16 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.3.CT
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 1 - <2 yrs	ADAF 2 - <7 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 1 - <2 years Ingestion	1 - <2 years Dermal	1 - <2 years Inhalation	2 - <7 years Ingestion	2 - <7 years Dermal	2 - <7 years Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Dermal	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Inhalation
Vinyl Chloride	6.8E-02	2.4E-01	10	3	2.0E-07	1.9E-08	5.9E-04	3.1E-07	2.9E-08	8.8E-04	5.1E-07	4.9E-08	1.5E-03
Chromium	6.0E+00	NA	10	3	1.8E-05	1.3E-07	NA	2.7E-05	1.9E-07	NA	4.6E-05	3.2E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Young child is assumed to be 1 to 6 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.3.RME
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 1 - <2 yrs	ADAF 2 - <7 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 1 - <2 years Ingestion	1 - <2 years Dermal	1 - <2 years Inhalation	2 - <7 years Ingestion	2 - <7 years Dermal	2 - <7 years Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	TOTAL Dermal	TOTAL Inhalation
Vinyl Chloride	6.8E-02	5.9E-01	10	3	6.2E-07	2.5E-08	2.4E-03	9.3E-07	3.7E-08	3.6E-03	1.6E-06	6.2E-08	6.1E-03
Chromium	6.0E+00	NA	10	3	5.5E-05	2.1E-07	NA	8.3E-05	3.1E-07	NA	1.4E-04	5.2E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Young child is assumed to be 1 to 6 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.5.RME
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 7 - <16 yrs	ADAF 16 - <17 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 7 - <16 years Ingestion	Dermal	Inhalation	16 - <17 years Ingestion	Dermal	Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	Dermal	Inhalation
Vinyl Chloride	6.8E-02	6.7E-01	3	1	8.4E-07	5.6E-08	8.2E-03	3.1E-08	2.1E-09	3.0E-04	8.7E-07	5.8E-08	8.5E-03
Chromium	6.0E+00	NA	3	1	7.4E-05	5.0E-07	NA	2.8E-06	1.9E-08	NA	7.7E-05	5.2E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Youth is assumed to be 7 to 16 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.6.RME
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Site-wide Groundwater
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 1 - <2 yrs	ADAF 2 - <7 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 1 - <2 years			2 - <7 years			TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3)		
					Ingestion	Dermal	Inhalation	Ingestion	Dermal	Inhalation	Ingestion	Dermal	Inhalation
Vinyl Chloride	6.8E-02	6.2E-01	10	3	4.8E-07	2.2E-08	2.6E-03	7.3E-07	3.3E-08	3.9E-03	1.2E-06	5.4E-08	6.5E-03
Chromium	6.0E+00	NA	10	3	4.3E-05	1.9E-07	NA	6.5E-05	2.8E-07	NA	1.1E-04	4.7E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Young child is assumed to be 1 to 6 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.8.CT
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 7 - <16 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 7 - <16 years		
				Ingestion	Dermal	Inhalation
Vinyl Chloride	6.8E-02	2.3E-01	3	8.9E-08	1.1E-08	5.0E-04
Chromium	6.0E+00	NA	3	8.0E-06	7.0E-08	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Youth is assumed to be 7 to 16 years of age, but only the first 3 years are evaluated under the CT scenario.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.8.RME
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 7 - <16 yrs	ADAF 16 - <17 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 7 - <16 years Ingestion	Dermal	Inhalation	16 - <17 years Ingestion	Dermal	Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	Dermal	Inhalation
Vinyl Chloride	6.8E-02	6.3E-01	3	1	1.1E-06	4.3E-08	7.7E-03	4.1E-08	1.6E-09	2.8E-04	1.2E-06	4.4E-08	8.0E-03
Chromium	6.0E+00	NA	3	1	9.9E-05	3.6E-07	NA	3.7E-06	1.4E-08	NA	1.0E-04	3.8E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Youth is assumed to be 7 to 16 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.9.CT
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 1 - <2 yrs	ADAF 2 - <7 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 1 - <2 years Ingestion	1 - <2 years Dermal	1 - <2 years Inhalation	2 - <7 years Ingestion	2 - <7 years Dermal	2 - <7 years Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Dermal	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Inhalation
Vinyl Chloride	6.8E-02	2.4E-01	10	3	2.0E-07	1.9E-08	5.9E-04	3.1E-07	2.9E-08	8.8E-04	5.1E-07	4.9E-08	1.5E-03
Chromium	6.0E+00	NA	10	3	1.8E-05	1.3E-07	NA	2.7E-05	1.9E-07	NA	4.6E-05	3.2E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Young child is assumed to be 1 to 6 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.9.RME
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 1 - <2 yrs	ADAF 2 - <7 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 1 - <2 years Ingestion	1 - <2 years Dermal	1 - <2 years Inhalation	2 - <7 years Ingestion	2 - <7 years Dermal	2 - <7 years Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	TOTAL INTAKE Dermal	TOTAL INTAKE Inhalation
Vinyl Chloride	6.8E-02	5.9E-01	10	3	6.2E-07	2.5E-08	2.4E-03	9.3E-07	3.7E-08	3.6E-03	1.6E-06	6.2E-08	6.1E-03
Chromium	6.0E+00	NA	10	3	5.5E-05	2.1E-07	NA	8.3E-05	3.1E-07	NA	1.4E-04	5.2E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Young child is assumed to be 1 to 6 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.11.RME
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Youth [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 7 - <16 yrs	ADAF 16 - <17 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 7 - <16 years Ingestion	Dermal	Inhalation	16 - <17 years Ingestion	Dermal	Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	Dermal	Inhalation
Vinyl Chloride	6.8E-02	6.7E-01	3	1	8.4E-07	5.6E-08	8.2E-03	3.1E-08	2.1E-09	3.0E-04	8.7E-07	5.8E-08	8.5E-03
Chromium	6.0E+00	NA	3	1	7.4E-05	5.0E-07	NA	2.8E-06	1.9E-08	NA	7.7E-05	5.2E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Youth is assumed to be 7 to 16 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

Table D.12.RME
Intakes for Cancer Risk Calculations for COPCs Considered Mutagenic - Mine Water
USEPA Standard Default Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Addendum
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

Scenario Timeframe: Future
Receptor Population: Hypothetical Future Resident
Receptor Age: Young Child [1]

Constituent	EPC (ug/L)	EPC (ug/m^3)	ADAF 1 - <2 yrs	ADAF 2 - <7 yrs	INTAKE (MG/KG-DAY) OR (UG/M^3) 1 - <2 years Ingestion	1 - <2 years Dermal	1 - <2 years Inhalation	2 - <7 years Ingestion	2 - <7 years Dermal	2 - <7 years Inhalation	TOTAL INTAKE (MG/KG-DAY) OR (UG/M^3) Ingestion	TOTAL Dermal	TOTAL Inhalation
Vinyl Chloride	6.8E-02	6.2E-01	10	3	4.8E-07	2.2E-08	2.6E-03	7.3E-07	3.3E-08	3.9E-03	1.2E-06	5.4E-08	6.5E-03
Chromium	6.0E+00	NA	10	3	4.3E-05	1.9E-07	NA	6.5E-05	2.8E-07	NA	1.1E-04	4.7E-07	NA

Notes:
Intake for cancer risk calculations was calculated using the following equation for ingestion for each portion of life:
EPC * CF * IRW * EF * EDx-y * ADAFx-y * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for dermal contact for each portion of life:
EPC * CF1 * CF2 * DAevent * EvF * EF * EDx-y *ADAFx-y * SA * 1/BW * 1/ATc
Intake for cancer risk calculations was calculated using the following equation for inhalation for each portion of life:
EPC * ET * EvF * EF * EDx-y *ADAFx-y * 1/ATc
[1] Young child is assumed to be 1 to 6 years of age.
ADAF = Age-dependent adjustment factor
EPC = Exposure point concentration
mg/kg-day = Milligrams per kilogram per day
ug/L = Micrograms per liter
ug/m^3 = Micrograms per cubic meter

APPENDIX E

IEUBK Sensitivity Analysis

Table E.1
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	0.330
2-3	0.330
3-4	0.330
4-5	0.330
5-6	0.330
6-7	0.330

Drinking Water Concentration: 1.790 µg Pb/l

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

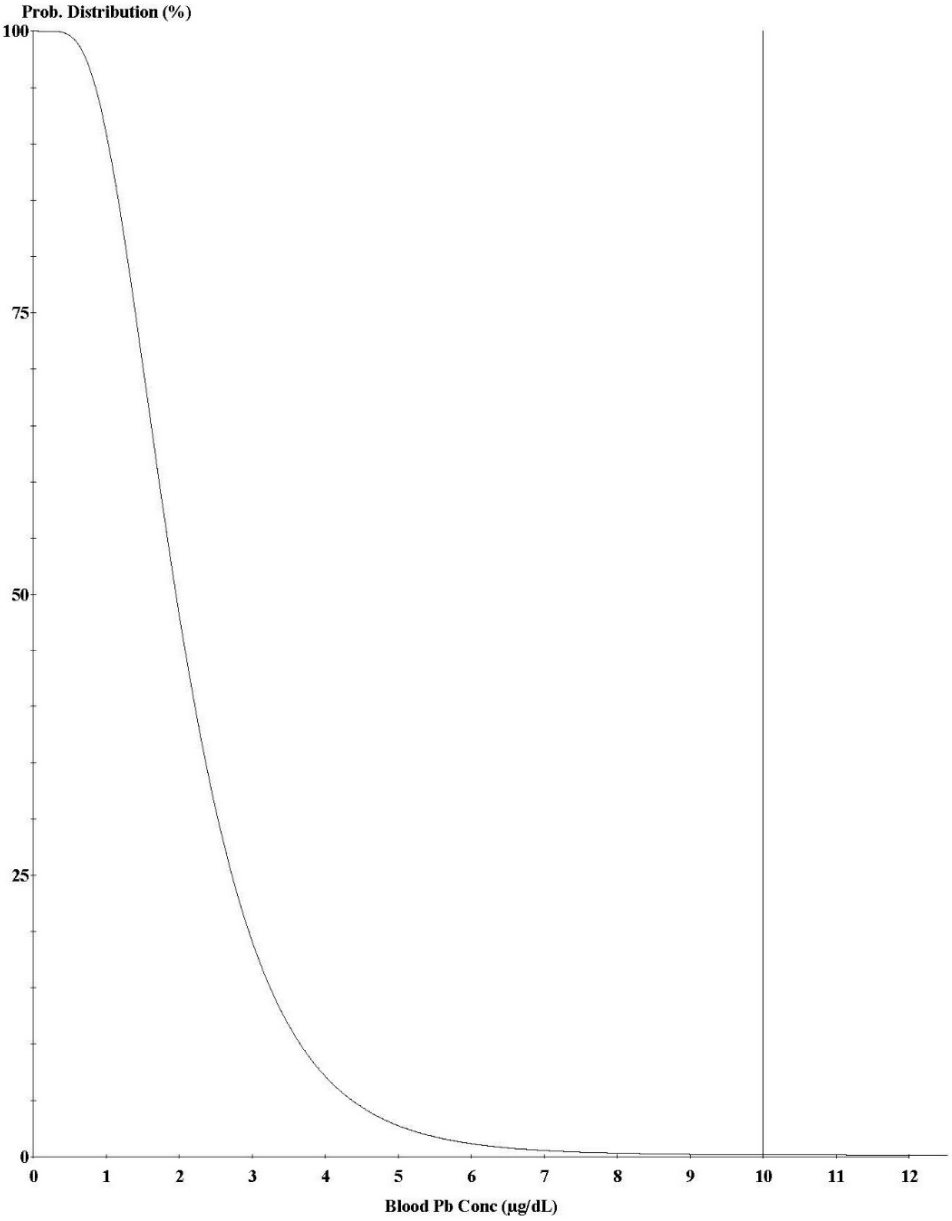
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.916	0	0.276	6.529	7.755	2.7
2-3	0.062	1.004	0	0.279	6.589	7.934	3.0
3-4	0.067	0.97	0	0.281	6.645	7.962	2.8
4-5	0.067	0.942	0	0.285	5.002	6.296	2.3
5-6	0.093	0.997	0	0.287	4.528	5.905	1.9
6-7	0.093	1.082	0	0.288	4.29	5.753	1.7

Table E.1
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 10 ug/L cutoff



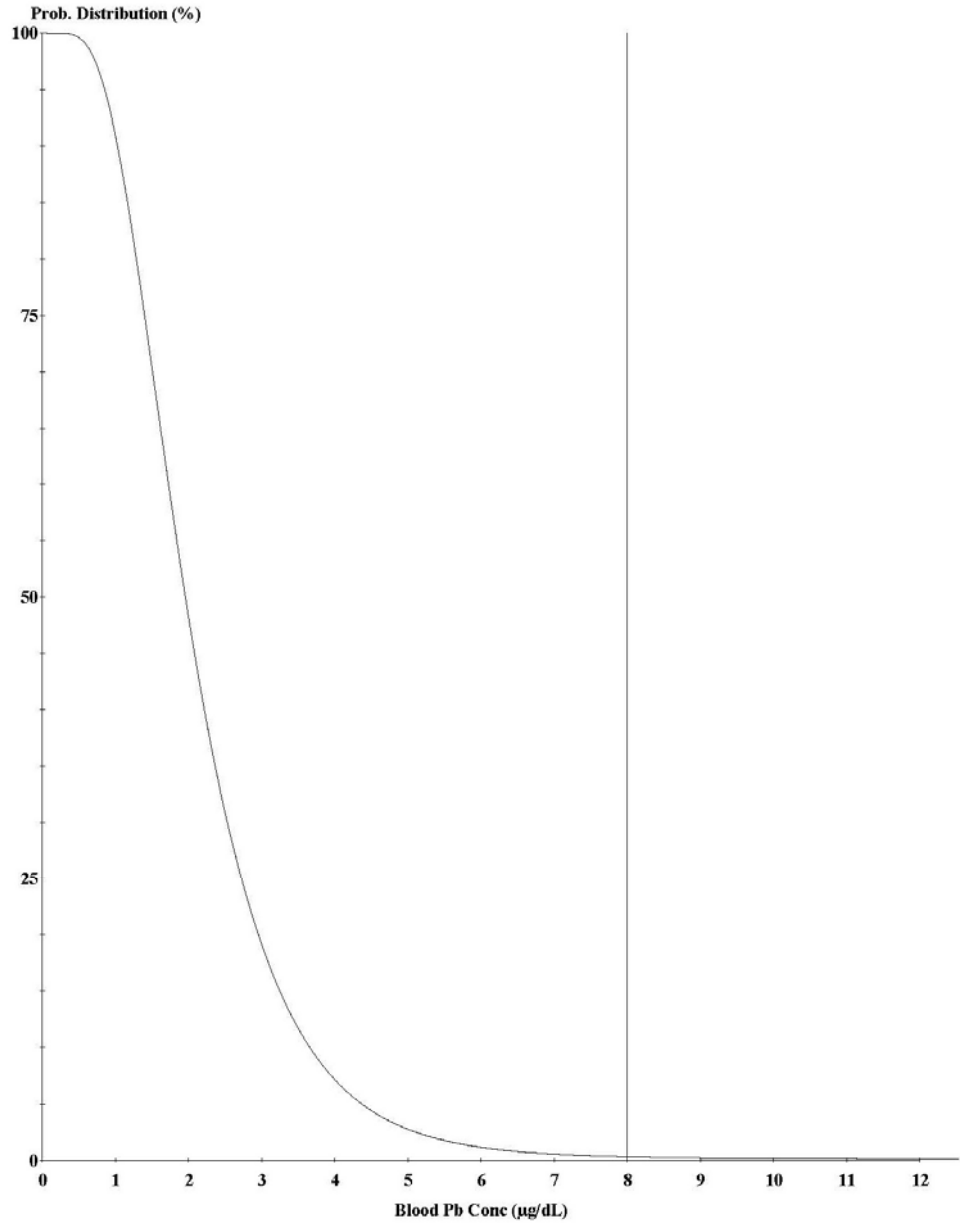
Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
CT = central tendency
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.1
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 8 ug/L cutoff



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
CT = central tendency
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
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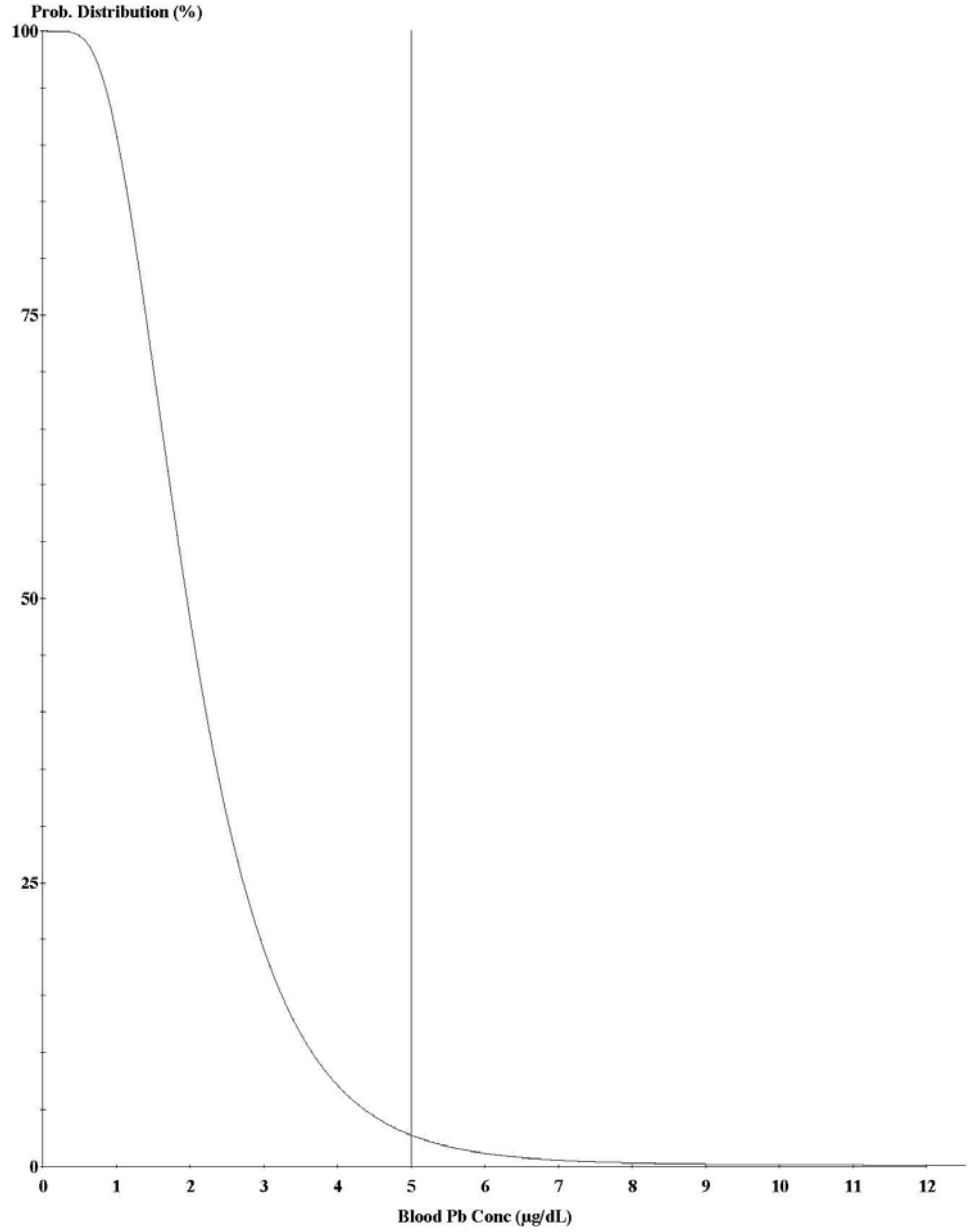
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.1
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 5 ug/L cutoff



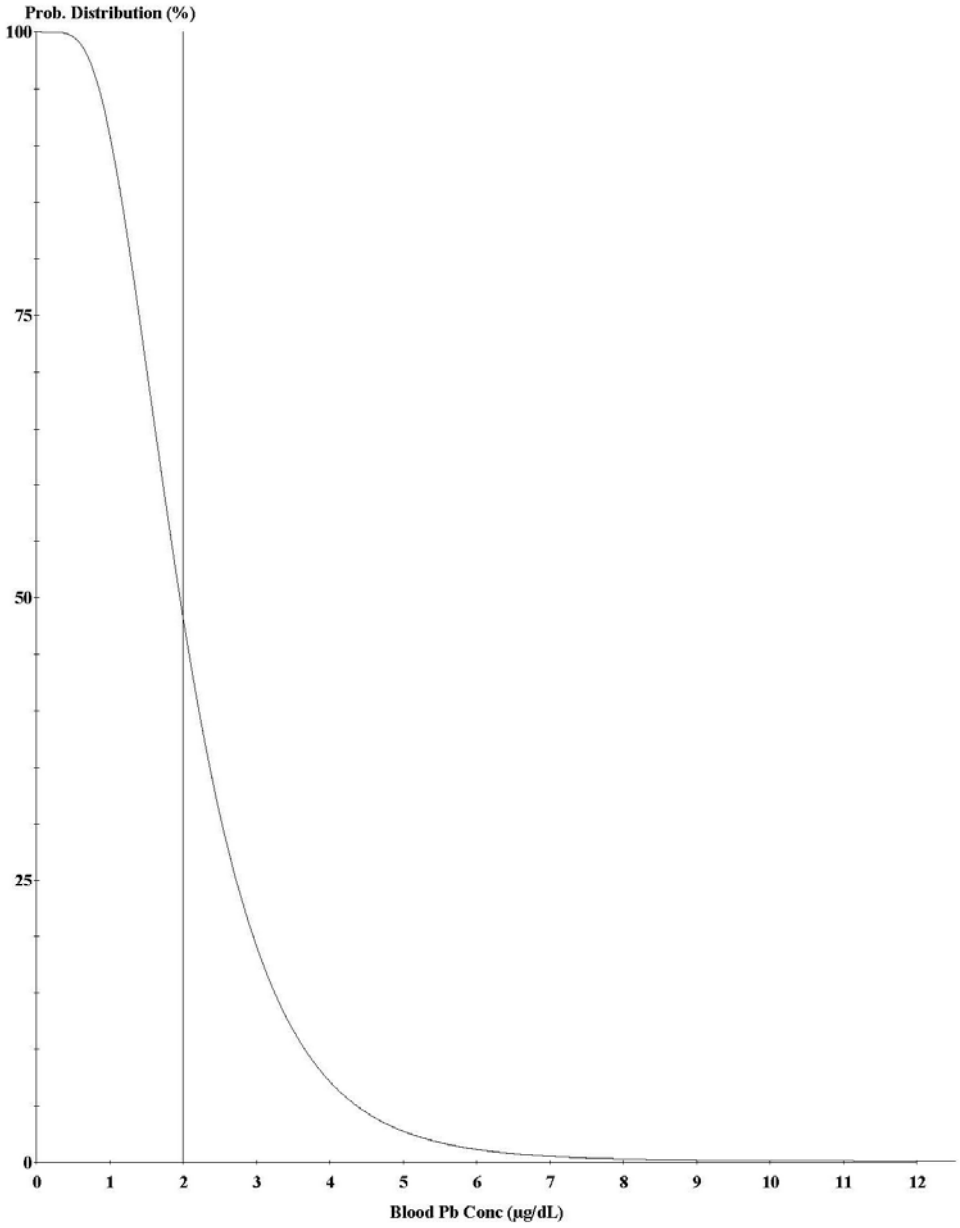
Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
CT = central tendency
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.1
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 2 ug/L cutoff



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
CT = central tendency
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.2
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	1.000
2-3	1.000
3-4	1.000
4-5	1.000
5-6	1.000
6-7	1.000

Drinking Water Concentration: 1.790 µg Pb/l

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

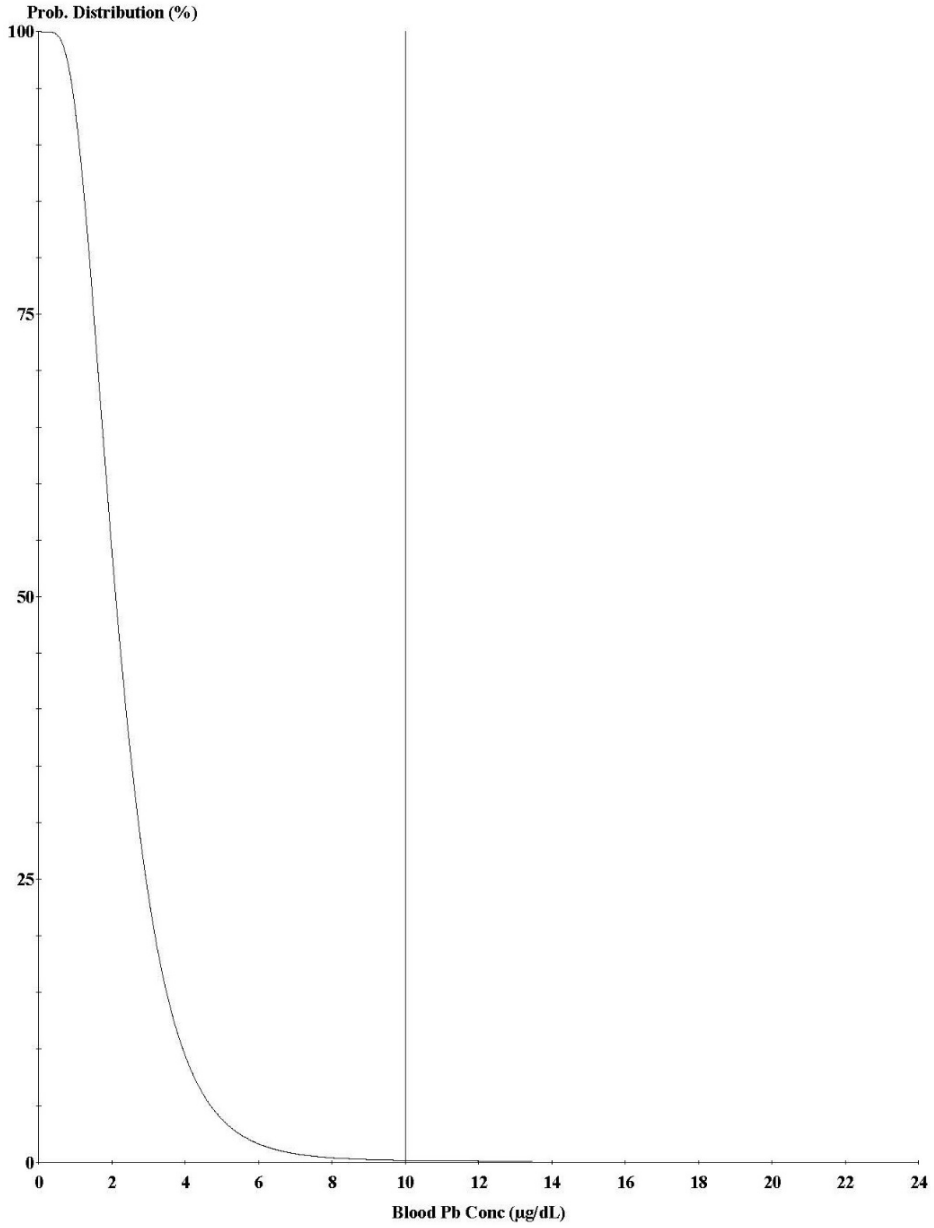
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.912	0	0.833	6.498	8.277	2.9
2-3	0.062	1.000	0	0.841	6.562	8.465	3.2
3-4	0.067	0.967	0	0.848	6.622	8.503	3.0
4-5	0.067	0.939	0	0.862	4.986	6.855	2.5
5-6	0.093	0.994	0	0.868	4.516	6.471	2.1
6-7	0.093	1.08	0	0.871	4.279	6.322	1.8

Table E.2
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 10 ug/L cutoff



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
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Pb = lead
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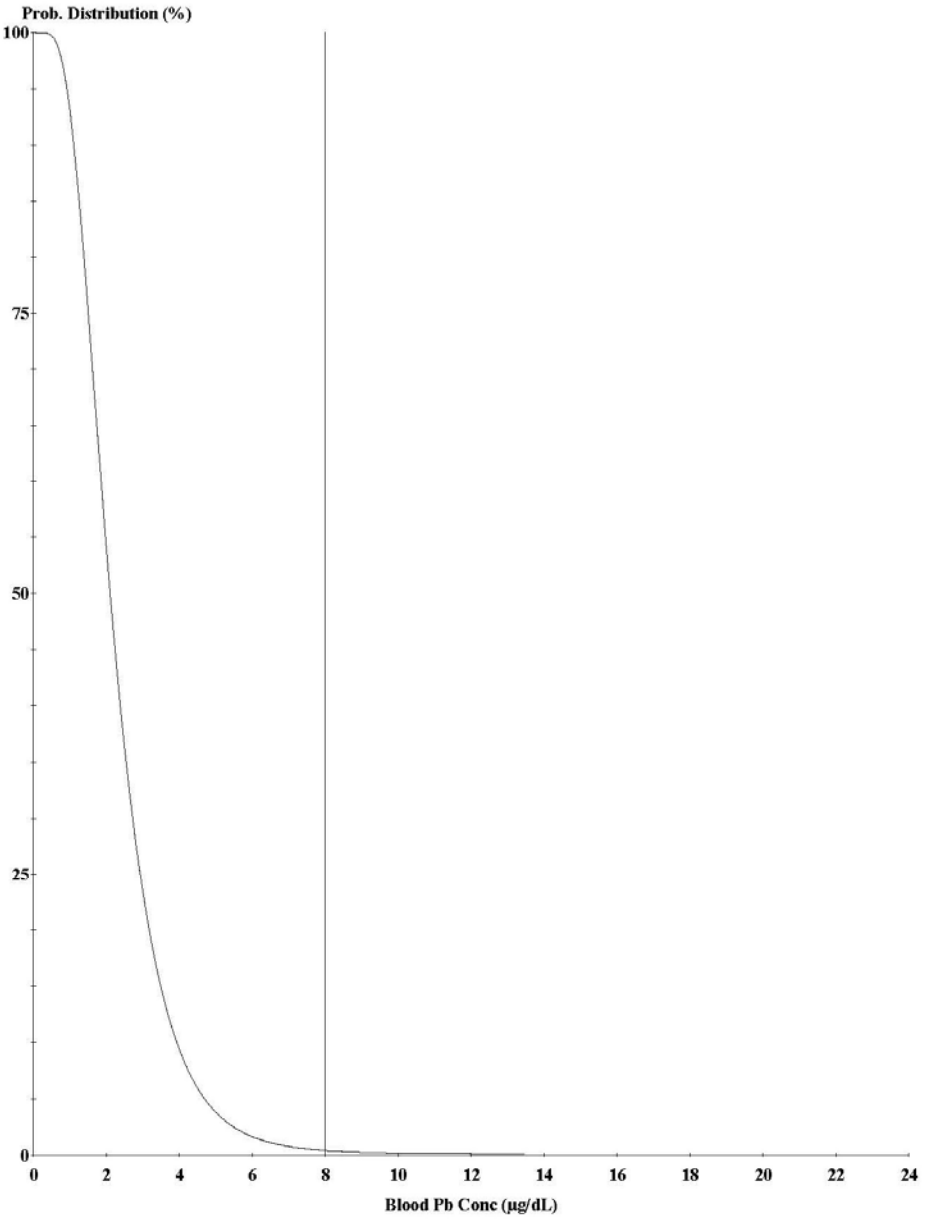
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.2
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 8 ug/L cutoff



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
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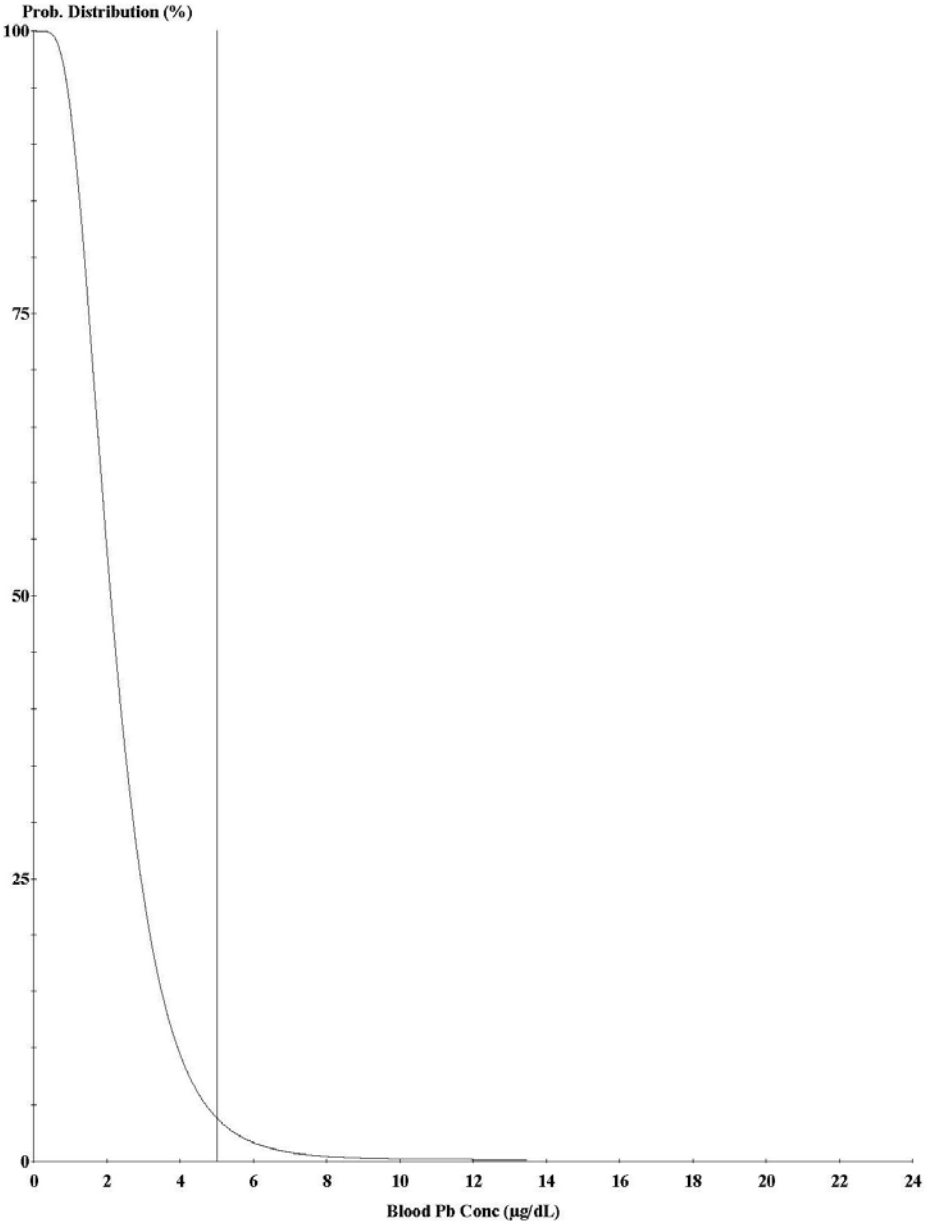
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.2
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 5 ug/L cutoff



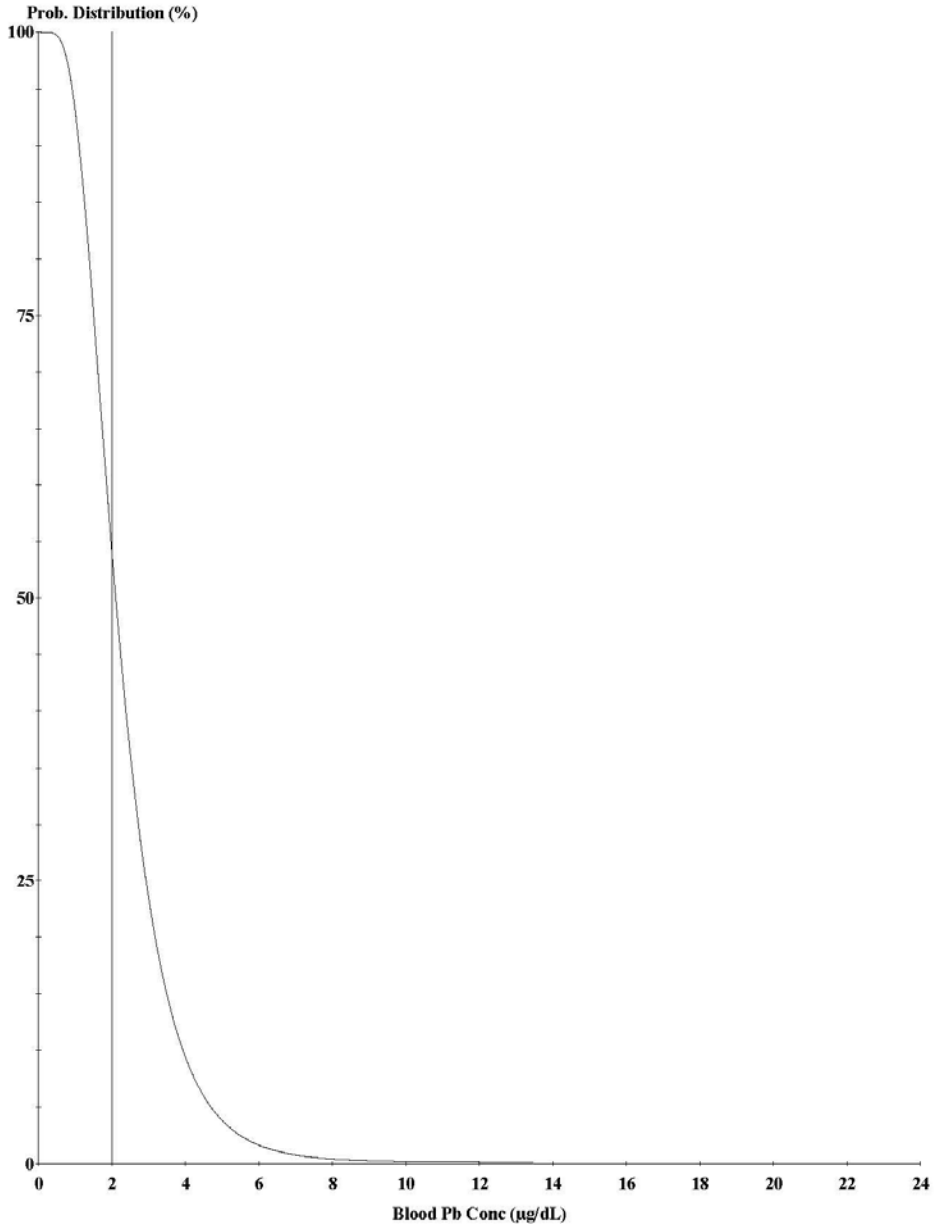
Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
µg Pb/day = microgram of lead per day
µg Pb/dL = microgram of lead per deciliter
µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.2
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 2 ug/L cutoff



Acronyms and Abbreviations:

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BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
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µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.3
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
IEUBK Default Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 4.000 µg Pb/l

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	200	150
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

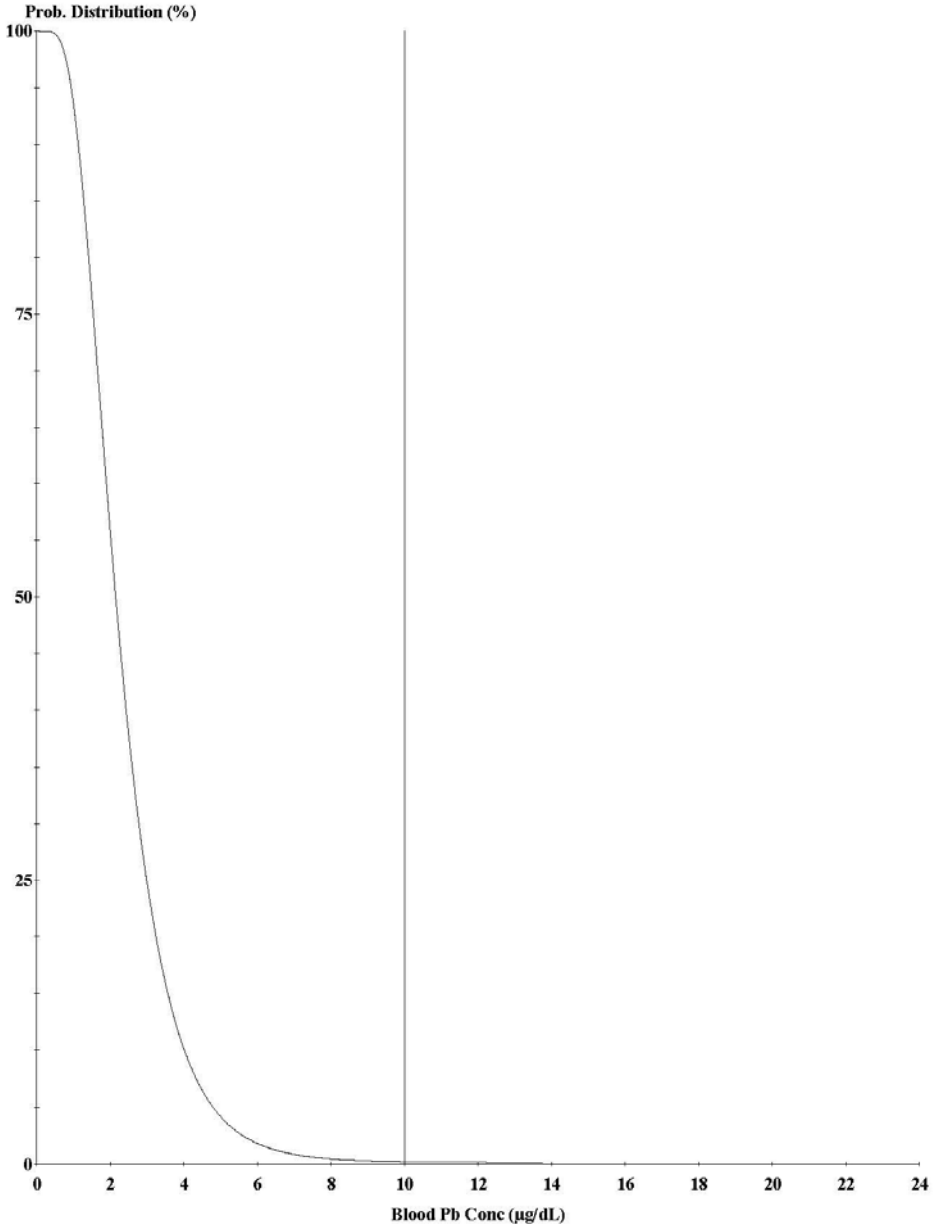
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.911	0	0.929	6.493	8.368	2.9
2-3	0.062	0.999	0	0.976	6.556	8.593	3.2
3-4	0.067	0.966	0	1.004	6.615	8.651	3.0
4-5	0.067	0.938	0	1.059	4.981	7.045	2.5
5-6	0.093	0.993	0	1.123	4.510	6.720	2.1
6-7	0.093	1.078	0	1.146	4.274	6.592	1.9

Table E.3
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
IEUBK Default Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 10 ug/L cutoff



Acronyms and Abbreviations:

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RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
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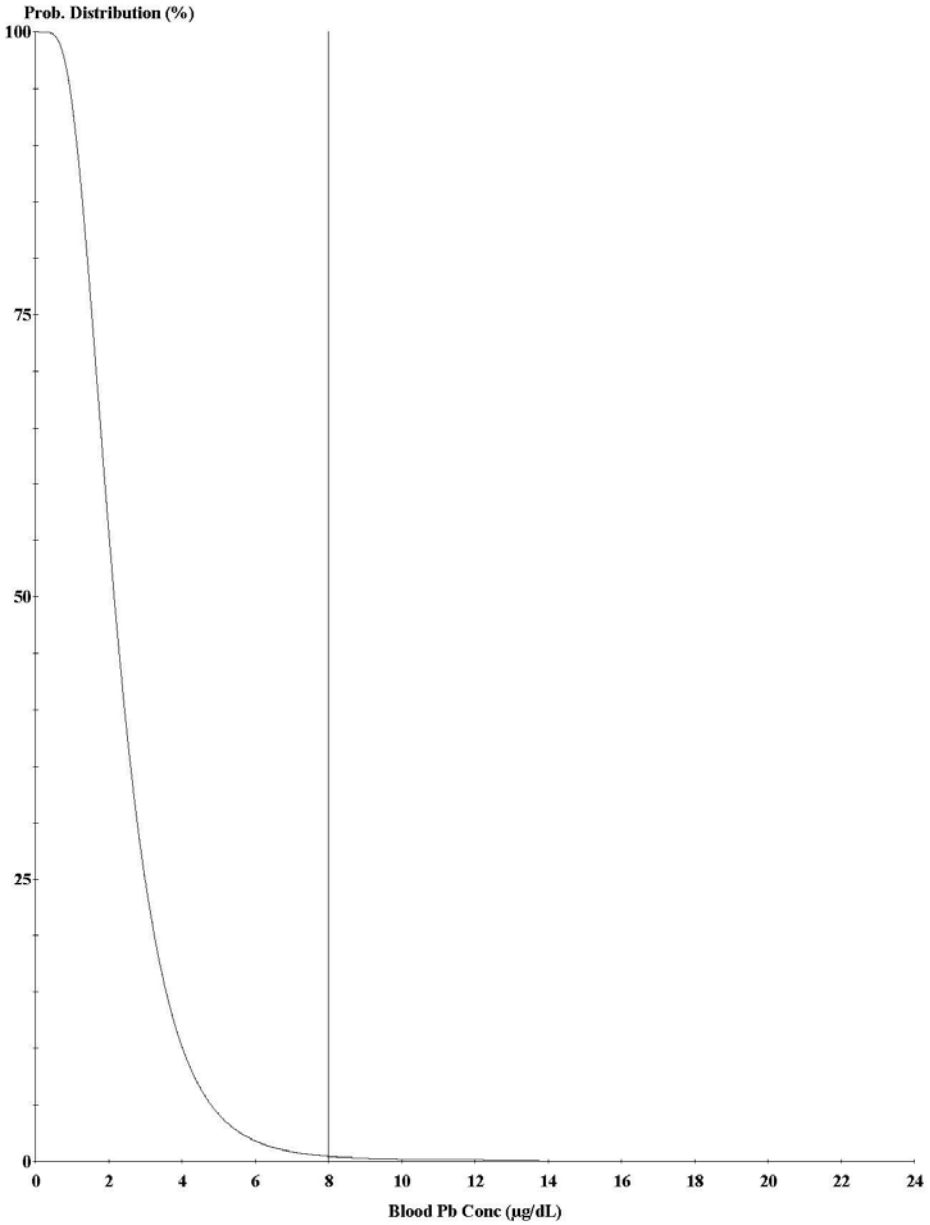
Table E.3
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
IEUBK Default Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 8 ug/L cutoff



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L/day = liter per day
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Table E.3
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
IEUBK Default Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 5 ug/L cutoff

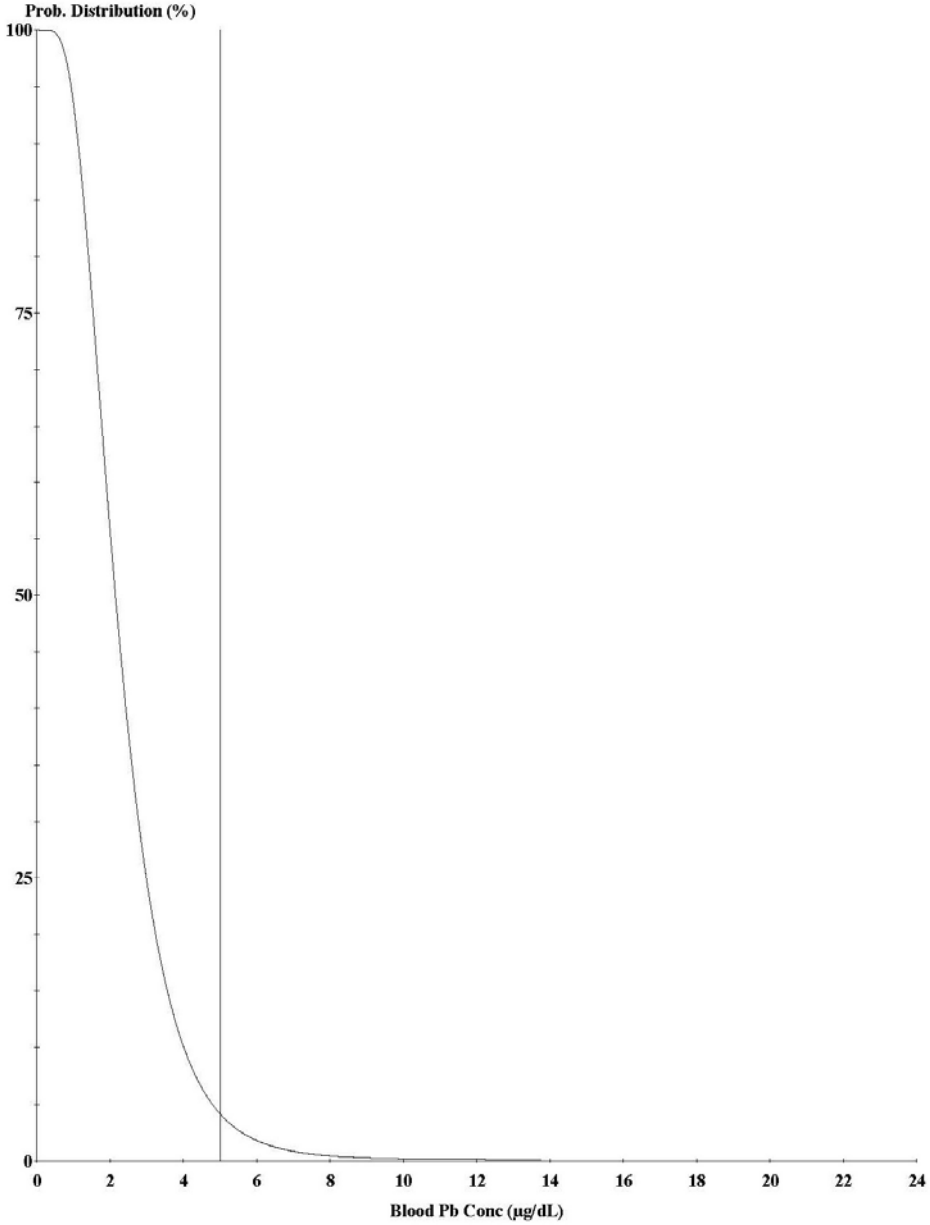

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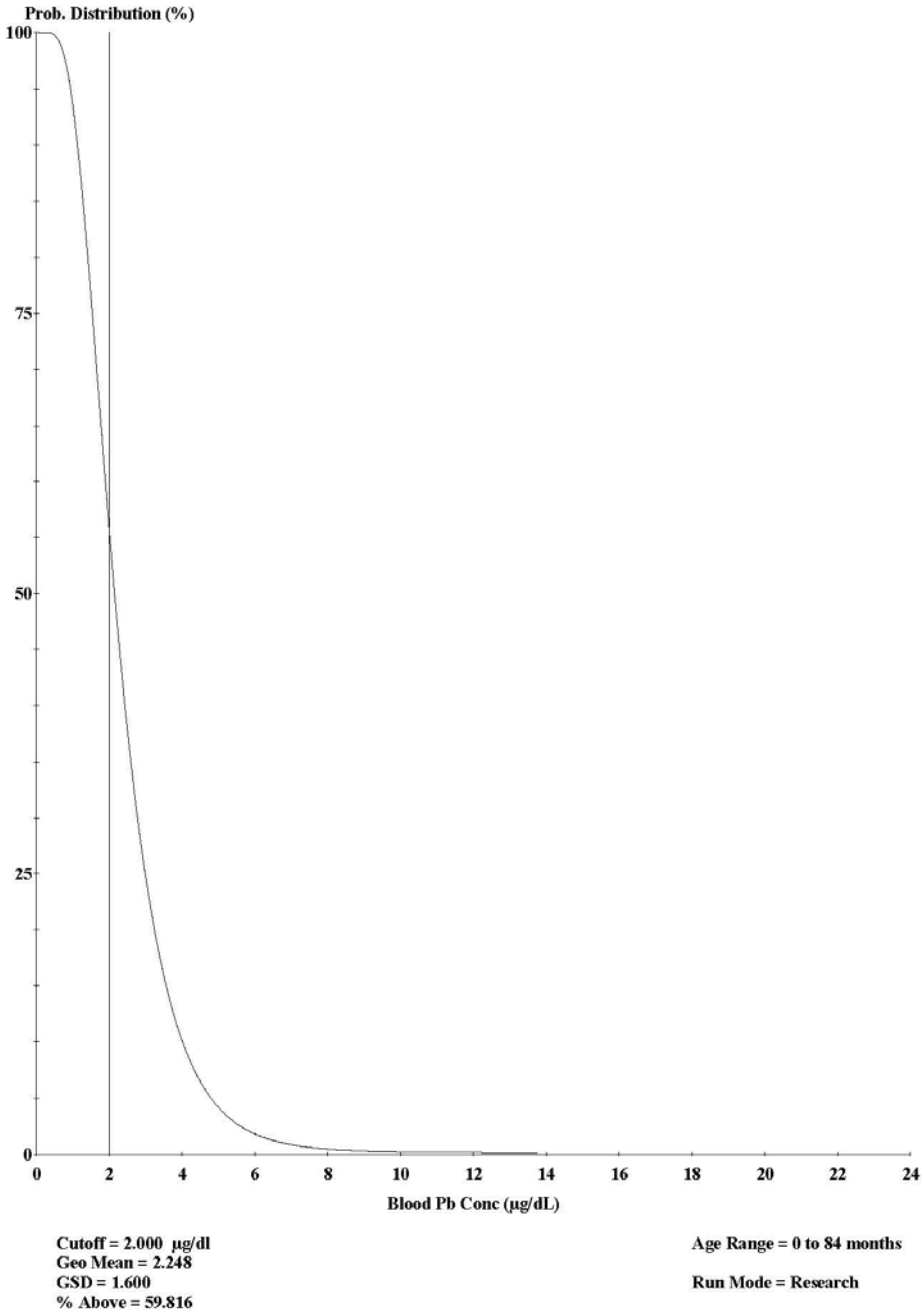
Table E.3
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
IEUBK Default Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 2 ug/L cutoff



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Pb = lead
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µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.4
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	0	3	0	0.1
2-3	0	5	0	0.1
3-4	0	5	0	0.1
4-5	0	5	0	0.1
5-6	0	7	0	0.1
6-7	0	7	0	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	1.000
2-3	1.000
3-4	1.000
4-5	1.000
5-6	1.000
6-7	1.000

Drinking Water Concentration: 1.790 µg Pb/l

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	0	10
2-3	0	10
3-4	0	10
4-5	0	10
5-6	0	10
6-7	0	10

Multiple Source Analysis Used
Average multiple source concentration: 10.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

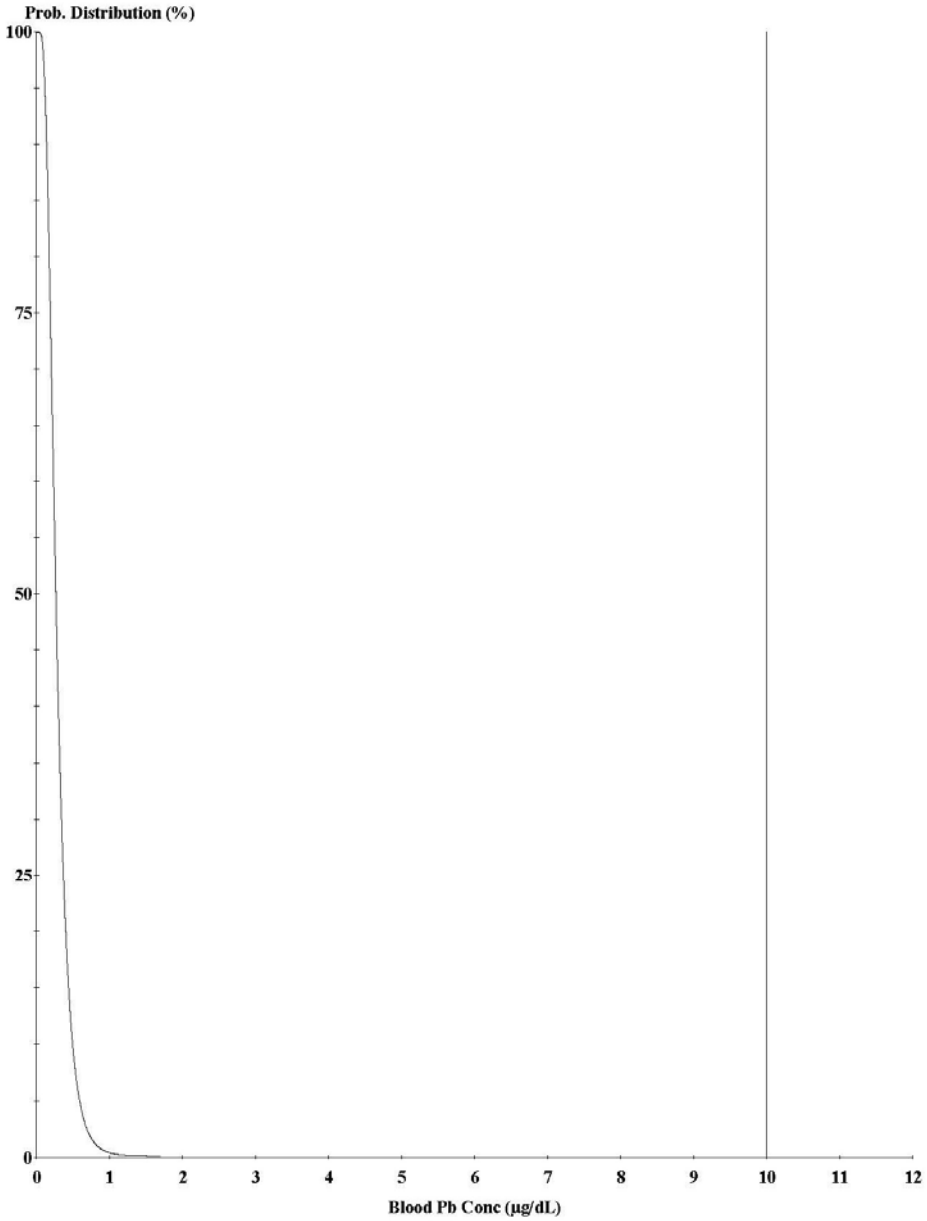
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0	0	0	0.888	0	0.888	0.3
2-3	0	0	0	0.889	0	0.889	0.3
3-4	0	0	0	0.890	0	0.890	0.3
4-5	0	0	0	0.891	0	0.891	0.3
5-6	0	0	0	0.891	0	0.891	0.3
6-7	0	0	0	0.891	0	0.891	0.3

Table E.4
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 10 ug/L cutoff



Acronyms and Abbreviations:

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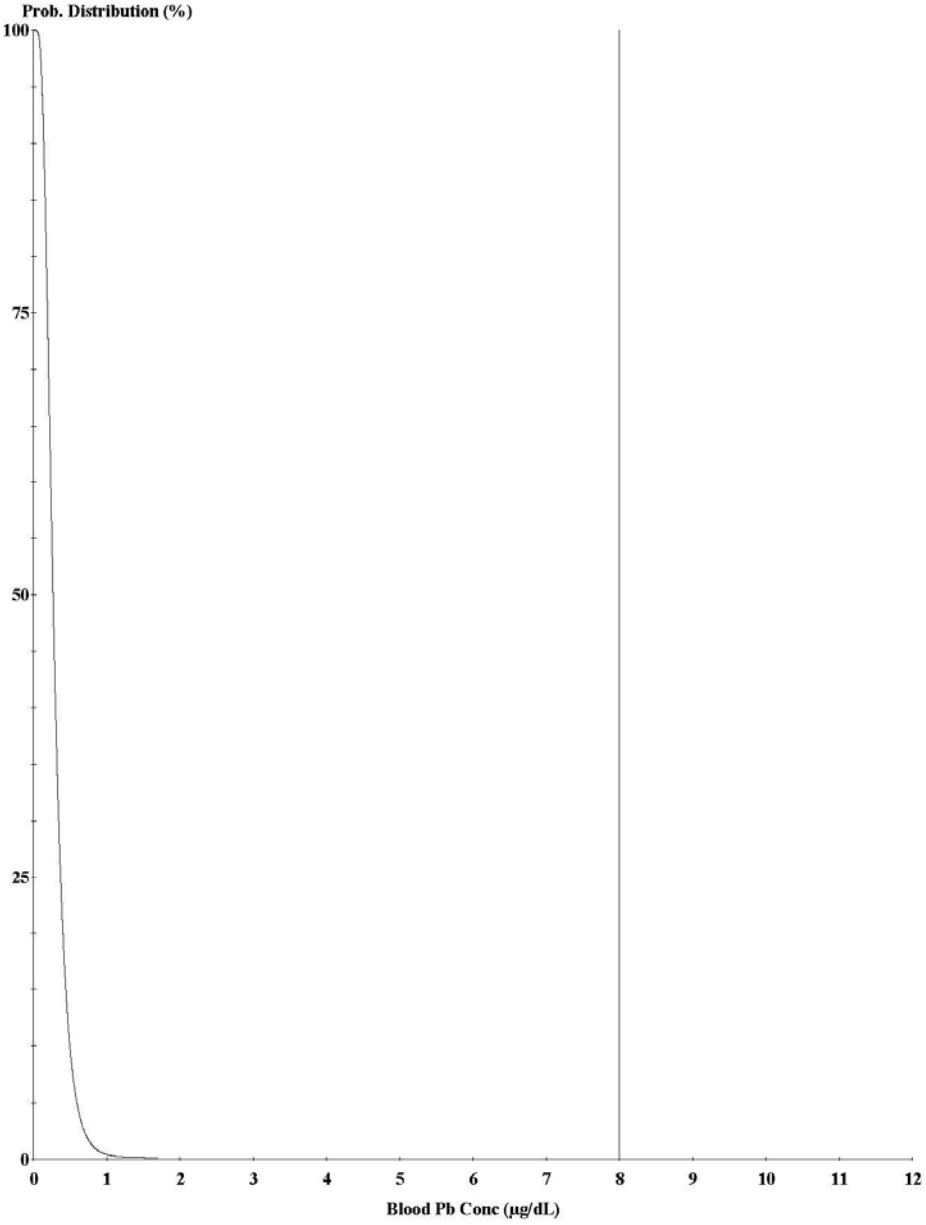
Table E.4
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 8 ug/L cutoff



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
m^3/day = cubic meter per day
Pb = lead
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µg Pb/g = microgram of lead per gram
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µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
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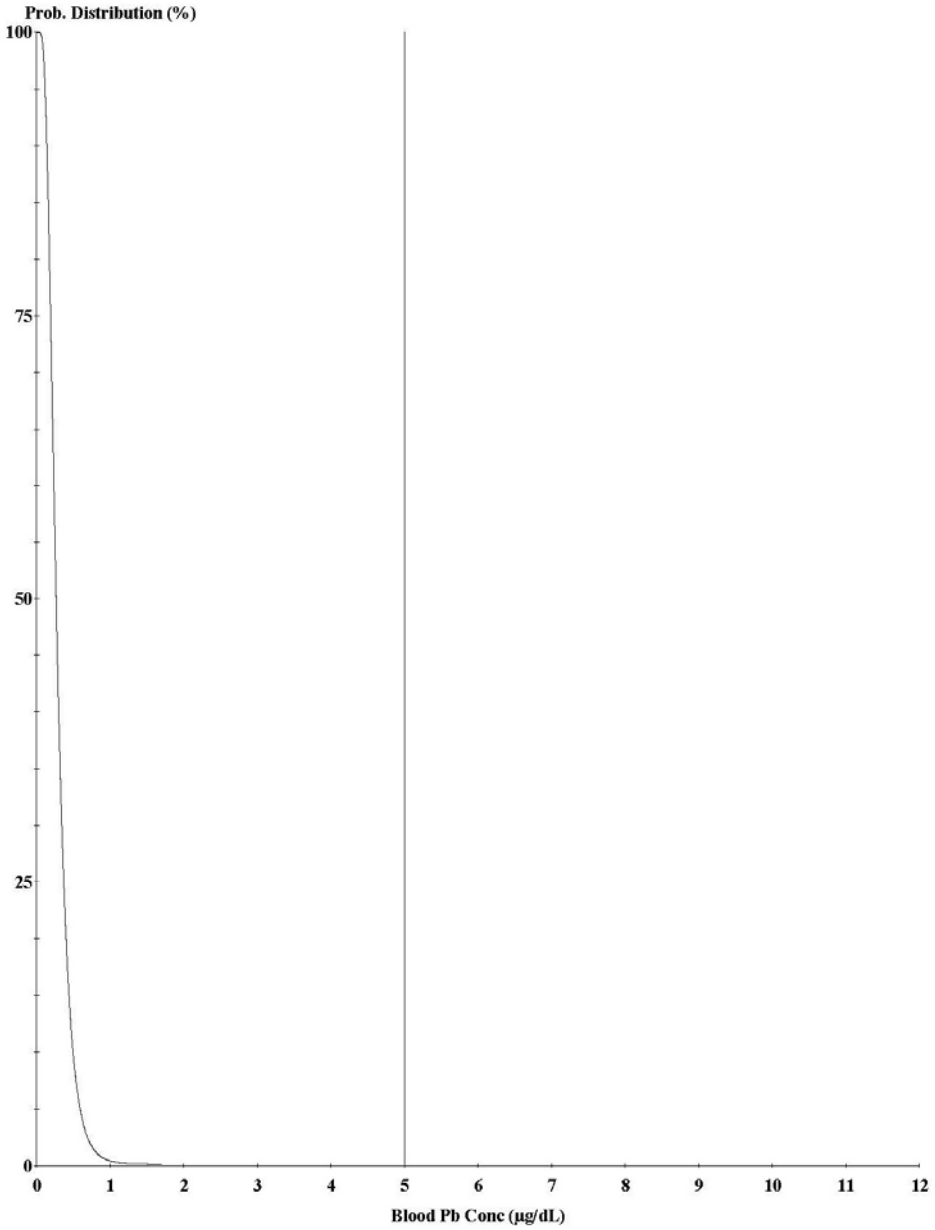
Table E.4
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 5 ug/L cutoff



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RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
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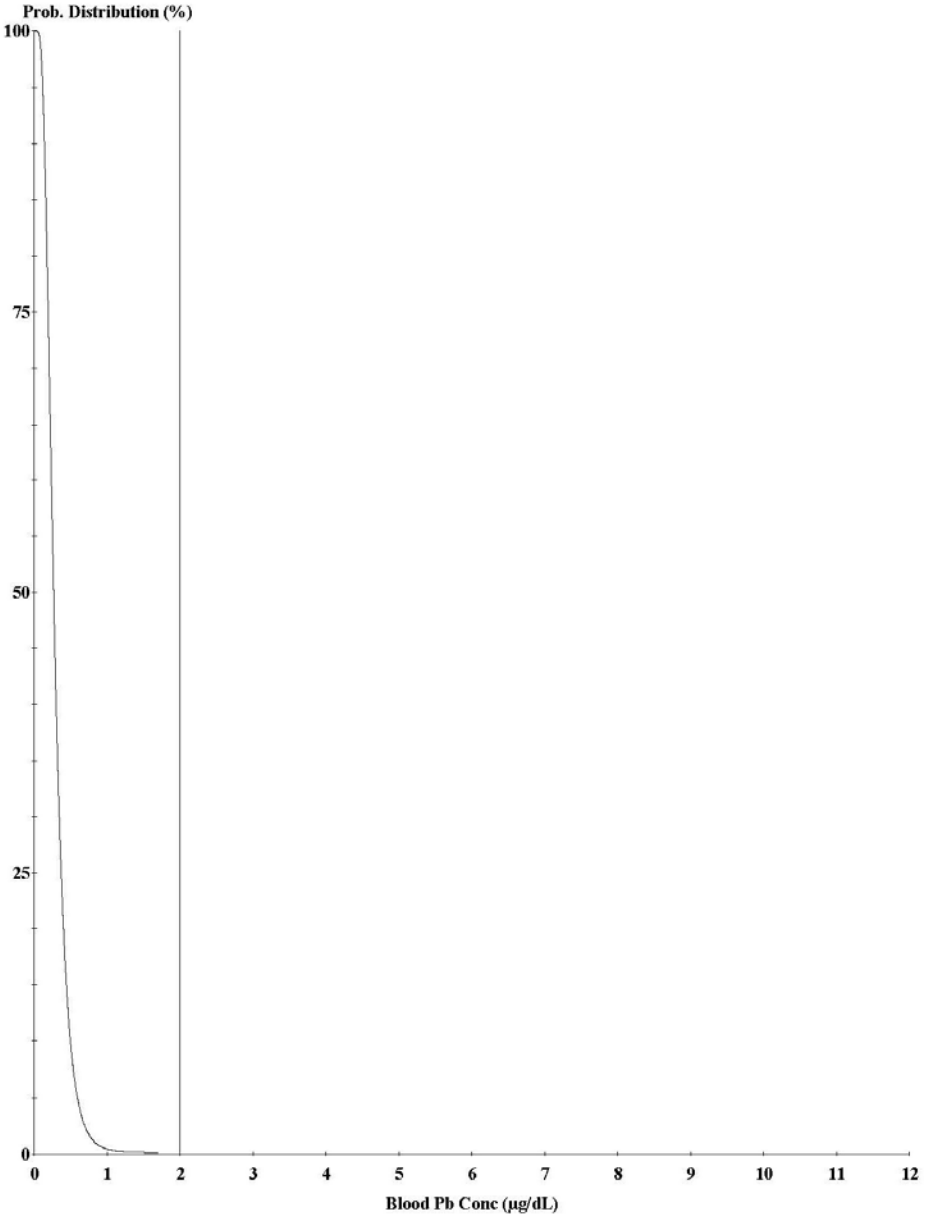
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.4
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Site-wide Groundwater
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 2 ug/L cutoff



Acronyms and Abbreviations:

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BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
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Pb = lead
µg Pb/day = microgram of lead per day
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µg Pb/g = microgram of lead per gram
µg Pb/L = microgram of lead per liter
µg Pb/m^3 = microgram of lead per cubic meter
µg/day = microgram per day
µg/g = microgram per gram

Table E.5
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	0.330
2-3	0.330
3-4	0.330
4-5	0.330
5-6	0.330
6-7	0.330

Drinking Water Concentration: 14.100 µg Pb

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

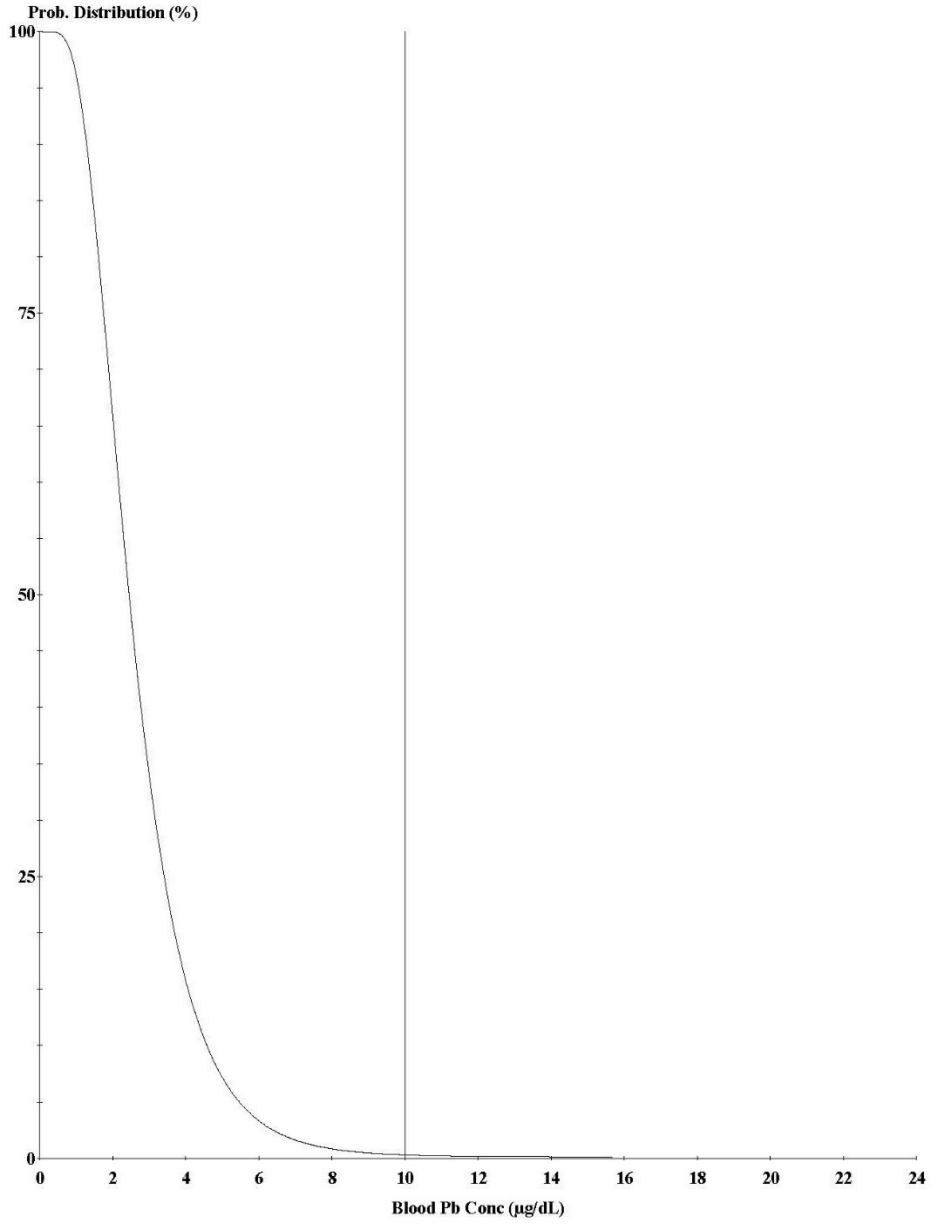
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.902	0	2.14	6.428	9.504	3.3
2-3	0.062	0.991	0	2.165	6.5	9.718	3.6
3-4	0.067	0.959	0	2.187	6.567	9.78	3.4
4-5	0.067	0.933	0	2.225	4.95	8.175	2.9
5-6	0.093	0.987	0	2.241	4.486	7.808	2.5
6-7	0.093	1.073	0	2.249	4.253	7.669	2.2

Table E.5
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 10 ug/L cutoff



Acronyms and Abbreviations:

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CT = central tendency
IEUBK = Integrated Exposure Uptake Biokinetic
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Table E.5
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 8 ug/L cutoff

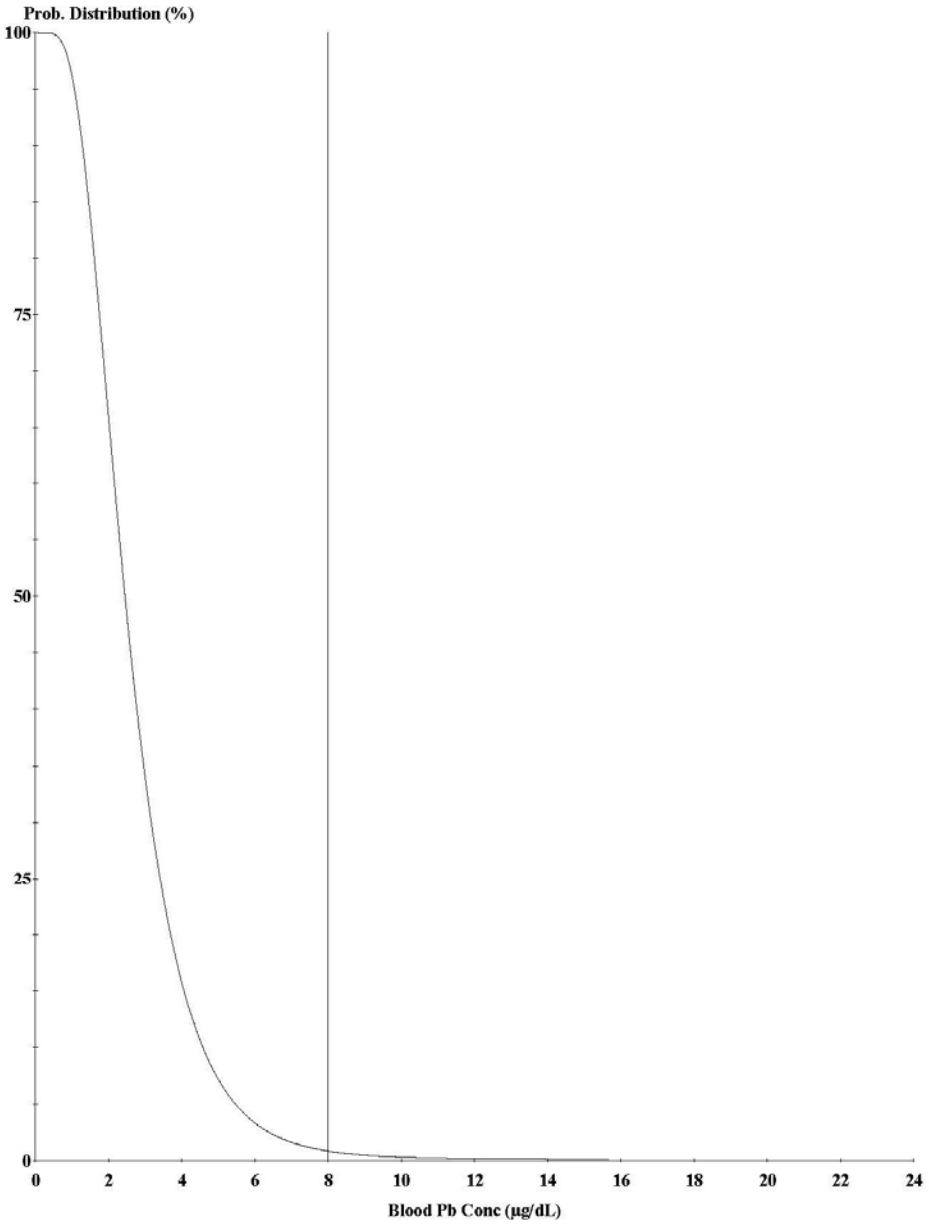

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Table E.5
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 5 ug/L cutoff

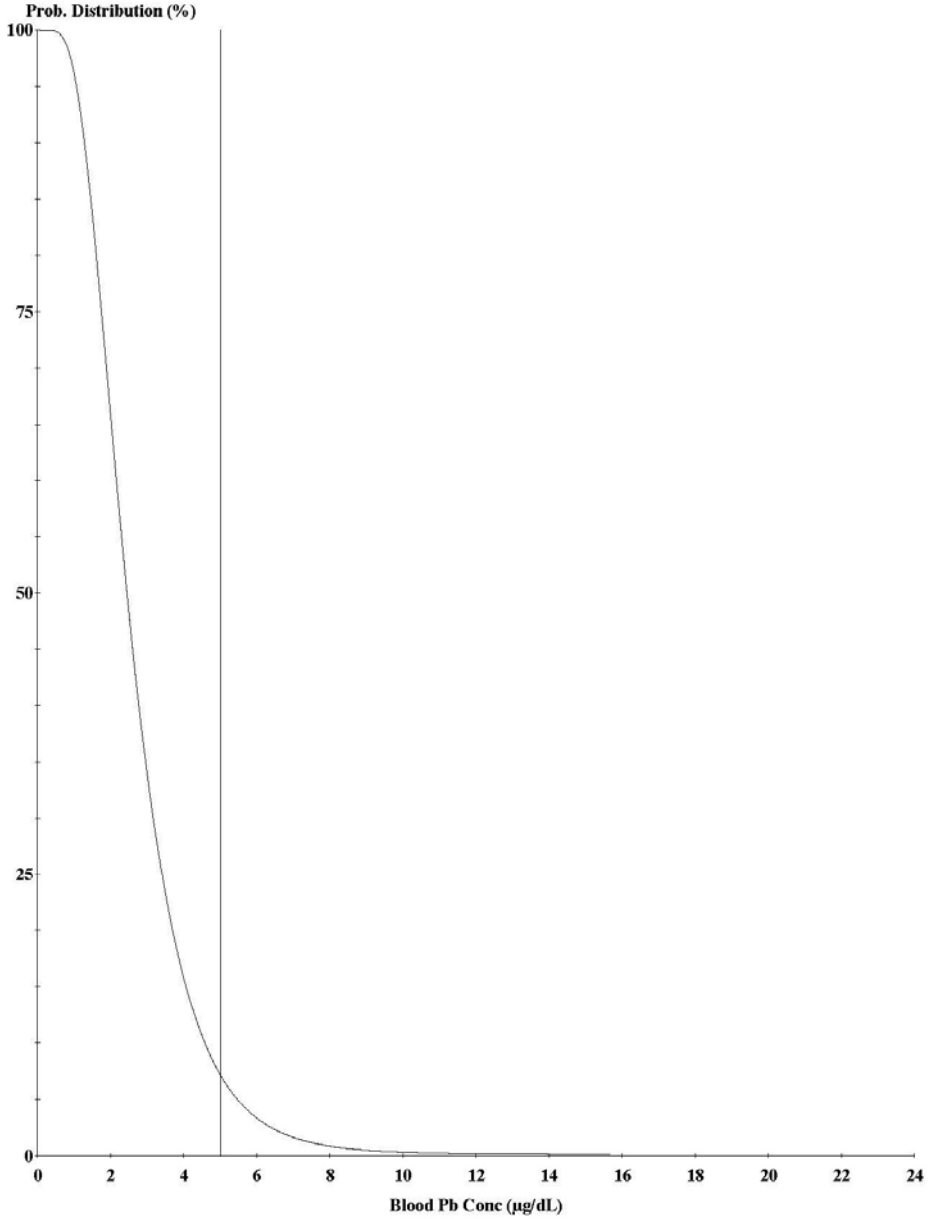

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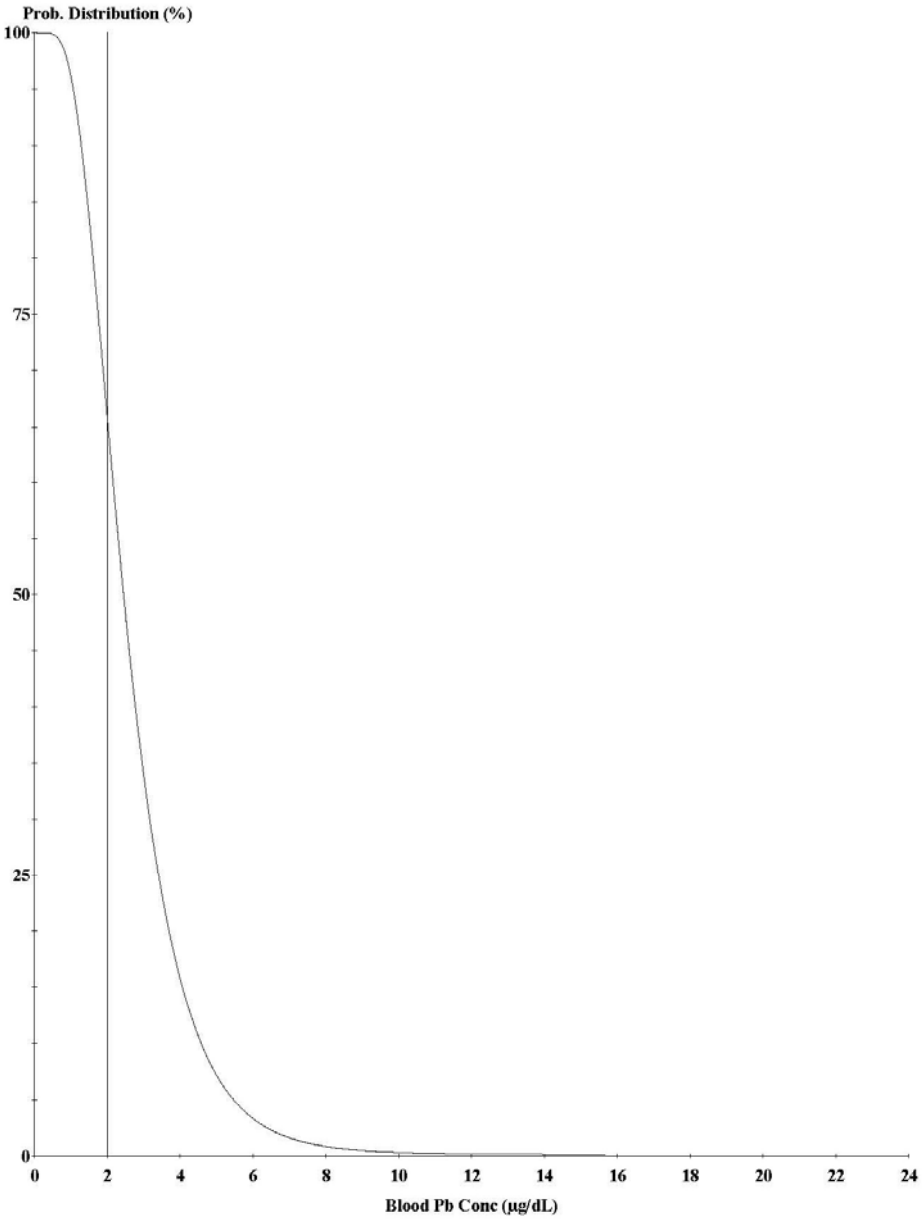
Table E.5
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Central Tendency Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 2 ug/L cutoff



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IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
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Pb = lead
µg Pb/day = microgram of lead per day
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Table E.6
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	2	3	32	0.1
2-3	3	5	32	0.1
3-4	4	5	32	0.1
4-5	4	5	32	0.1
5-6	4	7	32	0.1
6-7	4	7	32	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	1.000
2-3	1.000
3-4	1.000
4-5	1.000
5-6	1.000
6-7	1.000

Drinking Water Concentration: 14.100 µg Pb

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	200	150
2-3	200	150
3-4	200	150
4-5	200	150
5-6	200	150
6-7	200	150

Multiple Source Analysis Used
Average multiple source concentration: 150.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

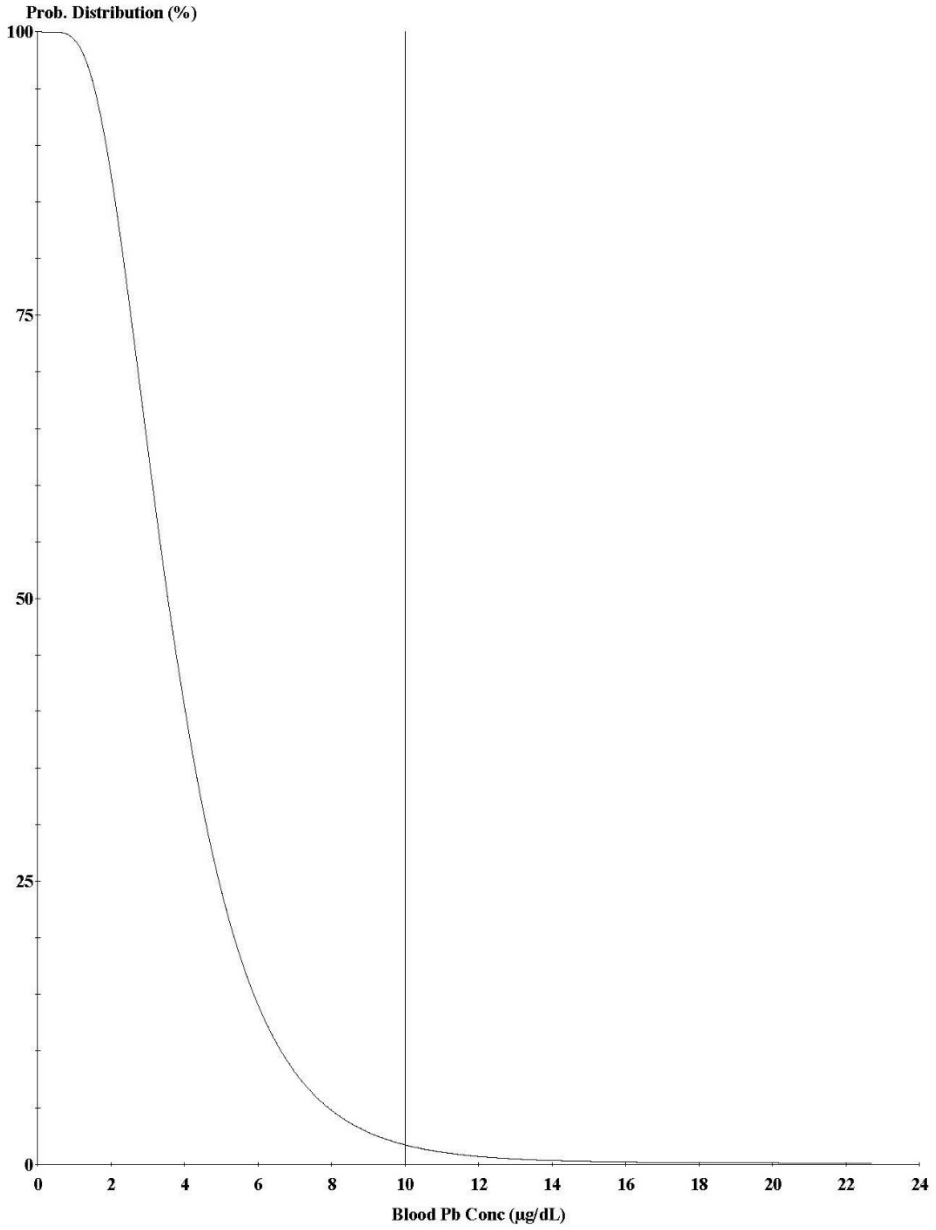
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0.034	0.871	0	6.264	6.207	13.376	4.7
2-3	0.062	0.961	0	6.364	6.306	13.693	5.1
3-4	0.067	0.934	0	6.454	6.396	13.851	4.8
4-5	0.067	0.911	0	6.587	4.835	12.4	4.3
5-6	0.093	0.967	0	6.649	4.393	12.102	3.8
6-7	0.093	1.052	0	6.685	4.171	12.001	3.4

Table E.6
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 10 ug/L cutoff



Acronyms and Abbreviations:

% = percent
BHHRA = Baseline Human Health Risk Assessment
RME = reasonable maximum exposure
IEUBK = Integrated Exposure Uptake Biokinetic
GSD = geometric standard deviation
L/day = liter per day
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Table E.6
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 8 ug/L cutoff

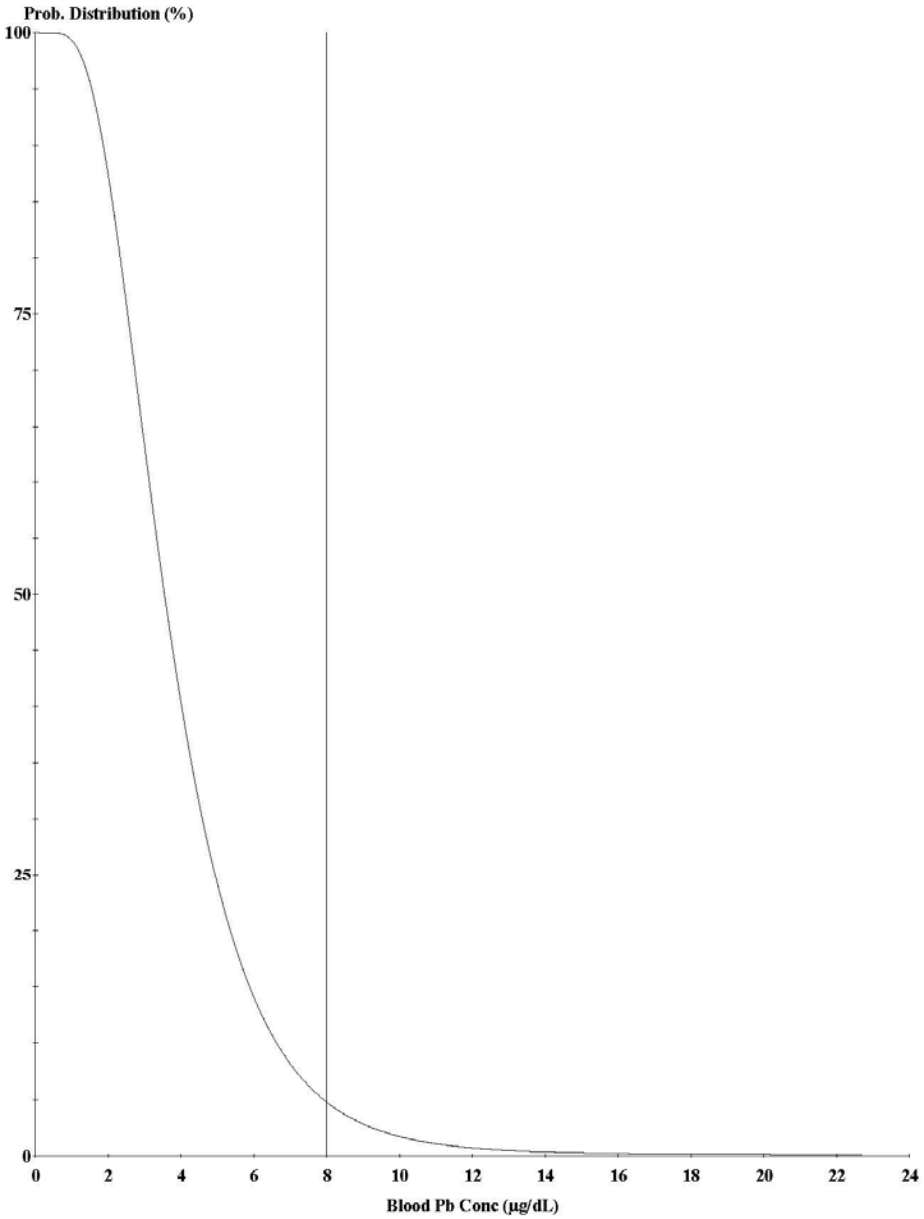

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Table E.6
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 5 ug/L cutoff

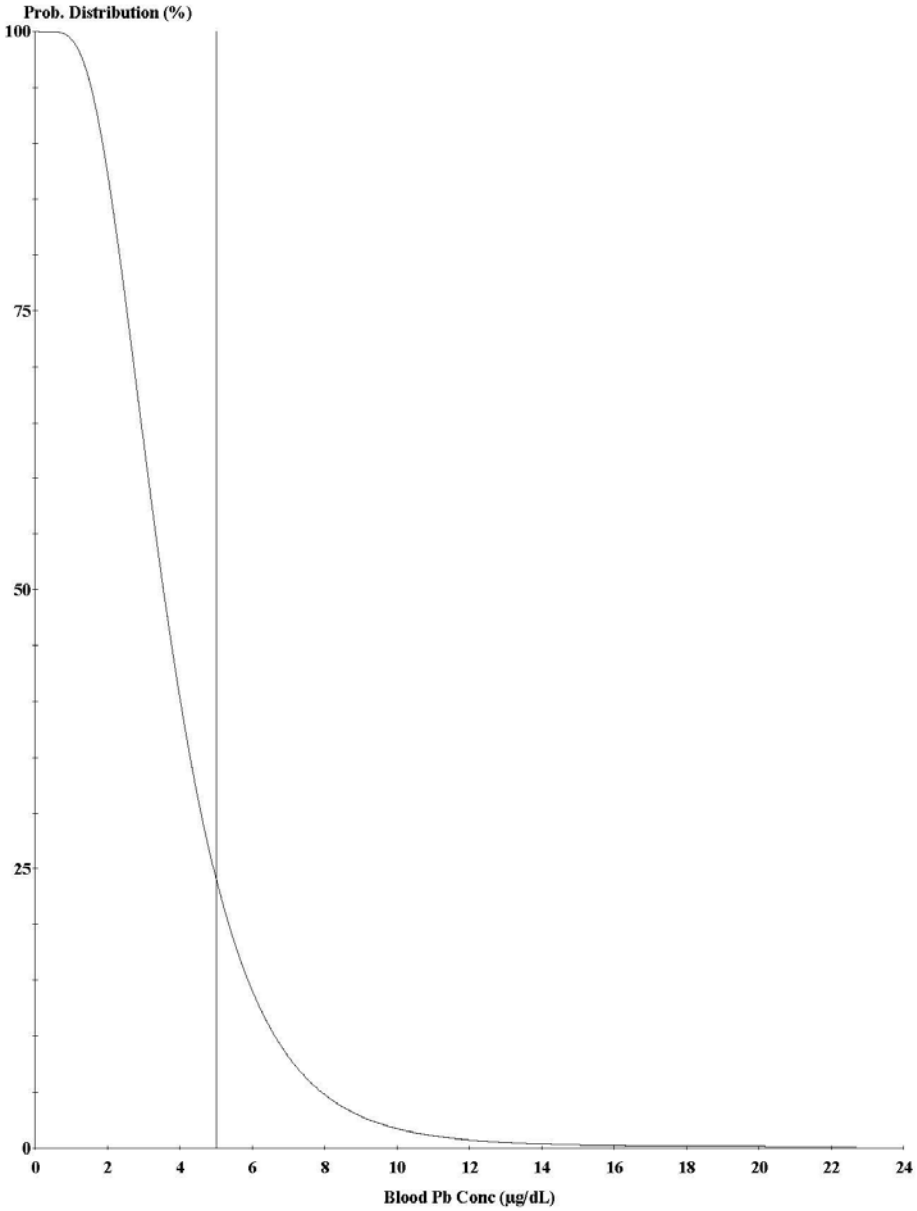

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Table E.6
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 2 ug/L cutoff

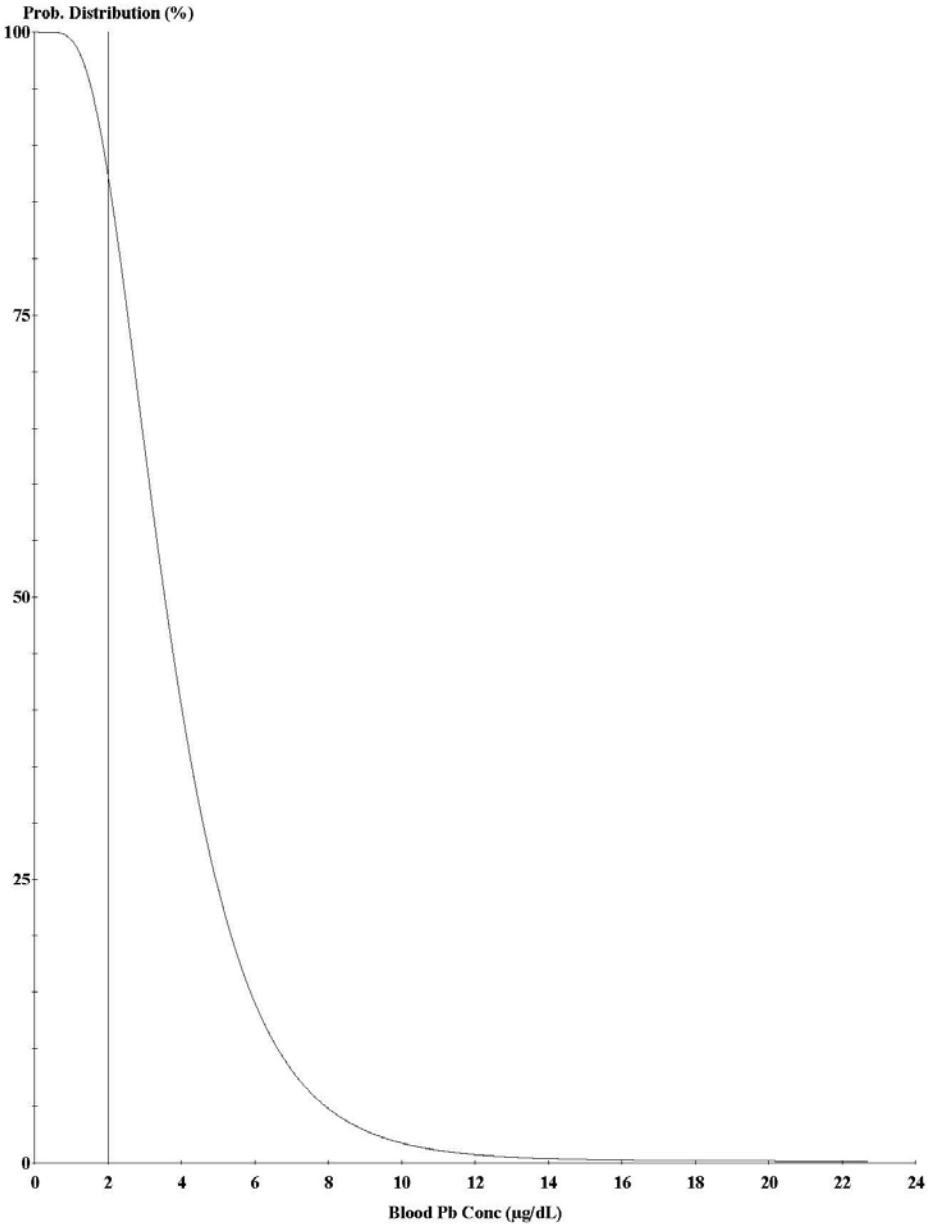

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Table E.7
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

LEAD MODEL FOR WINDOWS Version 1.1

INPUTS:

AIR

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Concentration (µg Pb/m^3)
0.5-1	0	2	0	0.1
1-2	0	3	0	0.1
2-3	0	5	0	0.1
3-4	0	5	0	0.1
4-5	0	5	0	0.1
5-6	0	7	0	0.1
6-7	0	7	0	0.1

Indoor Air Pb Concentration: 30.000 percent of outdoor.

DIET

Age	Diet Intake (µg/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

DRINKING WATER

Age	Water Consumption (L/day)
0.5-1	0
1-2	1.000
2-3	1.000
3-4	1.000
4-5	1.000
5-6	1.000
6-7	1.000

Drinking Water Concentration: 14.100 µg Pb

SOIL & DUST

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
0.5-1	0	0
1-2	0	10
2-3	0	10
3-4	0	10
4-5	0	10
5-6	0	10
6-7	0	10

Multiple Source Analysis Used
Average multiple source concentration: 10.000 µg/g
Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

ALTERNATE INTAKE

Age	Alternate (µg Pb/day)
0.5-1	0
1-2	0
2-3	0
3-4	0
4-5	0
5-6	0
6-7	0

MATERNAL CONTRIBUTION: INFANT MODEL
Maternal Blood Concentration: 1.000 µg Pb/dL

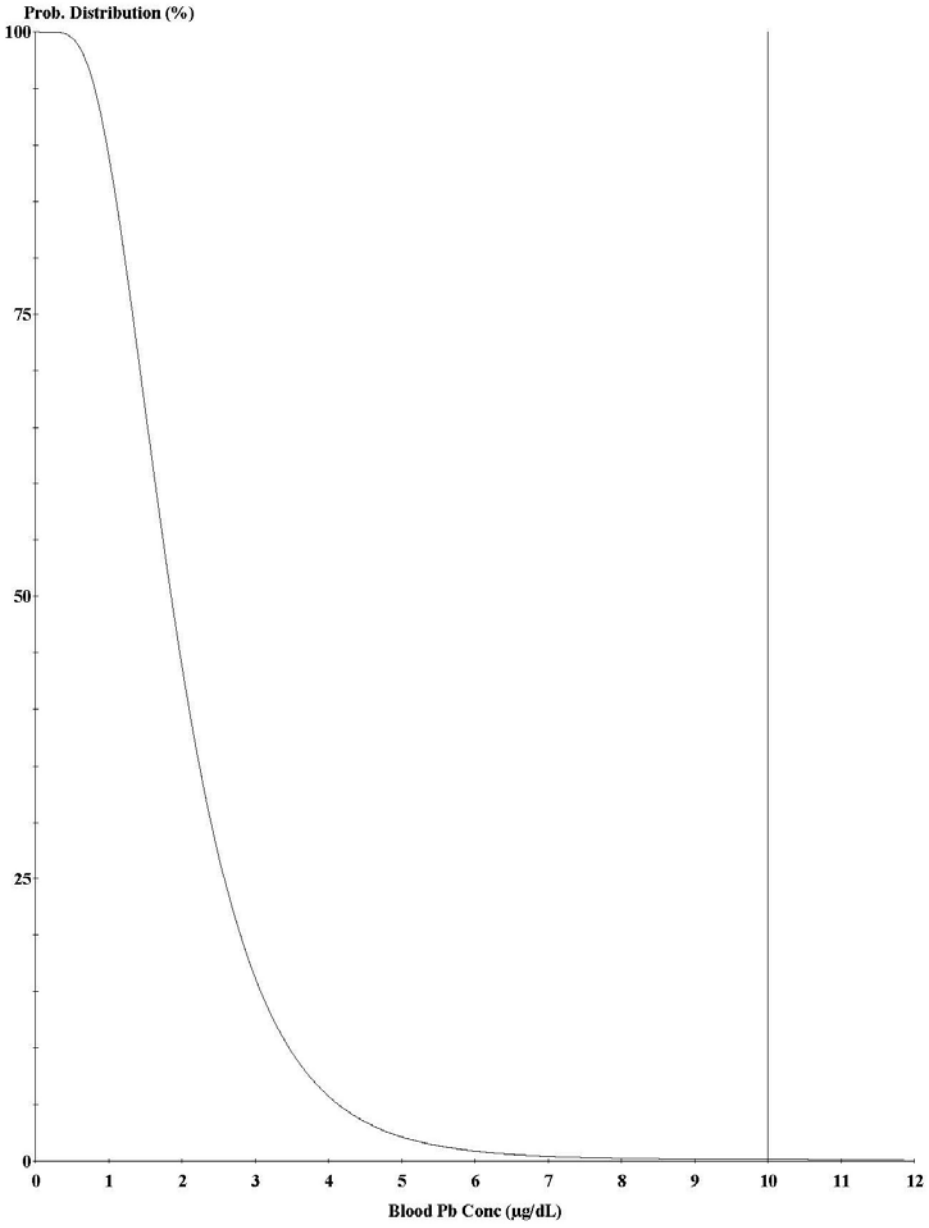
CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Age	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)	Soil + Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
0.5-1	0	0	0	0	0	0	0
1-2	0	0	0	6.651	0	6.651	2.3
2-3	0	0	0	6.707	0	6.707	2.5
3-4	0	0	0	6.755	0	6.755	2.4
4-5	0	0	0	6.793	0	6.793	2.3
5-6	0	0	0	6.821	0	6.821	2.1
6-7	0	0	0	6.839	0	6.839	2.0

Table E.7
Calculations of Blood Lead Concentrations (IEUBK) – Hypothetical Future Resident – Young Child - Mine Water
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 10 ug/L cutoff



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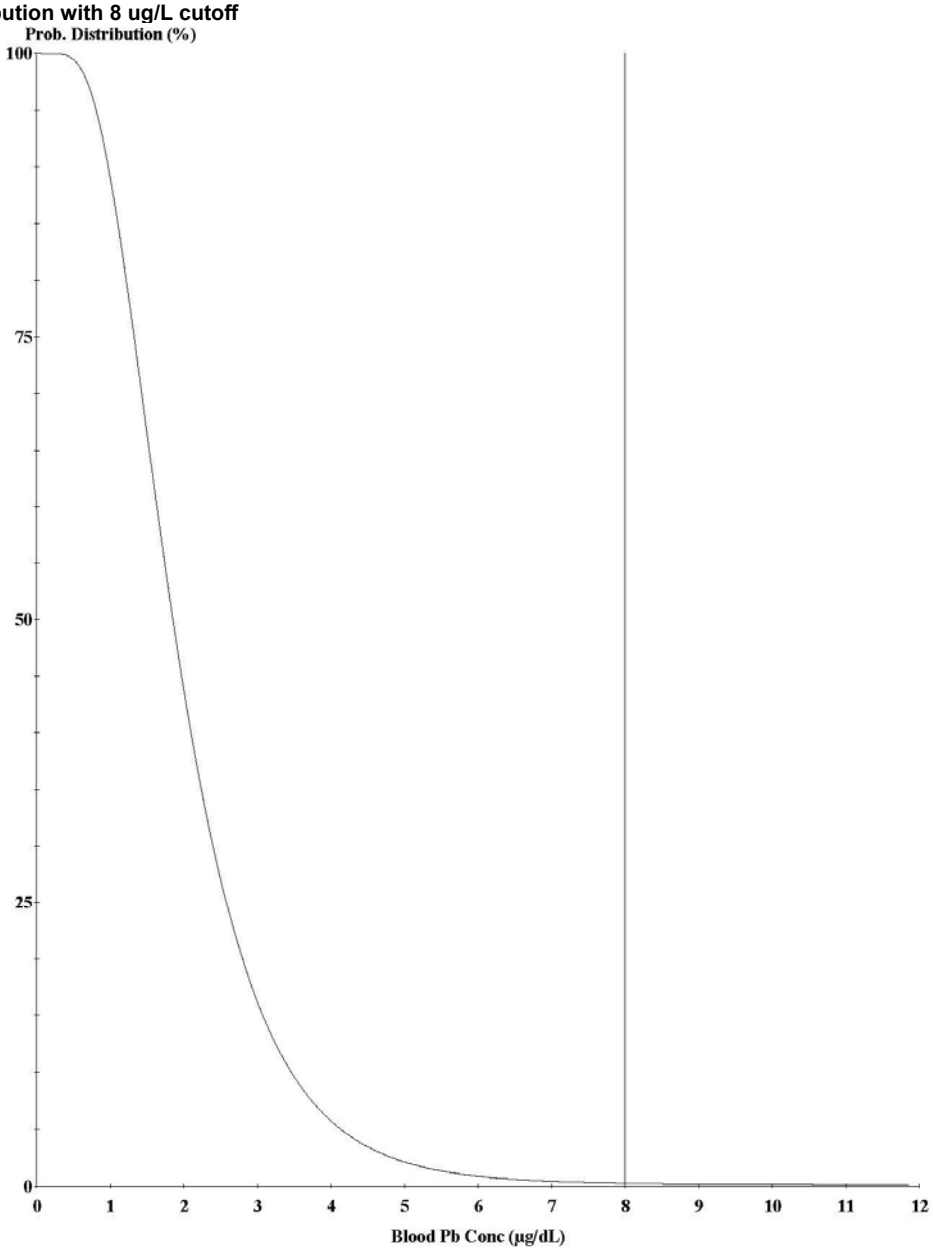
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 8 ug/L cutoff



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Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

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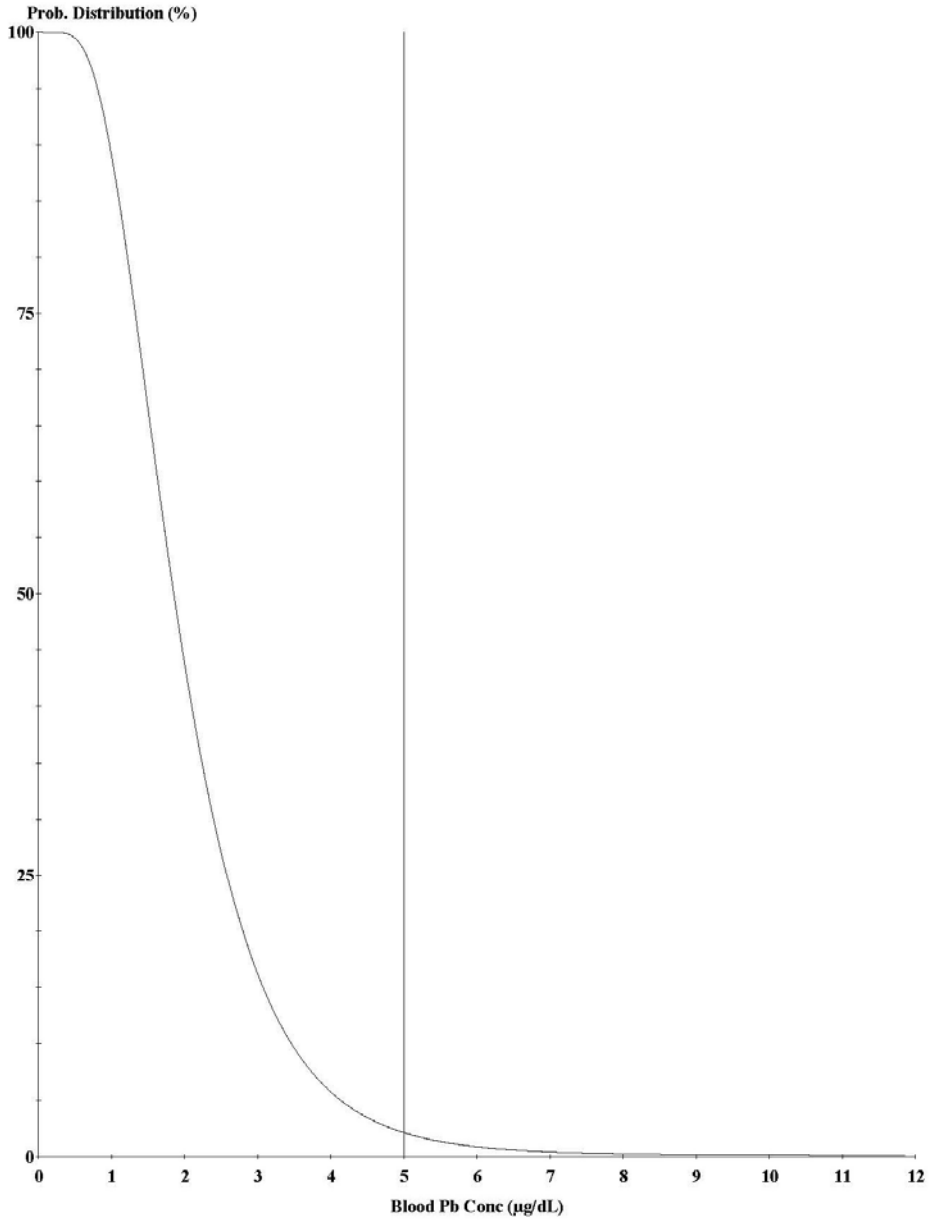
Probability Distribution with 5 ug/L cutoff



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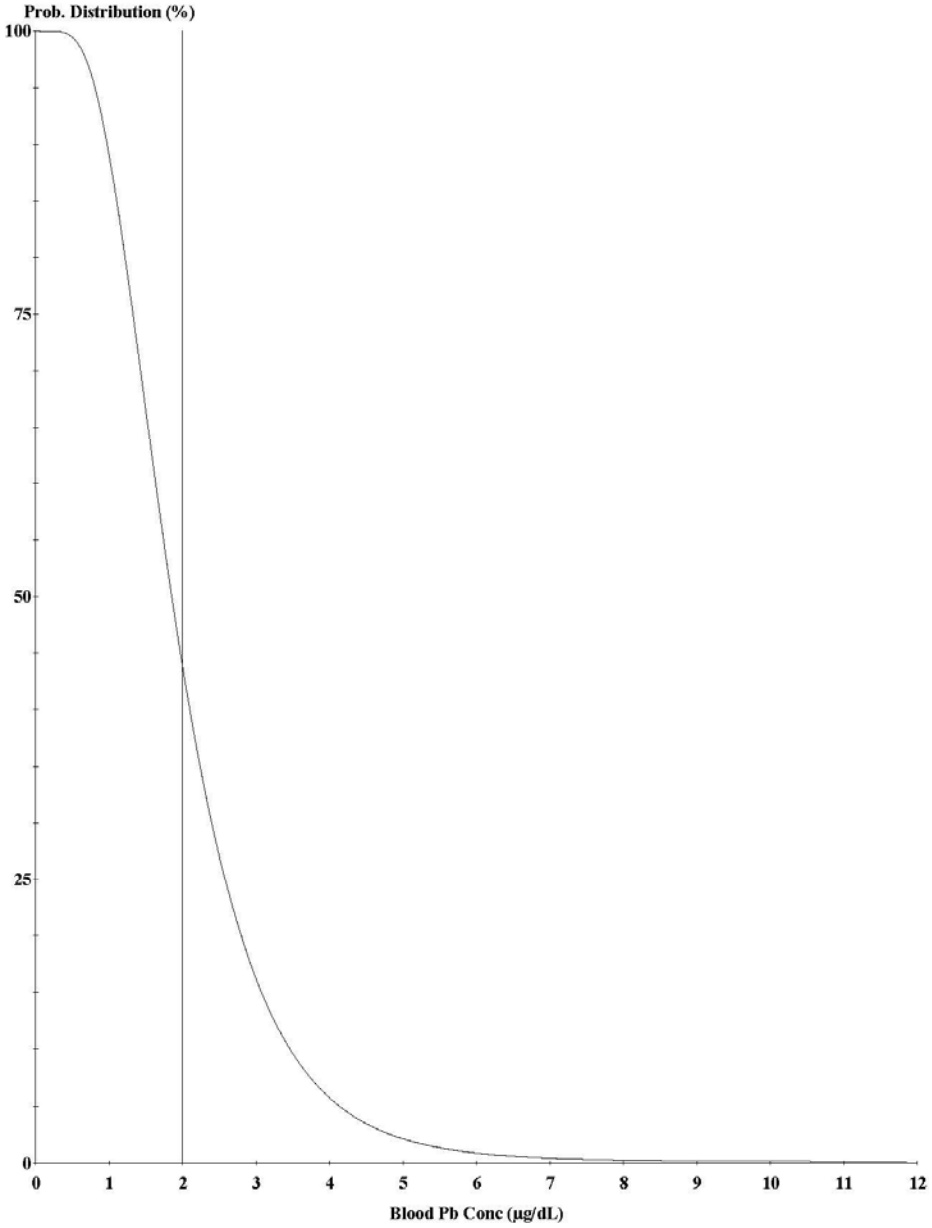
Reasonable Maximum Exposure Water Ingestion Only

Site-Wide Groundwater BHHRA Update
Ringwood Mines/Landfill Superfund Site
Ringwood, New Jersey

RESULTS:
Probability Distribution with 2 ug/L cutoff



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